# Phase II ESA
# Report of Findings
# (Subsurface)

Elim City Shop
Moses Point Road
Elim, Alaska

Alaska DEC Contaminated Site ID 600.38.007
Alaska DEC Hazard ID 25510

January 2025

# Phase II Environmental Site Assessment Report (Subsurface)

Elim City Shop
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Alaska DEC Hazard ID 25510

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January 2025

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# List of Acronyms

| | |
|---|---|
| AAC | Alaska Administrative Code |
| ABCA | Analysis of Brownfields Cleanup Alternatives |
| ADEC | Alaska Department of Environmental Conservation |
| AST | Aboveground Storage Tank |
| BGS | Below Ground Surface |
| BTEX | Benzene, Toluene, Ethylbenzene, and Xylenes |
| CFR | Code of Federal Regulations |
| CIAP | Coastal Impact Assistance Program |
| COC | Chain of Custody |
| COPC | Contaminants of Potential Concern |
| CSM | Conceptual Site Model |
| DNR | Alaska Department of Natural Resources |
| DQO | Data Quality Objective |
| DRO | Diesel Range Organics |
| ELI | Elim |
| EPA | U.S. Environmental Protection Agency |
| ERB | Equipment Rinse Blank |
| ESA | Environmental Site Assessment |
| GPS | Global Positioning System |
| GRO | Gasoline Range Organics |
| HASP | Health and Safety Plan |
| HAZWOPER | Hazardous Waste Operations and Emergency Response |
| HDPE | High Density Polyethylene |
| LOD | Limit of Detection |
| OSHA | Occupational Safety and Health Administration |
| PAH | Polycyclic aromatic hydrocarbon |
| PID | Photoionization Detector |
| QA/QC | Quality Assurance / Quality Control |
| QAPP | Quality Assurance Project Plan |
| QEP | Qualified Environmental Professional |
| REC | Recognized Environmental Condition |
| ROW | Right-Of-Way |
| RPD | Relative Percent Difference |
| RRO | Residual Range Organics |
| SAP | Sampling and Analysis Plan |
| SOP | Standard Operating Procedure |
| TP | Test Pit |
| VOC | Volatile Organic Compound |

# Executive Summary

In September 2024, contractors to Kawerak, Inc. (Kawerak) completed a Supplemental Phase II Environmental Site Assessment (ESA; hereafter referred to as Phase II) at the City Shop site in Elim, Alaska. The objective of the Phase II was to address data gaps identified during previous investigations. The City of Elim uses the property as a vehicle maintenance and repair facility. The site also serves as a storage area for heavy equipment and various wastes, including used oil, drums, tanks, smaller containers, batteries, and other materials. A portion of the site reportedly served as a landfill prior to the early 1980s.

To complete the Phase II, the project team excavated 21 test pits, characterized subsurface conditions, and collected and analyzed samples of surface and subsurface soil. The soil profile was dominated by silt (ML) containing variable amounts of gravel, sand, and/or clay. Some intervals consisted of sand, gravel, or clay with minor amounts of particles of other grain sizes. A few intervals contained significant quantities of organic material.

The assessment indicated that several discrete contaminant releases are present on the property. Concentrations of some contaminants exceed State of Alaska cleanup levels. Results indicate potential risks to human health and the environment. Contaminants have impacted soil in the southeastern portion of the site at a used oil collection area. Other test pits revealed contamination near the northwest corner of the shop building, as well as within the structure. In general, the horizontal extent of impacts appears to have been defined, although discrete areas of contamination may be present at locations not investigated. All of the identified contamination was present in the upper six feet of the soil column.

Subsurface water was not encountered in any of the test pits, and no monitoring wells were installed. No surface waters were identified near the property, and surface water samples were not collected.

Based on available information for the site, Esker recommends that Kawerak develop an Analysis of Brownfields Cleanup Alternatives (ABCA), select a preferred site remediation strategy, and prepare a site-specific Cleanup Plan for the property.

# Introduction

Esker Associates, LLC (Esker), in cooperation with ChemTrack Alaska, Inc. (ChemTrack) completed a Supplemental Phase II Environmental Site Assessment (ESA; hereafter referred to as Phase II) at the Elim Shop site in Elim, Alaska (**Figure 1** and **Figure 2**). The Phase II was completed on behalf of the Environmental Program of Kawerak, Inc. (Kawerak) of Nome, Alaska using funds provided by a U.S. Environmental Protection Agency (EPA) Brownfields Grant.

The City of Elim and members of the community have expressed concerns related to potential human health effects, contamination, and environmental impacts from current and previous uses of the shop site. The nearby Elim Creek and an adjacent spring serve as water supply sources for the village, and the community is concerned that its drinking water could be impacted by contaminants originating at the site.

Kawerak completed a Phase I ESA (Phase I, NewFields, 2022a) that identified several Recognized Environmental Conditions (RECs) on and near the property. A preliminary (surface) Phase II completed in 2023 (Esker 2024a) documented the distribution, types, and quantities of wastes present on the ground surface in preparation for offsite waste disposal.

Residents would like to remove unnecessary equipment, storage tanks, drums, lead-acid batteries, and hazardous materials from the property. Site cleanup would reduce risks for onsite workers, city residents, and ecological systems. Once site remediation is achieved, the City would like to develop an environmentally sound used oil collection area, battery storage facility, and waste backhaul staging area.

The 2023 Phase II (Esker 2024a) recommended the completion of a subsurface investigation. The purposes of the assessment were to help evaluate:

- current subsurface conditions at the subject property;
- whether the identified RECs resulted in the release of contaminants;
- the extent and severity of potential impacts to environmental media; and
- cleanup options and associated costs.

The field team completed the investigation in accordance with Kawerak's Quality Assurance Project Plan (QAPP; NewFields 2022b) and the Sampling and Analysis Plan (SAP) for the site (Esker 2024b), both of which were approved by the U.S. EPA. The Alaska Department of Environmental Conservation (ADEC) reviewed and approved the SAP. Esker prepared this document using guidance provided by EPA and by ADEC (2017).

ChemTrack scientist Lauren Jennings and Jackie Rowley of JMR Geosolutions, both Qualified Environmental Professionals (QEPs), conducted field data collection activities. Adam Johnson of Esker provided remote support during the Phase II. Kayla Bourdon of Kawerak provided onsite logistical support. Mr. Johnson (Esker) managed the Phase II and served as the project's overall QEP in accordance with Title 18 of the Alaska Administrative Code (AAC) Chapter 5 Section 75.333. Esker prepared this report with the assistance of ChemTrack.

# Background and General Site Description

The Elim City Shop site is located north of Moses Point Road, in Elim, Alaska (**Figure 1** and **Figure 2**). The approximate latitude and longitude of the property in decimal degrees are 64.6183° North, 162.2609° West, respectively. The site is located at an elevation of approximately 40 feet above mean sea level. The total area of the property is about 1.5 acres. The portion of the site that is the focus of this subsurface Phase II is about 1.2 acres (**Figure 3**). The site is owned and operated by the City of Elim. The property contains several buildings, waste storage areas, and equipment laydown areas (**Figure 2** and **Figure 3**). The site slopes gently to the east toward Elim Creek (**Figure 2**).

Information provided by Kawerak indicates that a site survey was recorded on April 17, 1986, in Plat No. 86-8T. The property is located in Section 15, Township 10 South, Range 18 West, Kateel River Meridian. Historical community maps appear to indicate that the property is located within U.S. Survey No. 2548 and Patent 50-79-0148. Kawerak maps indicate that a portion of the site was under a special use permit associated with the U.S. Army and the Alaska Army National Guard. Maps prepared in 2004 show a special use permit to the Army National Guard that was associated with a portion of the subject property.

The property lies north of Moses Point Road and west of the road leading from central Elim to the airport. An Army National Guard Building lies southeast of the shop. A church and health clinic are located west of the site. Residential properties of central Elim are located south of the site. North of the site is a relatively new equipment storage facility which was under construction at the time of the 2022 Phase I site inspection.

The adjoining property to the east includes a forested wetland, part of the Elim Creek drainage, that is likely downgradient from the site and up-gradient from the municipal surface water supply (**Figure 2**; Oasis, 2010). Surface water and groundwater in the area probably drain toward the creek, which flows in a southerly direction toward Norton Bay. The community's drinking water source at Elim Creek and a water transmission line are located east of the site (**Figure 2**). Saltwater intrusion may occur during very high tides or as a result of storm surges, and surface water runoff could potentially contaminate the drinking water source (Oasis, 2010). The water treatment plant lies south of the Armory building.

The City of Elim occasionally uses the subject property as a vehicle maintenance and repair facility. A fire station building is also present on the site, as well as a facility for processing subsistence fish harvests. The site also serves as a storage area for heavy equipment and various wastes, including used oil, drums, tanks, smaller containers, batteries, and other materials.

A portion of the property reportedly served as a landfill prior to the early 1980s when the current landfill was opened about two miles east of town. Around that time, the onsite landfill was buried, and an equipment shop was constructed for storage and repair of the city's equipment. A former petroleum storage tank farm was located north of and adjacent to the site (**Figure 3**). For the purposes of the planned subsurface Phase II, the former tank farm is not considered part of the site.

Although the site has been owned by the City of Elim for some time, funding has not been available to develop a proper hazardous materials collection site. Over the years, community members have disposed of various wastes at the facility. Available information suggests that the federal Bureau of Land Management (BLM) may have disposed of fuel and construction debris from a nearby abandoned mine site (Kawerak, personal communication, 2022).

The ADEC maintains a status report for the property which lists the data as "informational". The report indicated that the site stored heating oil. The 2022 Phase I reviewed several historical Elim maps. A 1980 map labeled the property as a "solid waste disposal site". On a 1996 map, an area north of the site was labeled as containing bulk fuel tanks.

At some point, the U.S. Army provided a special use permit to the Alaska Army National Guard for a portion of the site. The Phase I reviewed a site report for an Alaska Army National Guard facility located adjacent to the site (ADEC, 2022a; **Figure 2** and **Figure 3**). The National Guard site is identified as ADEC file number 600.38.008 and Hazard ID 27313. According to the report, three 1,500-gallon above ground storage tanks (ASTs) and a hazardous materials storage locker are or were present on the National Guard site.

The National Guard ASTs were closed in 2014. A 2020 investigation revealed the presence of diesel range organics (DRO) at a concentration above the ADEC cleanup level in one soil borehole (Hanagita, 2020). The National Guard facility is located between the Elim Shop and Elim Creek and likely lies in a downgradient position with respect to the City Shop site.

Oasis (2010) completed a property assessment of the City Shop site. The investigation consisted of reviews of available records and aerial photographs, a site inspection, and interviews with several individuals with knowledge of the history of the property. Oasis identified several contaminants of potential concern (COPCs) and sources of COPCs. Their report provided an inventory of materials present on the site in the various sub-areas of the property. Specific potential contaminant source areas were also identified.

The site is largely unpaved, and Oasis (2010) noted various locations exhibiting stained soil. The maintenance shop was constructed on bare ground without a concrete pad, and soil staining was noted inside the building. Surface soil samples at various locations were measured using a photo-ionization detector (PID), and several readings were above 40 parts per million (ppm) volatile organic compounds. Oasis did not collect any surface soil samples for chemical analysis or evaluate any subsurface soil samples.

The 2022 Phase I noted stressed vegetation throughout the property, which may be due to exposure to various wastes. Solid wastes included batteries of various types and sizes, tires, and large machinery. Several ASTs and 55-gallon drums were observed throughout the subject property. The 2022 Phase I did not determine the contents of all of the tanks, drums, and containers. Several of the drums were in poor condition with rusting and pitting, and holes were observed in a few of the drum walls. Several drums had expanded and were cracked at the seams. A heating oil tank along the south side of the shop building may have been in use. Several pieces of heavy equipment were noted; some appeared operational, and others were likely not useable. An office of Norton Sound Seafood Products was noted in the western portion of the site, and fish processing equipment (ice machine) was observed adjacent to the site's western boundary. A building housing the Elim Volunteer Fire Department was present in the southwestern portion of the site.

The site as defined by Oasis (2010) contained several site sub-areas, including the south yard, shop building, equipment laydown area, former tank farm, and former landfill. Discussions with Kawerak staff indicated that the following areas be excluded from the Phase II: the former tank farm area north of the new paved road; and an area northwest of the fire station that was being used as a fish-processing facility in 2022. The remaining areas are included within the current site boundary as defined by Kawerak (**Figure 3**) and as described in more detail below.

South Yard

This portion of the property contains collections of hazardous substances in containers, drums, and ASTs, including a heating oil AST serving the fire station. Portions of the South Yard were and are used as a collection location for used oil and other community wastes. Historical interviews and site observations suggest that one or more releases have occurred at the used oil collection area. In addition, a variety of solid wastes are present to the east of the shop building, and a heavy equipment storage area is present south of the shop building. Oasis (2010) documented elevated PID readings (up to 53 ppm) in surface soil in this area.

Equipment Laydown Area

Historical interviews suggested that a release could have occurred at the former battery storage location on the east side of this area. Other potential contaminant sources include abandoned heavy equipment and ASTs; a second battery storage area on the west side of the property; and areas containing drums on the east side of the site. Elevated PID readings (up to 53 ppm) have been documented in surface soil within this area.

Landfill

The former landfill was reportedly located within the South Yard and the Equipment Laydown Area. Potential sources of contamination include appliances, batteries, equipment, vehicles, fuel containers, and other materials. At some point, the site apparently received wastes from several offsite properties, including a contaminated site at Moses Point (east of Elim) and an abandoned mine site. However, the types, quantities, and depths of buried wastes are currently unknown. The subsurface Phase II site investigation activities will help determine whether constituents from the landfill migrated into soil, groundwater, and/or surface water.

Shop Building

The onsite shop is a metal structure in good condition with fiberglass insulation and a bare soil floor. The building is used for maintenance and repair of equipment and vehicles. Heat is provided via an exterior AST that was observed in 2022 near the southeastern corner of the building. Inside the structure are portable heaters, new waste oil burner, electrode oven, welding generator, air compressor, power inverter, and other equipment, materials, and supplies.

The 2022 Phase I noted numerous drums and stained soil areas both inside and outside the shop building. There were also pools of liquid near the shop entrance and on the northern side of the building associated with the drums. A petroleum hydrocarbon odor was noted near the containers at the site entrance as well as near the drums by the northeast entrance to the shop. Several other containers of lubricants, oils, fuel tanks, waste oil, and other products were present on the property. Some containers lacked lids. Other items included drums, 5-gallon containers, used oil filters, and miscellaneous empty containers.

Historical interviews suggest that one or more releases may have occurred within the onsite structure. Oasis (2010) documented elevated PID readings (up to 47 ppm) in surface soil within the building. The City of Elim and the community are concerned about the health and safety of onsite employees. Releases of contaminants into soil beneath or near the structure could have resulted in the intrusion of vapors into the building. The building's dirt floor provides no physical barrier to vapor migration. Inhalation of indoor air by shop workers could present a human health hazard, and a vapor intrusion assessment may be warranted in the future.

Recognized Environmental Conditions (RECs)

The Phase I report identified the following RECs for the site:

- Onsite maintenance shop and use of the site as an equipment repair and maintenance facility;
- Storage areas for various liquid and solid wastes, including ASTs, drums of used oil and unidentified substances, smaller containers, batteries, construction debris, heavy equipment, and other materials;
- Former onsite landfill with unknown waste types, depths, and quantities;
- Areas of interior and exterior surface soil staining and elevated PID readings, as well as several areas of stressed vegetation, pools of unidentified liquids, and petroleum hydrocarbon odors;

- Potential presence of wastes from offsite sources, including from an abandoned mine site;
- Petroleum release at the adjacent Alaska Army National Guard facility; and
- Former petroleum products storage tank farm to the north of the current site boundary with at least one detection of DRO in surface soil (not included in this SAP)

Oasis (2010) provided the following recommendations for assessment at the site:

- Chemical characterization would allow Kawerak to identify and segregate potentially hazardous materials and wastes in abandoned tanks, drums, containers, vehicles, and equipment. Kawerak completed this work in 2023 (see below).
- Inert and hazardous wastes should be removed, transported, and disposed of outside of Elim.
- Characterization of environmental conditions at the property should be completed to determine the nature and extent of potential contamination due to site operations and conditions. Such an investigation may include soil, groundwater, surface water, and soil vapor sampling to determine the extent of COPCs at the site. Oasis identified the following COPCs: petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), and lead.
- Development of a comprehensive plan to manage the collection, storage, and disposal of future wastes such as waste oil and batteries.

# Geology and Hydrogeology – General Conditions

The Elim area is underlain by metamorphic rocks, including sandstone, marble and schist (Till et al., 1986). Surficial deposits include alluvium of Elim Creek and beach-related sandy gravel sediments. At the adjacent Army National Guard property (**Figure 3**), Hanagita Resources (2020) encountered silt with occasional peaty mats below fill material. The silt was underlain by sandy gravel or gravelly sand which may have been weathered bedrock (schist).

Shallow groundwater in the region likely flows to the south and/or southeast toward Elim Creek and Norton Bay. The Alaska Department of Natural Resources (DNR) Well Log Tracking System (WELTS) database contains a record for one well in the Elim area (DNR 2023). The well is 78 feet deep, and the static water level was 63 feet below ground surface (bgs) at the time of drilling in 1963. The borehole log for the well indicated permafrost to a depth of approximately seven feet bgs, fractured rock from seven feet to about 60 feet bgs, and underlying sandstone to the bottom of the boring. Groundwater was not encountered during a study at the adjacent Army National Guard facility (Hanagita 2020) which involved boreholes to depths of up to 24 feet bgs.

Surface water runoff at the site likely follows topography and flows to the east toward Elim Creek (**Figure 2**). The potential for contaminant migration from the site to nearby drinking water sources has been a community concern. Groundwater at the property may be hydraulically connected to Elim Creek and/or an associated spring, both of which serve as sources of public water supply. These sources are located about 700 feet northeast of the site.

# Phase II Investigation (2023)

In September 2023, ChemTrack and Esker completed a Phase II on behalf of Kawerak (Esker 2024a). The purposes of the assessment were to obtain information about substances present at the ground surface and to prepare the materials for eventual offsite disposal. The assessment identified, characterized, classified, and quantified liquid wastes present in various containers. The investigation included development of a waste segregation log with information about each waste stream, including descriptions, estimated volumes, and additional comments and details. **Figure 4** shows the spatial distribution of REC elements on the site following the 2023 investigation.

Results of the Phase II are summarized as follows:

- The project team identified a total of 14 different liquid waste streams.
- More than 3,500 gallons of liquids were characterized.
- A variety of solid wastes were identified, including compressed gas cylinders, containers of lead-acid batteries, and supersacks of an unidentified black granular solid.
- Laboratory analysis indicated that most of the sampled substances were non-ignitable. Results for two samples were slightly below the flash point threshold for ignitability.
- The pH of the majority of samples was neutral.
- Analytical results suggest that lead and benzene may be elevated in some samples.
- The above findings indicate that most of the wastes are likely non-hazardous.

# Regulatory Framework

The ADEC has established soil cleanup levels for contaminated sites in Alaska. The regulations are contained in Title 18 AAC, Chapter 75 - Oil and Other Hazardous Substances Pollution Control (ADEC 2023). Several soil cleanup level methods are available. Method One is limited to petroleum hydrocarbon compounds and involves the calculation of cleanup levels based on site characteristics including depth to groundwater, soil type, and potential receptors. Method Two consists of ADEC-prescribed numeric cleanup levels for both petroleum hydrocarbons and non-petroleum contaminants. Methods Three and Four are associated with alternative site-specific cleanup levels. According to state regulations, soil cleanup levels provided under Method One and Method Two apply at a given site unless the ADEC approves alternative cleanup levels under Method Three or Method Four.

For this Phase II, soil sample analytical results will be compared with Method Two cleanup levels. The cleanup levels are provided in tables within this report, as well as in 18 AAC 75.341. Method Two lists cleanup levels for both human health risks and for environmental risks (migration to groundwater). This report focuses on comparisons of soil analytical results to cleanup levels that are protective of the migration-to-groundwater pathway.

# Conceptual Site Model (CSM) and Data Gaps

Esker developed a conceptual site model (CSM) for the City Shop site based on the general site setting, the findings of previous investigations, and professional knowledge regarding likely conditions at similar properties. Based on the information reviewed, the CSM included the following elements:

- The onsite maintenance shop has been used to repair vehicles and equipment for several decades.
- Multiple areas of stored liquids and solid wastes are, or were, present on the site.
- Shallow groundwater, if present, likely flows to the south and/or southeast toward Elim Creek.

- Site-specific geologic and groundwater data are not available. However, a study at the adjacent Army National Guard facility suggests that bedrock lies within 10 to 25 feet of ground surface. Groundwater was not encountered above bedrock at the National Guard site (Hanagita 2020).
- The shop site hosts an abandoned and capped landfill with unknown waste types, depths, and quantities.
- Petroleum hydrocarbon contamination was documented in a 2010 surface soil screening study. Indications of impacts included soil staining, stressed vegetation, elevated PID readings, pools of liquids, and petroleum hydrocarbon odors.

The lack of information about potential subsurface impacts from current and former uses of the property is a data gap.

# Phase II Purpose and Approach

The purposes of the 2024 Supplemental Phase II were to address the above data gap and to provide sufficient information to support cleanup planning. The investigation targeted environmental media that may have been impacted by current or former uses of the property. The project team completed several tasks to meet the identified purposes, as follows:

- Excavation of 21 test pits to depths ranging from 4 to 15 feet;
- Field screening of soil samples from the test pits; and
- Collection and analysis of surface and subsurface soil samples;

The SAP proposed the installation of several monitoring wells, collection of groundwater samples, and collection of surface water samples. However, due to several factors, wells were not installed, and neither groundwater nor surface water samples were collected.

# Health and Safety

All personnel working on the site were trained to perform field-related tasks safely and effectively. ChemTrack staff had 40-hour Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) training and annual HAZWOPER refresher training in accordance with the requirements listed under 29 CFR 1910.120. All onsite staff had the authority to stop work on the project due to potential unsafe conditions. Prior to commencing site work, the project team reviewed the Health and Safety Plan (HASP) developed specifically for the site (Esker 2024b). Documentation of safety meetings completed prior to site work is contained in **Appendix A**.

# Field Methods

## Preparations and General Procedures

Prior to conducting field work, the project team reviewed the Phase I (NewFields, 2022a), the 2023 Phase II (Esker 2024a), the SAP for the Supplemental investigation (Esker 2024b), and Kawerak's EPA-approved QAPP (NewFields 2022b). Fieldwork was completed in general accordance with the SAP and Standard Operating Procedures (SOPs) contained in the QAPP. Site-specific work was also completed in accordance with the State of Alaska's Field Sampling Guidance (ADEC 2024).

Before initiating the subsurface investigation, the project team met with local staff to identify the locations of onsite and nearby buried utilities. The purpose of the consultation was to avoid damage to subsurface

infrastructure during the investigation. The site investigation team considered the locations of surface and subsurface utilities when determining final test pit locations.

All field activities were documented in accordance with SOPs. Pertinent field investigation and sampling information was recorded in field notes (**Appendix B**) and on daily field reports (**Appendix C**). The field team recorded the locations of relevant site features using a mapping-grade Global Positioning System (GPS) device provided by Kawerak (Juniper Geode GNS3S with a single-frequency antenna).

Information collected and/or recorded in the field generally included date and time; field team members; weather conditions; field measurements; location of activities and site conditions; field observations and comments; soil types and descriptions; evidence of potential contamination; site photographs and sketches; locations of sampling points; and changes to sampling protocols and/or deviations from the SAP. Visual and olfactory observations included descriptions of site conditions, indications of soil impacts, and descriptions of detected odors. Selected photographs are included in **Appendix D**.

The field team labeled and packaged samples in accordance with SOPs. Standard laboratory Chain-of-Custody (COC) forms were prepared for soil samples, and standard laboratory turnaround times were requested for the project. The project team selected SGS North America, Inc. of Anchorage, Alaska as the laboratory for this project due to its relative proximity to Elim and lab personnel familiarity with Alaska-specific procedures and analyses. Detailed information about the laboratory is provided in its Quality Manual (SGS 2023).

During the sampling portion of the investigation, the field team labeled soil samples with the year of sampling (24) followed by "ELI" for Elim, then "TP" for test pit and finally a depth in feet bgs. For example, one of the samples was named "24ELI TP13 (9')" for Test Pit 13 at a depth of 9 feet bgs.

## Required Equipment

The investigation did not make use of a borehole drilling rig because procurement of such equipment would have been logistically complex and cost prohibitive. The project team took advantage of an excavator that had already been staged in Elim to complete test pits for the collection of soil samples. Following sampling, the excavator operator backfilled each test pit and compacted the backfilled soil.

All field equipment was operated, calibrated, and maintained in accordance with SOPs and with procedures recommended by device manufacturers. The laboratory's Quality Assurance Manual provides details related to the operation, calibration, and maintenance of its equipment.

## Soil Investigation

To address the subsurface conditions data gap described above, the project team provided oversight during the excavation of 21 test pits on the site to depths ranging from 4 to 15 feet bgs. Test pits were completed from September 25 to September 27, 2024 using a New Holland backhoe. **Table 1** provides information about 2023 and 2024 test pits, including ID numbers, descriptive locations, latitude, longitude, and total depths.

Test pit locations were selected to target the following site features and conditions:

- Used oil collection area;
- Soil within two areas surrounded by berms;
- Battery storage areas and ASTs;
- Areas containing drums;
- Exterior areas of stained soil;

- Intermediate bulk containers and former USTs;
- The location of two former 10,000-gallon ASTs;
- Several locations that exhibited elevated PID readings (Oasis 2010);
- Interior areas of stained soil; and
- The southeastern property boundary adjacent to the Army National Guard ASTs.

The field team modified several proposed test pit locations (shown in the SAP) due to the presence of buried utilities, real-time field screening of soil impacts, and/or field observations. Final test pit locations are shown in **Figure 5**.

The SAP (Esker 2024) identified the following Contaminants of Potential Concern (COPCs) for the site: gasoline-range organics (GRO), diesel-range organics (DRO), residual-range organics (RRO), polycyclic aromatic hydrocarbons (PAHs), Resource Conservation and Recovery Act (RCRA) metals, and volatile organic compounds (VOCs).

Within each test pit, the field team obtained discrete (non-composited) samples of surface and subsurface soils for the purposes of classification, field screening, and sampling. According to the SAP, material encountered deeper than two feet bgs was considered subsurface soil. Both surface and subsurface samples were collected and submitted for laboratory analysis during this investigation.

ChemTrack described and classified soils from each test pit using the Unified Soil Classification System (ASTM, 2018). Staff also documented visual and olfactory evidence of contamination. Field observations were recorded on individual test pit logs (**Appendix E**). The team recorded the location of each test pit using Kawerak's mapping-grade GPS device.

During the excavation of test pits, the project team took appropriate precautions to avoid 1) introducing contaminants into excavations and 2) mixing different soil horizons. As detailed in ADEC's Field Sampling Guidance, clean soil should be segregated from contaminated soil during site assessment activities. This Phase II did not involve the permanent stockpiling of soil. The equipment operator temporarily placed excavated soil on the site in such a way that it could be returned to the excavation in approximately the reverse order in which it was removed from the ground. Soil suspected to be contaminated was placed on a clean tarp adjacent to each test pit to prevent potential contamination of the ground surface. Excavated soil was returned to each pit immediately after completion of the soil sampling process.

Soil Field Screening

The field team screened soils for organic vapors using a PID. The instrument facilitated real-time evaluations of the extent of soil contamination and aided in the selection of samples for submittal to the laboratory. Additional field screening consisted of visual and olfactory indications of contamination. ChemTrack recorded screening measurements and observations on individual test pit logs (**Appendix E**).

Soil Sampling and Analysis

ChemTrack collected 21 soil samples and three soil duplicate samples for laboratory analysis in accordance with SOPs. The field team collected soil samples directly from the excavator bucket and used new disposable supplies to fill laboratory-provided containers. Information used to select sample depths within a test pit included visual and olfactory observations, PID screening results, soil moisture content, and lithology observations. In many cases, a soil sample submitted for laboratory analysis was collected from the bottom of the excavation. One or two soil samples were collected from most test pits for laboratory analysis. The project team did not collect soil samples from test pits TP7 or TP18.

Each soil sample was marked using laboratory-provided labels. Label information included a unique ID number, as described above, and the date and time. The project team placed reusable gel ice packs in coolers

to maintain sample temperatures. ChemTrack labeled, packaged, and shipped soil samples with COC documentation to SGS in Anchorage. Soil samples were analyzed for the following constituents:

- GRO by Alaska Method (AK) 101;
- DRO by Method AK 102;
- RRO by Method AK 103;
- VOCs by EPA Method 8260D;
- PAHs by EPA Method 8270D SIM; and
- RCRA metals by EPA Method 6020B.

## Decontamination & Investigation-Derived Wastes

Decontamination of soil sampling equipment was not required because ChemTrack used new disposable supplies to collect each sample. The excavator bucket was decontaminated using dry methods. ChemTrack removed visible materials from the bucket to the extent possible using hand tools. The dry method was selected because pressure washers and steam cleaners are not available in Elim. Investigation-derived wastes (soils excavated from test pits) were placed back into excavations at the approximate depths they were first encountered. Additional details about the handling of potentially contaminated soils can be found in the section entitled Soil Sampling.

## Field and Laboratory QA/QC Procedures

The Phase II followed Kawerak's EPA-approved QAPP which establishes specific quality assurance (QA) and quality control (QC) policies and activities. The assessment was also carried out in accordance with the SAP and State of Alaska requirements (ADEC 2022b and 2024). Investigation staff adhered to applicable SOPs during the Phase II. The project team collected QA/QC samples during the investigation to assess sample collection techniques, evaluate analytical results, and assess whether errors were introduced during sample collection, handling, transport, and/or analysis. The laboratory followed written procedures addressing internal QA/QC requirements (SGS, 2023).

ChemTrack collected 21 primary soil samples and three duplicate soil samples during the course of the Phase II. The duplicates were submitted as blind samples to the laboratory with unique sample ID numbers. Equipment rinse blanks were not collected because ChemTrack used new disposable equipment to collect soil samples. Temperature blanks were included in coolers with soil samples shipped to the laboratory.

# Investigation Results

## Soil Conditions

The soil profile was dominated by silt (ML) that contained variable amounts of gravel, sand, and/or clay. Soil types at some intervals consisted of sand with minor silt, gravel, and/or clay (SM); gravel with silt and sand (GM); gravelly sand (SP); and clay (CL). A few intervals contained significant quantities of organic peat material (OL or PT). TP20 was the sole test pit in which coarse-grained soils were intersected at most depths. Soil types at TP20 included gravelly sand (SP) and silty gravelly sand (SM). Test pit TP20 is located at the southern extent of the site. The presence of coarse material may indicate that fill material was placed on the property at some point. Downward advancement of test pit TP02 was impeded by the presence of shallow quartzite bedrock. None of the test pits intersected subsurface water.

Observations of potential contamination at the ground surface comprised stained soil and chemical odors. Several test pits intersected what appeared to be material associated with the former landfill at depths of approximately 6.5 to 9.5 feet bgs (TP3, TP10, TP12, TP15, and TP17). Such pits were terminated 1-2 feet below the bottom of the disturbed layer within an orange silt-rich horizon containing quartzite fragments.

## Soil Field Screening Results

Field observations of potential contamination at the site included soil staining, chemical odors, and elevated PID readings. **Table 2** presents field screening results (PID readings) collected during excavation of the test pits. Elevated concentrations of volatile compounds (above 30 parts per million or ppm) were detected in three of the 21 test pits. ChemTrack documented concentrations above 200 ppm in test pit TP8, where the highest reading was 238 ppm at a depth of 1 foot bgs. In all of the three test pits with elevated concentrations of volatile organics, PID readings had declined to less than 10 ppm at the bottom of the excavation.

Field screening (PID) results suggest that several discrete petroleum hydrocarbon releases have occurred at the site. Based on the locations of test pits with elevated PID readings, soil appears to be impacted in at three areas: 1) near the northwest corner of the shop (exterior soil); 2) within the shop structure; and 3) the former waste oil storage area north of the site entrance (**Figure 5**).

## Soil Analytical Results

Analytical results for soil samples are included in **Table 3** through **Table 8**. Selected field screening and analytical results are shown on **Figure 6**. A complete laboratory report for the 2024 sampling event is included as **Appendix F**. Esker compared soil analytical results to Method Two Soil Cleanup Levels (ADEC 2023) which are protective of human health and the environment.

Analytical results support field observations and PID readings which suggested that shallow soil contamination is present on several portions of the site. Petroleum hydrocarbon concentrations in soil were above cleanup levels in 6 of 21 soil samples and 4 of 21 test pits. Field observations and PID readings were generally consistent with analytical results.

Identified soil contamination was limited to depths of zero feet bgs (ground surface) to about 6 feet bgs. The following test pits and depths exhibited field evidence of impacts as well as exceedances of cleanup levels:

- TP8 (from ground surface to 6 feet bgs; outside the northwest corner of the shop);
- TP10 (from ground surface to 3 feet bgs; inside the shop near the northeast corner);
- TP16 (from ground surface to 5 feet bgs; east side of the waste oil collection area); and

- TP20 (from ground surface to 2 feet bgs; southwest side of the waste oil collection area).

Analytical results for GRO (**Table 3**) were below cleanup levels. DRO concentrations, however, exceeded cleanup levels at the above-listed test pits (**Table 4**). Concentrations of RRO (**Table 5**) exceeded cleanup levels at test pits at TP8 (1') and TP20 (2').

Detections of VOCs and PAHs are summarized in **Table 6** and **Table 7**. Although several constituents were detected, only six had concentrations above cleanup levels, as follows:

- Total xylenes at TP8 (1');
- Naphthalene at TP8 (1'), TP8 (6'), TP16 (2'), TP16 (5'), and TP20 (2');
- 1,2,4-Trimethylbenzene at TP8 (1') and TP20 (2');
- 1,3,5-Trimethylbenzene at TP8 (1') and TP20 (2');
- 1-Methylnaphthalene at TP8 (1'), TP16 (2'), and TP20 (2'); and
- 2-Methylnaphthalene at TP8 (1'), TP16 (2'), and TP20 (2').

Based on the analytical results, the above constituents are considered to be COPCs for the site.

Analytical results for metals are shown in **Table 8**. Most concentrations were below cleanup levels. One exception was arsenic. ADEC (2023) acknowledges that this metalloid occurs naturally in various parts of Alaska: "Due to the prevalence of naturally occurring arsenic throughout the state, arsenic at a site will be considered background arsenic unless anthropogenic contribution from a source, activity, or mobilization by means of another introduced contaminant is known or suspected." In the case of the City Shop, no anthropogenic sources of arsenic are known. In addition, the two exceedances were less than 0.2 mg/kg above the cleanup level. For these reasons, arsenic is not considered a COPC for the site.

## Data Validation, QA/QC Assessment, and DQOs

Esker validated laboratory data in accordance with State of Alaska guidance (ADEC 2022b) and the QAPP. The validation process included completion of a Laboratory Data Review Checklist for the project (ADEC 2022c; **Appendix G**). The report indicates that most sample handling metrics and quality control results were within applicable thresholds. Exceptions are noted below.

- No trip blanks were received or analyzed. The laboratory sample receipt checklist indicates that although a trip blank was listed on the COC, none were included in the shipment. The lack of a trip blank prevents evaluations of potential cross-contamination of samples during sample handling or transport. Nevertheless, the analytical results can be used to identify general areas of soil impacts.
- Several samples were analyzed after the hold time had expired due to a laboratory error. These results may be biased low. Affected samples include TP09 (10') for VOCs and TP11 (9') for DRO and RRO.
- Due to a laboratory error, sample 1245700-011 was analyzed one day past the method-specified hold time. Samples TP09 (10') and TP11 (9') were both affected according to the lab narrative.
- Limits of Detection (LODs) for GRO, DRO, RRO were below cleanup levels. Most VOCs, PAHs, and metals LODs were below their respective cleanup levels.
- Sample TP120 (9'), a duplicate of TP12 (9'), was mislabeled by the lab as sample TP20 (9').
- Most of the samples arrived at the laboratory in good condition. One exception was SGS sample 15, for which the unpreserved container was missing. This is soil sample 24ELI-TP11 (9').
- Some laboratory control sample recoveries for GRO, RRO, chrysene, and acenaphthene were outside of QC criteria. Laboratory control samples relative percent differences (RPDs) for GRO and RRO were outside of QC criteria. Matrix spike recoveries for several PAHs, metals, and

VOCs were outside of QC criteria. Matrix spike RPD values for several PAHs and metals were outside of QC criteria. Surrogate recoveries for several analytes are outside of laboratory control limits. In some cases, analytical results may be affected, but we do not believe that the overall report findings and conclusions have been impacted by these discrepancies.

The data validation issues identified above most likely did not result in decision errors regarding the presence and location of contaminant impacts on site soils. Results indicate detections above applicable cleanup levels, and therefore the results may be used to identify the extent of contaminants in soil.

Data quality objectives (DQOs) are qualitative and quantitative statements developed during the planning process of an assessment or cleanup project (EPA 1998, EPA 2006). The DQOs for this project are presented in the SAP (Esker 2024b). As stated therein, soil data were to be used to determine the spatial extent of contaminant impacts at the site, and to determine if soil results were above applicable cleanup levels. In general, DQOs were fulfilled for this investigation.

### Deviations from the SAP

ADEC's Field Sampling Guidance (2024) and the SAP for this project (Esker 2024b) guided the Phase II field investigation. Deviations from these documents are described below.

- The SAP discussed the installation of several groundwater monitoring wells. However, groundwater was not encountered in any of the test pits and no wells were installed or sampled.
- The SAP mentioned sampling of nearby surface water features. However, the field team was not able to locate any nearby surface waters, and no samples were collected.
- The PID unit was calibrated on a routine basis, but the calibration data were not recorded.
- GPS results for test pits completed in the shop building had horizontal errors of up to 10-30 feet due to interference of the structure with GPS satellite reception (test pits TP9 and TP10).

## Findings

This section summarizes the results of the investigation and considers the implications of the data. An initial CSM was presented above. The summary below can be considered a revised CSM based on the Phase II field investigation.

- Onsite soils consisted largely of silt with variable amounts of clay, sand, and gravel. Earlier sections of this report provide additional information about soil characteristics.
- The 2024 Phase II was intended to address data gaps related to subsurface conditions that were identified during the Phase I. The assessment confirmed the presence of several onsite releases. COPCs were detected in surface and subsurface soil on the site, and concentrations of some contaminants exceeded ADEC cleanup levels.
- Petroleum hydrocarbon compounds have impacted soil at test pits TP8 (outside the northwest corner of the shop); TP10 (inside the shop near the northeast corner); TP16 (east side of the waste oil collection area); and TP20 (southwest side of the waste oil collection area).
- These pits were located within and near discrete areas where small releases appear to have occurred.
- The 2024 Phase II provided data necessary to fill data gaps and evaluate the extent and severity of soil contamination across most of the site. The pattern of soil impacts suggests that small discrete releases of contaminants may have been sources of onsite contamination.
- None of the test pits encountered subsurface water, and monitoring wells were not installed as part of this investigation. Groundwater depth and flow direction remain data gaps for the site. The severity and extent of any impacts on the local or regional groundwater system were not evaluated.

- The assessment did not identify the downgradient extent of impacts (e.g., near the site entrance). However, the property has not been used for the storage or distribution of large quantities of fuel. Rather, the site has served as a repair facility and a gathering point for liquid wastes from the community. We believe that soil impacts in the liquid waste storage area (TP16, TP20, and surrounding areas) reflect the releases of limited quantities of liquids to the ground surface. Therefore, we do not consider the lack of information further to the south to be a data gap.
- The investigation generally defined the horizontal extent of soil impacts. Impacted areas include the waste oil collection/storage area near the site entrance, soil near the northwest corner of the shop building, and soil within the shop building.
- Discrete areas of contamination may be present at locations not investigated. In particular, the horizontal extent of impacts was not determined east of test pit TP16 and south of test pit TP 20.
- Field measurements and analytical results indicate that impacts exist at depths ranging from the ground surface to depths of about 6 feet bgs. The vertical extent of impacts has not been defined at test pit TP20.
- Other potentially contaminated areas described in earlier reports and in the site background section (e.g., the former landfill) did not appear to exhibit impacts. Test pits TP7, TP8, TP9, TP13, and TP14 were excavated within or near the reported footprint of the former landfill, but no exceedances of any analyzed constituents were detected. Some debris and solid wastes were noted in test pits located east of the previously-reported landfill footprint (i.e., TP3, TP10, TP12, TP15, and TP17). This could indicate that the landfill extended further east than shown in historical reports. Assessment results suggest that landfill wastes may extend beneath the principal shop building.
- Given the exceedances of migration-to-groundwater cleanup levels, onsite soil may be a continuing source of groundwater contamination.
- The closest known water well is located about 1,000 feet southwest of the project site. The public water supply well was installed in 1964 (Alaska DNR 2024). At one point, fuel lines connected the onsite ASTs with areas to the east. It is unknown whether the fuel lines remain in the subsurface.

# Recommendations

The Findings section above provides information about the nature, magnitude, and extent of impacts to onsite soils from one or more releases. In general, data gaps identified during the Phase I have been filled.

Based on available information, limited corrective action will likely be required at the site. Esker recommends that Kawerak develop an Analysis of Brownfields Cleanup Alternatives (ABCA). The alternatives analysis will consider several factors, including but not limited to site-specific conditions, cost, ability to implement, and effectiveness. Once a preferred site remediation alternative has been identified, the project team will prepare a site-specific Cleanup Plan for the property.

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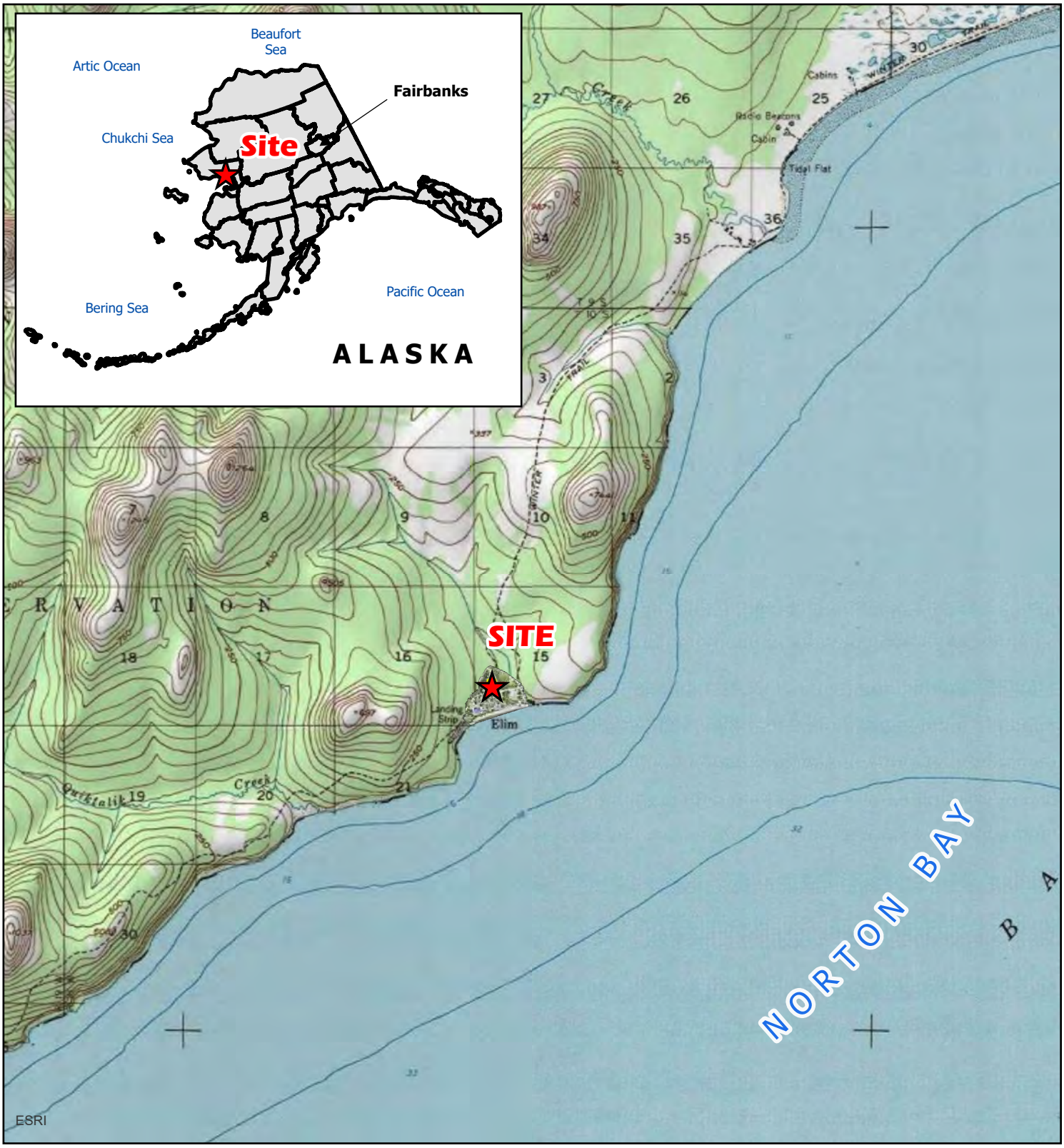
# Figures




N

0 Miles 2

**Location Map**
**Old City Shop**
**Elim, AK**
**Figure 1**

ESKER

Esker Associates, LLC


N

0 Feet 300

Site Boundary

**Vicinity Map**
**Old City Shop**
**Elim, AK**
**Figure 2**

ESKER

Esker Associates, LLC


N

0 Feet 50

Former Landfill Footprint (Oasis 2010)

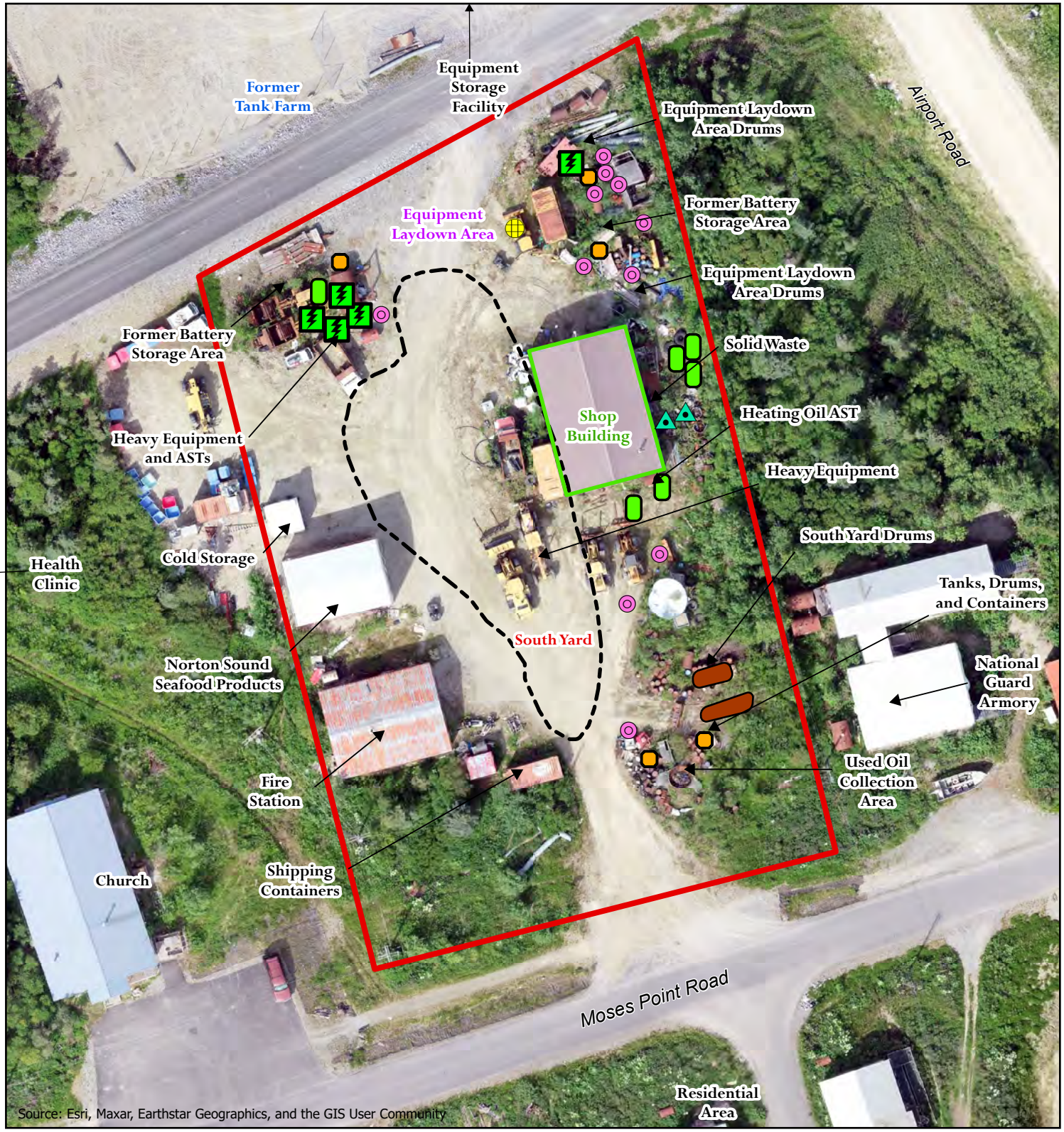
Site Boundary

Notes:
AST = Aboveground Storage Tank

ESKER

Esker Associates, LLC

**Site Map**
**Elim City Shop**
**Elim, AK**
**Figure 3**




Building
Site Boundary
AST
Backhoe
Battery Storage
Bucket or buckets
Container w/ parts/debris
Compressed gas cylinder
Approximate berm location

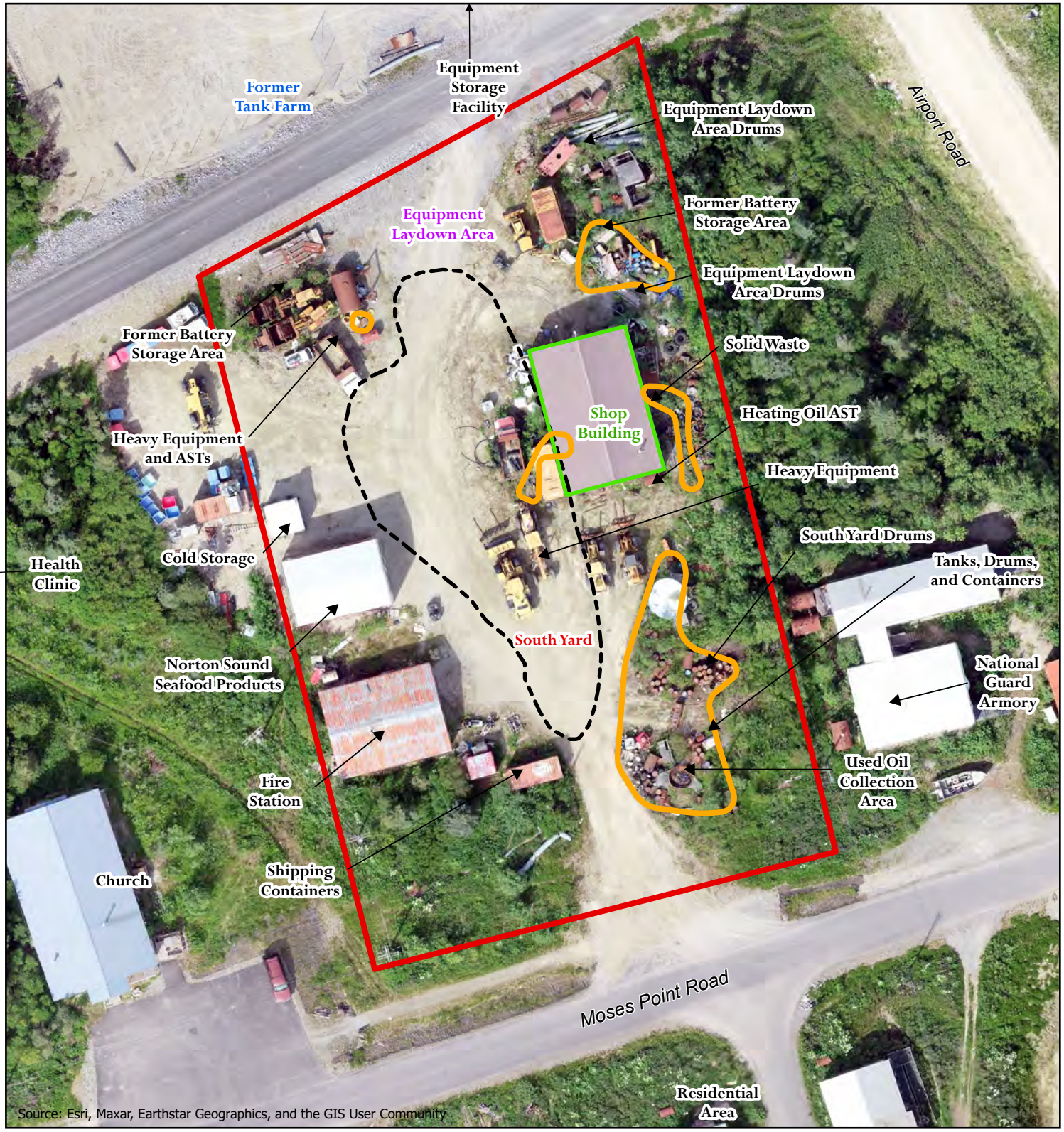
N

0 Feet 50

ESKER
Esker Associates, LLC

**Documented Surface Wastes**
**Elim City Shop**
**Elim, AK**
**Figure 4a**

Notes:
AST = Aboveground Storage Tank



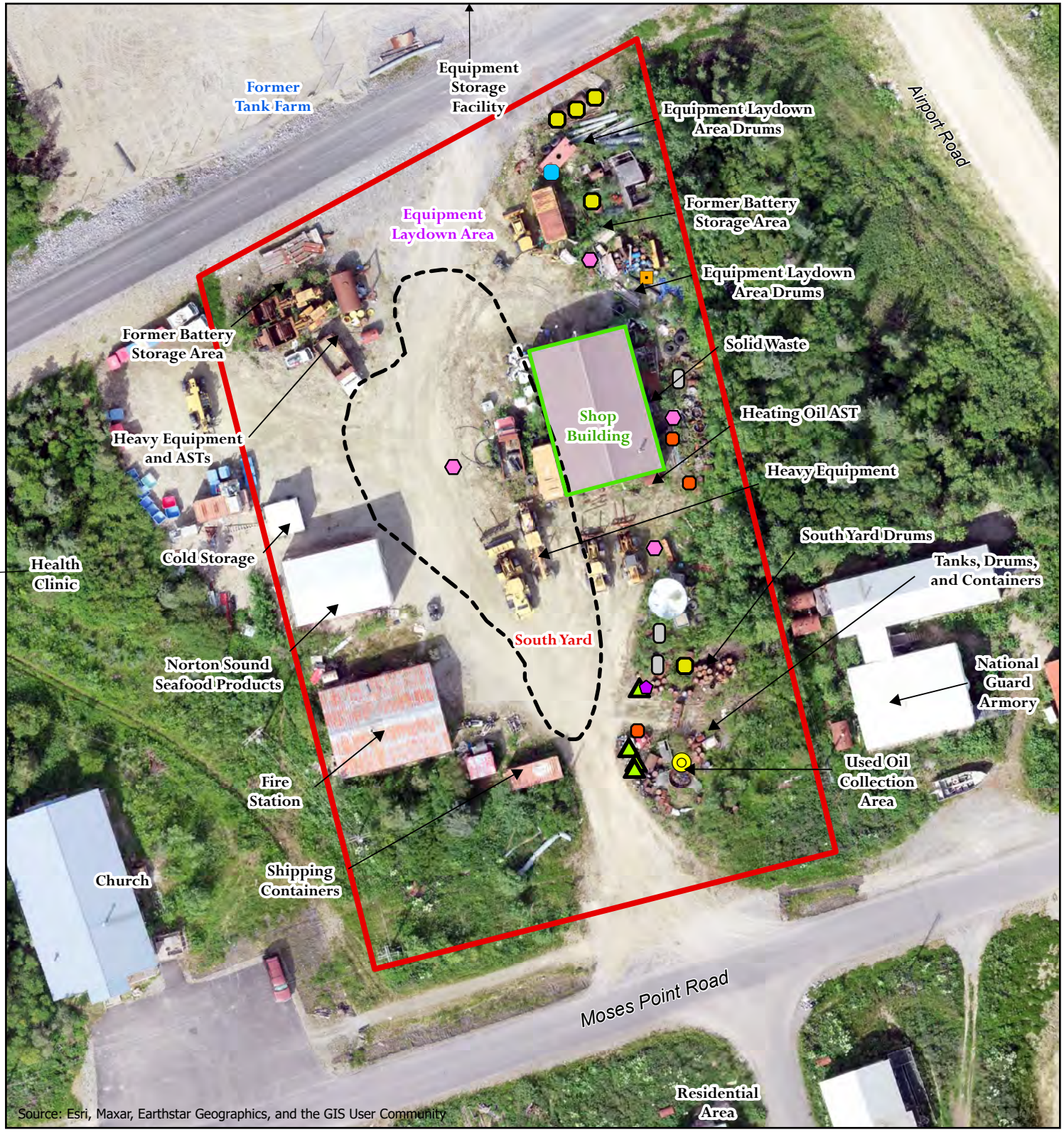

N

0 Feet 50

Building
Site Boundary
Areas containing drums

**Documented Surface Wastes**
**Elim City Shop**
**Elim, AK**
**Figure 4b**

ESKER
Esker Associates, LLC




N

0 Feet 50

Building
Site Boundary

- Engine or engines
- Frack Fluid Tank
- Gasoline Container
- Generator
- Glycol Odor and Soil Staining
- Intermediate Bulk Container
- Propane Tank
- Soil staining observed
- UST

ESKER

Esker Associates, LLC

Notes:
UST - underground storage tank

# Documented Surface Wastes
# Elim City Shop
# Elim, AK
# Figure 4c


N

0 Feet 50

Site Boundary
Former Landfill Footprint (Oasis 2010)

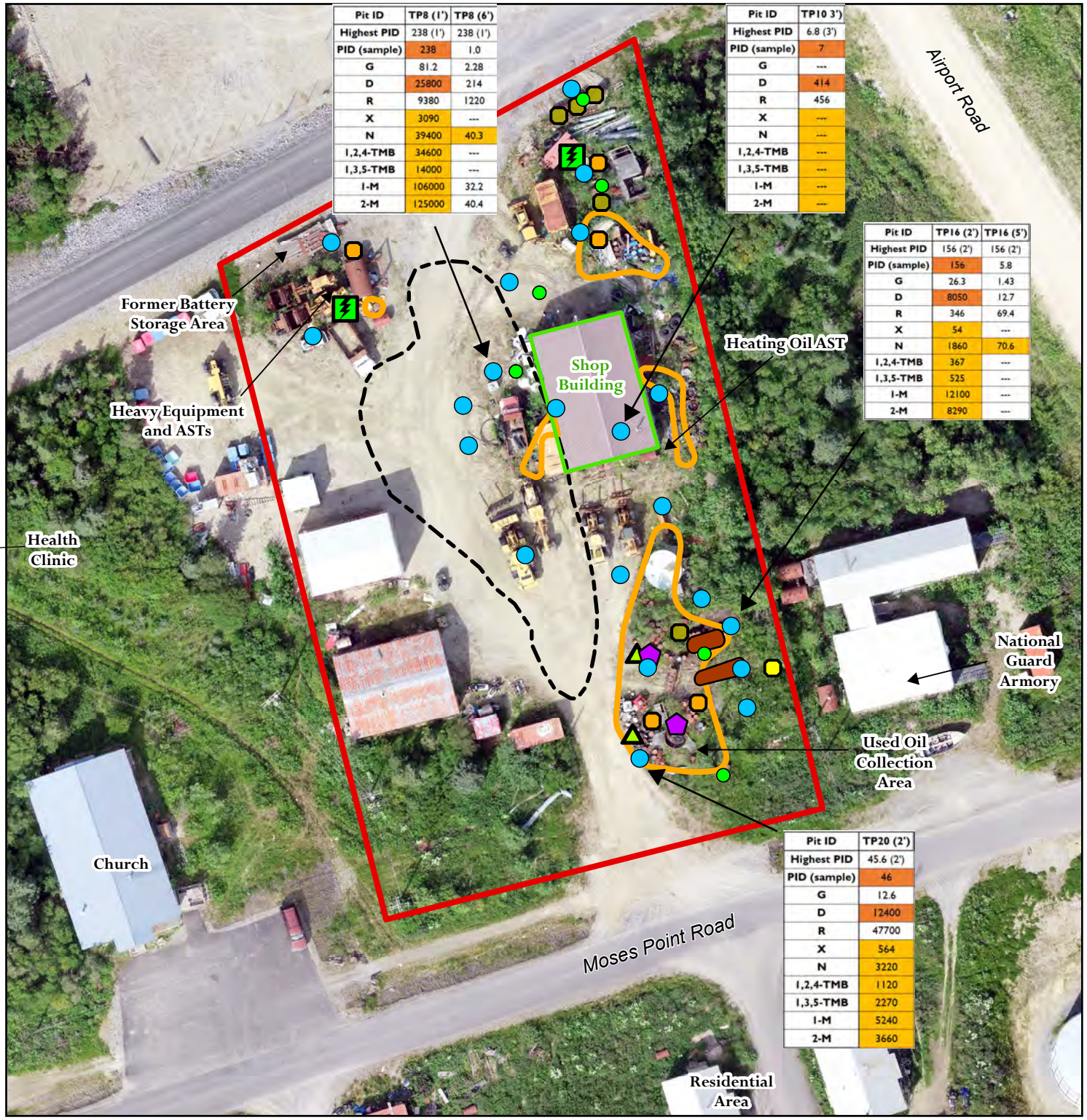
Test Pit Locations
UST
Intermediate Bulk Container
Areas containing drums
AST

Battery Storage
Approximate berm location
Former AST
Elevated PID reading (2010)
Soil Staining

Esker Associates, LLC

# Sampling Locations
# Elim City Shop
# Elim, AK
# Figure 5

Notes:
AST = Aboveground Storage Tank
UST = Underground Storage Tank




| Pit ID | TP8 (1') | TP8 (6') |
|---|---|---|
| Highest PID | 238 (1') | 238 (1') |
| PID (sample) | 238 | 1.0 |
| G | 81.2 | 2.28 |
| D | 25800 | 214 |
| R | 9380 | 1220 |
| X | 3090 | --- |
| N | 39400 | 40.3 |
| 1,2,4-TMB | 34600 | --- |
| 1,3,5-TMB | 14000 | --- |
| 1-M | 106000 | 32.2 |
| 2-M | 125000 | 40.4 |

| Pit ID | TP10 3') |
|---|---|
| Highest PID | 6.8 (3') |
| PID (sample) | 7 |
| G | --- |
| D | 414 |
| R | 456 |
| X | --- |
| N | --- |
| 1,2,4-TMB | --- |
| 1,3,5-TMB | --- |
| 1-M | --- |
| 2-M | --- |

| Pit ID | TP16 (2') | TP16 (5') |
|---|---|---|
| Highest PID | 156 (2') | 156 (2') |
| PID (sample) | 156 | 5.8 |
| G | 26.3 | 1.43 |
| D | 8050 | 12.7 |
| R | 346 | 69.4 |
| X | 54 | --- |
| N | 1860 | 70.6 |
| 1,2,4-TMB | 367 | --- |
| 1,3,5-TMB | 525 | --- |
| 1-M | 12100 | --- |
| 2-M | 8290 | --- |

| Pit ID | TP20 (2') |
|---|---|
| Highest PID | 45.6 (2') |
| PID (sample) | 46 |
| G | 12.6 |
| D | 12400 |
| R | 47700 |
| X | 564 |
| N | 3220 |
| 1,2,4-TMB | 1120 |
| 1,3,5-TMB | 2270 |
| 1-M | 5240 |
| 2-M | 3660 |

0 Feet 50

Esker Associates, LLC

**Selected Soil Results**
**Elim City Shop**
**Elim, AK**
**Figure 6**

- Laboratory units are milligrams per kilogram (mg/kg); PID units are parts per million (ppm).
- PID = photoionization detector; --- = not applicable or not detected above the reporting limit.
- See report tables and laboratory report for complete analytical results; soil cleanup levels and data qualifiers are shown in report tables.
- Highlighted cells are elevated PID readings or analytical results detected above one or more cleanup level(s).
- Highest PID = highest reading measured within a given test pit; PID (sample) = PID reading at the sample depth.
- Values in parentheses - e.g., (6') - are sample depths below ground surface.
- Data for test pits without elevated PID readings or laboratory results are not shown on the map.
- No samples were submitted for laboratory analysis from test pits TP7 and TP18.
- G = gasoline range organics; D = diesel range organics; R = residual range organics; X = xylenes; N = Napthalene; 1,2,4-TMB = 1,2,4-Trimethylbenzene; 1,3,5-TMB = 1,3,5-Trimethylbenzene; 1-M = 1-Methylnapthalene; 2M = 2-Methylnapthalene
- Refer to Figure 5 for explanations of site features

Notes:
PID readings at test pits not shown are below 10 ppm.

# Tables

**Table 1. Test Pit Summary with GPS Data**

Elim Shop Site

Moses Point Road, Elim, Alaska

| Test Pit ID | Descriptive Location | Latitude (dec. degrees) | Longitude (dec. degrees) | Total Depth (feet bgs) |
|---|---|---|---|---|
| 24ELI TP01 | NW portion of the site near heavy equipment | 64.6185789 | -162.2613392 | 7.0 |
| 24ELI TP02 | NW portion of the site near heavy equipment | 64.6184836 | -162.2614161 | 9.5 |
| 24ELI TP03 | NE extent of the site close to paved road | 64.6187048 | -162.2607015 | 7.0 |
| 24ELI TP04 | NE extent of the site between road and shop | 64.6186146 | -162.2606996 | 8.0 |
| 24ELI TP05 | NE extent of the site between road and shop | 64.6185533 | -162.2607288 | 4.0 |
| 24ELI TP06 | Near NW corner of the shop (exterior) | 64.6185116 | -162.2609186 | 9.0 |
| 24ELI TP07 | Within N portion of mapped former landfill | 64.6183890 | -162.2610732 | 9.0 |
| 24ELI TP08 | Near NW corner of the shop (exterior) | 64.6184203 | -162.2609881 | 9.0 |
| 24ELI TP09 | Near NW corner of shop (interior) | 64.6183730 | -162.2608470 | 10.0 |
| 24ELI TP10 | Near NE corner of shop (interior) | 64.6183390 | -162.2606970 | 11.0 |
| 24ELI TP11 | Near SE corner of shop (exterior) | 64.6182547 | -162.2606212 | 9.0 |
| 24ELI TP12 | East side of shop (exterior) | 64.6183731 | -162.2605914 | 9.0 |
| 24ELI TP13 | Central portion of mapped former landfill | 64.6183462 | -162.2610732 | 9.0 |
| 24ELI TP14 | Within S portion of mapped former landfill | 64.6182234 | -162.2609720 | 15.0 |
| 24ELI TP15 | S of shop; N end of waste oil collection area | 64.6181889 | -162.2607468 | 9.0 |
| 24ELI TP16 | SE of shop near armory | 64.6181192 | -162.2604944 | 5.0 |
| 24ELI TP17 | N of site entrance in waste oil collection area | 64.6180878 | -162.2607116 | 8.0 |
| 24ELI TP18 | S of shop; E side of waste oil collection area | 64.6181521 | -162.2605570 | 7.0 |
| 24ELI TP19 | SE of shop near armory | 64.6180313 | -162.2604830 | 9.0 |
| 24ELI TP20 | S portion of the property near site entrance | 64.6179937 | -162.2607619 | 9.0 |
| 24ELI TP21 | SE of shop near armory | 64.6180728 | -162.2604836 | 7.0 |

Notes:

ELI = Elim; TP = Test Pit; GPS = Global Positioning System; bgs = below ground surface

All location data collected with Juniper Geode GNS3S single frequency GPS; WGS 84 spatial reference system

**Table 2. Soil Field Screening (PID) Results**

Elim Shop Site

Moses Point Road, Elim, Alaska

| Test Pit | TP1 | TP2 | TP3 | TP4 | TP5 | TP6 | TP7 | TP8 | TP9 | TP10 | TP11 | TP12 | TP13 | TP14 | TP15 | TP16 | TP17 | TP18 | TP19 | TP20 | TP21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TD (ft bgs) → | 7.0 | 9.5 | 7.0 | 8.0 | 4.0 | 9.0 | 9.0 | 9.0 | 10.0 | 11.0 | 9.0 | 9.0 | 9.0 | 15.0 | 9.0 | 5.0 | 8.0 | 7.0 | 9.0 | 9.0 | 7.0 |
| D (ft bgs) ↓ | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0.0 | 0.7 | 0.5 | 0.0 | 0.0 | 2.8 | 1.5 | **238** | 2.5 | 3.1 | 0.0 | 0.3 | 1.4 | 0.5 | 0.0 | 46.8 | 0.0 | 0.0 | **18.3** | 23.3 | 0.0 |
| 2 | 0.0 | 1.3 | 0.2 | 0.0 | 0.2 | 2.2 | 1.7 | 173 | 1.0 | 1.1 | 0.0 | --- | 2.0 | 0.2 | 0.1 | **156** | 0.0 | 0.0 | 0.0 | **45.6** | 0.0 |
| 3 | 0.0 | 1.2 | 0.6 | 0.0 | 0.4 | 0.3 | 2.6 | 105 | 0.4 | **6.8** | 0.0 | --- | 1.6 | --- | 0.0 | 43.7 | 0.0 | 0.0 | 0.0 | 18.0 | 0.0 |
| 4 | 0.2 | 2.5 | 0.5 | 0.0 | **0.3** | 0.2 | 3.3 | 10.8 | 0.5 | 1.5 | --- | 0.2 | 3.3 | 0.3 | 0.1 | 56.9 | --- | 0.0 | --- | 2.7 | --- |
| 5 | **0.3** | 4.1 | 0.4 | 0.0 | | 0.5 | 3.3 | 145 | 0.5 | 0.4 | 0.0 | 0.5 | 3.6 | --- | 0.4 | **5.8** | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| 6 | 0.3 | 3.2 | 1.0 | 0.0 | | 1.0 | 3.2 | **1.0** | --- | 0.4 | 2.0 | 0.5 | 6.5 | 0.0 | **0.9** | | **0.1** | 0.0 | 0.0 | 5.3 | 0.0 |
| 7 | 0.0 | 5.2 | **0.9** | 0.0 | | 0.4 | --- | 3.2 | 0.5 | --- | --- | 0.3 | 5.1 | 6.0 | 0.5 | | 0.9 | 0.0 | 0.0 | 5.6 | **0.7** |
| 8 | | 4.4 | | **0.0** | | 0.7 | 2.9 | 0.9 | 1.7 | 0.6 | 0.0 | 0.7 | --- | **7.0** | 0.2 | | 0.0 | | 0.0 | --- | |
| 9 | | **1.0** | | | | **0.8** | 3.6 | --- | 1.7 | 0.9 | **0.0** | **0.2** | **5.7** | 9.3 | 0.0 | | | | 0.0 | --- | |
| 10 | | | | | | | | | **1.2** | 0.8 | | | | 7.2 | | | | | | | |
| 11 | | | | | | | | | | 0.3 | | | | 1.1 | | | | | | | |
| 12 | | | | | | | | | | | | | | 3.0 | | | | | | | |
| 13 | | | | | | | | | | | | | | 3.3 | | | | | | | |
| 14 | | | | | | | | | | | | | | 2.8 | | | | | | | |
| 15 | | | | | | | | | | | | | | 2.8 | | | | | | | |

Notes:

PID = Photoionization Detector; TD = total depth of test pit; D = depth of PID reading

All readings are in parts per million (PPM); --- = no PID reading  = not applicable

Bold type = sample submitted for laboratory analysis; samples not submitted from test pits TP7 and TP18

For the purposes of this table, some fractional depths (e.g., 4.5 feet bgs) have been rounded to whole numbers (e.g., 4.0 or 5.0 feet bgs)

= elevated PID reading (> 30 ppm)

= elevated PID reading (> 200 ppm)

**Table 3. Soil Analytical Results - Gasoline Range Organics**

Elim Shop Site

Moses Point Road, Elim, Alaska

| Soil Cleanup Levels (ADEC Method Two) * | | | | | | |
|---|---|---|---|---|---|---|
| Under 40 Inch Zone (ingestion - mg/kg) | | | 1,400 | | | |
| Under 40 Inch Zone (inhalation - mg/kg)) | | | 1,400 | | | |
| Under 40 Inch Zone (migration to GW - mg/kg) | | | 300 | | | |
| Maximum Allowable Concentration (mg/kg) | | | 1,400 | | | |
| Sample Information | | | Results | | Laboratory Limits | |
| Sample Location and Depth (ft bgs) | Date Collected | Time Collected | GRO (C6-C10) | Qualifier | LOQ | LOD |
| 24ELI-TP01 (5') | 9/27/2024 | 14:20 | 0 | U | 5.06 | 3.79 |
| 24ELI-TP02 (9.5') | 9/25/2024 | 15:43 | 0 | U | 4.46 | 3.34 |
| 24ELI-TP03 (7') | 9/25/2024 | 14:20 | 0 | U | 5.68 | 4.26 |
| 24ELI-TP04 (8') | 9/27/2024 | 14:15 | 0 | U | 4.13 | 3.1 |
| 24ELI-TP05 (4') | 9/26/2024 | 16:35 | 0 | U | 3.93 | 2.95 |
| 24ELI-TP06 (9') | 9/26/2024 | 12:00 | 0 | U | 4.31 | 3.23 |
| 24ELI-TP08 (1') | 9/25/2024 | 16:10 | 81.2 | --- | 3.34 | 2.5 |
| 24ELI-TP08 (1') DUP | 9/25/2024 | 7:00 | 77.6 | --- | 3.44 | 2.58 |
| 24ELI-TP08 (6') | 9/25/2024 | 16:25 | 2.28 | J | 5.44 | 4.08 |
| 24ELI-TP09 (10') | 9/26/2024 | 15:33 | 0 | U | 3.83 | 2.87 |
| 24ELI-TP10 (3') | 9/26/2024 | 13:40 | 0 | U | 3.5 | 2.63 |
| 24ELI-TP11 (9') | 9/27/2024 | 9:00 | 0 | U | 4.05 | 3.04 |
| 24ELI-TP12 (9') | 9/26/2024 | 17:15 | 0 | U | 4.14 | 3.1 |
| 24ELI-TP12 (9') DUP | 9/26/2024 | 17:16 | 0 | U | 4.3 | 3.22 |
| 24ELI-TP13 (9') | 9/26/2024 | 11:15 | 0 | U | 4.76 | 3.57 |
| 24ELI-TP14 (8') | 9/25/2024 | 8:55 | 0 | U | 5.19 | 3.89 |
| 24ELI-TP15 (5.5') | 9/27/2024 | 17:00 | 0 | U | 5.22 | 3.92 |
| 24ELI-TP16 (2') | 9/27/2024 | 9:30 | 26.3 | --- | 3.78 | 2.84 |
| 24ELI-TP16 (2') DUP | 9/27/2024 | 9:31 | 34.8 | --- | 3.8 | 2.85 |
| 24ELI-TP16 (5') | 9/27/2024 | 9:48 | 1.43 | J | 4.13 | 3.1 |
| 24ELI-TP17 (6') | 9/27/2024 | 15:30 | 0 | U | 3.68 | 2.76 |
| 24ELI-TP19 (1') | 9/27/2024 | 10:05 | 0 | U | 3.52 | 2.64 |
| 24ELI-TP20 (2') | 9/25/2024 | 17:23 | 12.6 | --- | 3.34 | 2.5 |
| 24ELI-TP21 (7') | 9/27/2024 | 11:05 | 0 | U | 7.94 | 5.96 |

Notes:

Concentrations reported in milligrams per kilogram (mg/kg) using Method AK101

TP = Test Pit; GRO = Gasoline Range Organics; DUP = Duplicate

LOQ = Limit of Quantitation (Practical Quantitation Limit)

LOD = Limit of Detection (reporting limit); ELI = Elim

J = the quantitation is an estimation; --- = not applicable; U = not detected above the LOD

Highlighted cells are results detected above one or more cleanup level(s)

Non-highlighted cells are results not detected or detected below cleanup level(s)

* Cleanup levels from 18 AAC 75 (amended October 2023)

* Elim area receives less than 40 inches of annual precipitation

(Based on data for Moses Point and Unalakleet from Western Regional Climate Center)

**Table 4. Soil Analytical Results - Diesel Range Organics**

Elim Shop Site

Moses Point Road, Elim, Alaska

| Soil Cleanup Levels (ADEC Method Two) * | | | | | | |
|---|---|---|---|---|---|---|
| Under 40 Inch Zone (ingestion - mg/kg) | | | 10,250 | | | |
| Under 40 Inch Zone (inhalation - mg/kg)) | | | 12,500 | | | |
| Under 40 Inch Zone (migration to GW - mg/kg) | | | 250 | | | |
| Maximum Allowable Concentration (mg/kg) | | | 12,500 | | | |
| Sample Information | | | Results | | Laboratory Limits | |
| Sample Location and Depth (ft bgs) | Date Collected | Time Collected | DRO (C10-C25) | Qualifier | LOQ | LOD |
| 24ELI-TP01 (5') | 9/27/2024 | 14:20 | 64.9 | --- | 26.4 | 19.8 |
| 24ELI-TP02 (9.5') | 9/25/2024 | 15:43 | 0 | U | 25.2 | 18.9 |
| 24ELI-TP03 (7') | 9/25/2024 | 14:20 | 25.3 | J | 28.1 | 21.1 |
| 24ELI-TP04 (8') | 9/27/2024 | 14:15 | 20.6 | J | 24.2 | 18.1 |
| 24ELI-TP05 (4') | 9/26/2024 | 16:35 | 0 | U | 23.5 | 17.6 |
| 24ELI-TP06 (9') | 9/26/2024 | 12:00 | 0 | U | 25 | 18.8 |
| 24ELI-TP08 (1') | 9/25/2024 | 16:10 | 25800 | --- | 113 | 84.8 |
| 24ELI-TP08 (1') DUP | 9/25/2024 | 7:00 | 29500 | --- | 228 | 171 |
| 24ELI-TP08 (6') | 9/25/2024 | 16:25 | 214 | --- | 28 | 21 |
| 24ELI-TP09 (10') | 9/26/2024 | 15:33 | 12.4 | J | 23.2 | 17.4 |
| 24ELI-TP10 (3') | 9/26/2024 | 13:40 | 414 | --- | 22.7 | 17 |
| 24ELI-TP11 (9') | 9/27/2024 | 9:00 | 32.2 | --- | 24.4 | 18.3 |
| 24ELI-TP12 (9') | 9/26/2024 | 17:15 | 16.7 | J | 24.4 | 18.3 |
| 24ELI-TP12 (9') DUP | 9/26/2024 | 17:16 | 0 | U | 24.9 | 18.7 |
| 24ELI-TP13 (9') | 9/26/2024 | 11:15 | 24.2 | J | 25.7 | 19.3 |
| 24ELI-TP14 (8') | 9/25/2024 | 8:55 | 110 | --- | 27.1 | 20.3 |
| 24ELI-TP15 (5.5') | 9/27/2024 | 17:00 | 95.6 | --- | 27.4 | 20.5 |
| 24ELI-TP16 (2') | 9/27/2024 | 9:30 | 8050 | --- | 93.2 | 69.9 |
| 24ELI-TP16 (2') DUP | 9/27/2024 | 9:31 | 7980 | --- | 92.8 | 69.6 |
| 24ELI-TP16 (5') | 9/27/2024 | 9:48 | 12.7 | J | 24.4 | 18.3 |
| 24ELI-TP17 (6') | 9/27/2024 | 15:30 | 35.4 | --- | 23.1 | 17.3 |
| 24ELI-TP19 (1') | 9/27/2024 | 10:05 | 171 | --- | 22.3 | 16.7 |
| 24ELI-TP20 (2') | 9/25/2024 | 17:23 | 12400 | --- | 440 | 330 |
| 24ELI-TP21 (7') | 9/27/2024 | 11:05 | 158 | --- | 34.5 | 25.9 |

Notes:

Concentrations reported in milligrams per kilogram (mg/kg) using Method AK102

TP = Test Pit; DRO = Diesel Range Organics; DUP = Duplicate

LOQ = Limit of Quantitation (Practical Quantitation Limit)

LOD = Limit of Detection (reporting limit); ELI = Elim

J = the quantitation is an estimation; --- = not applicable; U = not detected above the LOD

Highlighted cells are results detected above one or more cleanup level(s)

Non-highlighted cells are results not detected or detected below cleanup level(s)

* Cleanup levels from 18 AAC 75 (amended October 2023)

* Elim area receives less than 40 inches of annual precipitation

(Based on data for Moses Point and Unalakleet from Western Regional Climate Center)

**Table 5. Soil Analytical Results - Residual Range Organics**

Elim Shop Site

Moses Point Road, Elim, Alaska

| Soil Cleanup Levels (ADEC Method Two) * | | | | | | |
|---|---|---|---|---|---|---|
| Under 40 Inch Zone (ingestion - mg/kg) | | | 10,000 | | | |
| Under 40 Inch Zone (inhalation - mg/kg)) | | | 22,000 | | | |
| Under 40 Inch Zone (migration to GW - mg/kg) | | | 11,000 | | | |
| Maximum Allowable Concentration (mg/kg) | | | 22,000 | | | |
| Sample Information | | | Results | | Laboratory Limits | |
| Sample Location and Depth (ft bgs) | Date Collected | Time Collected | RRO (C25-C36) | Qualifier | LOQ | LOD |
| 24ELI-TP01 (5') | 9/27/2024 | 14:20 | 592 | --- | 132 | 99 |
| 24ELI-TP02 (9.5') | 9/25/2024 | 15:43 | 68.9 | J | 126 | 94.5 |
| 24ELI-TP03 (7') | 9/25/2024 | 14:20 | 412 | --- | 140 | 105 |
| 24ELI-TP04 (8') | 9/27/2024 | 14:15 | 139 | --- | 121 | 90.8 |
| 24ELI-TP05 (4') | 9/26/2024 | 16:35 | 67.4 | J | 117 | 87.8 |
| 24ELI-TP06 (9') | 9/26/2024 | 12:00 | 73.2 | J | 125 | 93.8 |
| 24ELI-TP08 (1') | 9/25/2024 | 16:10 | 9380 | --- | 567 | 425 |
| 24ELI-TP08 (1') DUP | 9/25/2024 | 7:00 | 11000 | --- | 1140 | 855 |
| 24ELI-TP08 (6') | 9/25/2024 | 16:25 | 1220 | --- | 140 | 105 |
| 24ELI-TP09 (10') | 9/26/2024 | 15:33 | 87.8 | J | 116 | 87 |
| 24ELI-TP10 (3') | 9/26/2024 | 13:40 | 456 | --- | 113 | 84.8 |
| 24ELI-TP11 (9') | 9/27/2024 | 9:00 | 54.5 | J | 122 | 91.5 |
| 24ELI-TP12 (9') | 9/26/2024 | 17:15 | 149 | --- | 122 | 91.5 |
| 24ELI-TP12 (9') DUP | 9/26/2024 | 17:16 | 113 | J | 125 | 93.8 |
| 24ELI-TP13 (9') | 9/26/2024 | 11:15 | 128.0 | J | 128 | 96 |
| 24ELI-TP14 (8') | 9/25/2024 | 8:55 | 628 | --- | 136 | 102 |
| 24ELI-TP15 (5.5') | 9/27/2024 | 17:00 | 812 | --- | 137 | 103 |
| 24ELI-TP16 (2') | 9/27/2024 | 9:30 | 346 | J | 466 | 350 |
| 24ELI-TP16 (2') DUP | 9/27/2024 | 9:31 | 324 | J | 464 | 348 |
| 24ELI-TP16 (5') | 9/27/2024 | 9:48 | 69.4 | J | 122 | 91.5 |
| 24ELI-TP17 (6') | 9/27/2024 | 15:30 | 326 | --- | 116 | 87 |
| 24ELI-TP19 (1') | 9/27/2024 | 10:05 | 571 | --- | 112 | 84 |
| 24ELI-TP20 (2') | 9/25/2024 | 17:23 | 47700 | --- | 2200 | 1650 |
| 24ELI-TP21 (7') | 9/27/2024 | 11:05 | 1520 | --- | 172 | 129 |

Notes:

Concentrations reported in milligrams per kilogram (mg/kg) using Method AK103

TP = Test Pit; RRO = Residual Range Organics; DUP = Duplicate

LOQ = Limit of Quantitation (Practical Quantitation Limit)

LOD = Limit of Detection (reporting limit); ELI = Elim

J = the quantitation is an estimation; --- = not applicable

Highlighted cells are results detected above one or more cleanup level(s)

Non-highlighted cells are results not detected or detected below cleanup level(s)

* Cleanup levels from 18 AAC 75 (amended October 2023)

* Elim area receives less than 40 inches of annual precipitation

(Based on data for Moses Point and Unalakleet from Western Regional Climate Center)

**Table 6. Soil Analytical Results - Summary of VOC Detections**

Elim Shop Site

Moses Point Road, Elim, Alaska

| Sample Location and Depth (ft bgs) | VOC Analyte | HH SCL * | MGW SCL * | Result | Qualifier | LOQ | LOD |
|---|---|---|---|---|---|---|---|
| 24ELI-TP08 (1') | Xylenes (total) | 4.9E+05 | 1,500 | 3090 | --- | 1000 | 750 |
| 24ELI-TP08 (1') DUP | | | | 3420 | --- | 1030 | 773 |
| 24ELI-TP16 (2') | | | | 54 | J | 113 | 84.8 |
| 24ELI-TP16 (2') DUP | | | | 53.1 | J | 114 | 85.5 |
| 24ELI-TP20 (2') | | | | 564 | --- | 100 | 75 |
| 24ELI-TP05 (4') | Naphthalene | 29,000 | 38 | 18.1 | J | 39.3 | 29.5 |
| 24ELI-TP08 (1') | | | | 39400 | --- | 334 | 251 |
| 24ELI-TP08 (1') DUP | | | | 47000 | --- | 344 | 258 |
| 24ELI-TP08 (6') | | | | 40.3 | J | 54.4 | 40.8 |
| 24ELI-TP12 (9') | | | | 14.9 | J | 41.4 | 31 |
| 24ELI-TP13 (9') | | | | 18.5 | J | 47.6 | 35.7 |
| 24ELI-TP14 (8') | | | | 25.6 | J | 51.9 | 38.9 |
| 24ELI-TP16 (2') | | | | 1860 | --- | 37.8 | 28.3 |
| 24ELI-TP16 (2') DUP | | | | 1890 | --- | 38 | 28.5 |
| 24ELI-TP16 (5') | | | | 70.6 | --- | 41.3 | 31 |
| 24ELI-TP19 (1') | | | | 17.8 | J | 35.2 | 26.4 |
| 24ELI-TP20 (2') | | | | 3220 | --- | 33.4 | 25 |
| 24ELI-TP21 (7') | | | | 26.8 | J | 79.4 | 59.6 |
| 24ELI-TP08 (1') | 1,2,4-Trimethylbenzene | 280,000 | 610 | 34600 | --- | 1340 | 1005 |
| 24ELI-TP08 (1') DUP | | | | 39400 | --- | 1380 | 1035 |
| 24ELI-TP16 (2') | | | | 367 | --- | 151 | 113 |
| 24ELI-TP16 (2') DUP | | | | 374 | --- | 152 | 114 |
| 24ELI-TP20 (2') | | | | 1120 | --- | 134 | 101 |
| 24ELI-TP08 (1') | 1,3,5-Trimethylbenzene | 250,000 | 660 | 14000 | --- | 334 | 251 |
| 24ELI-TP08 (1') DUP | | | | 15600 | --- | 344 | 258 |
| 24ELI-TP16 (2') | | | | 525 | --- | 37.8 | 28.3 |
| 24ELI-TP16 (2') DUP | | | | 492 | --- | 38 | 28.5 |
| 24ELI-TP20 (2') | | | | 2270 | --- | 33.4 | 25 |
| 24ELI-TP08 (1') | 4-Isopropyltoluene | --- | --- | 9920 | --- | 1070 | 803 |
| 24ELI-TP08 (1') DUP | | | | 11200 | --- | 1100 | 825 |
| 24ELI-TP14 (8') | | | | 156 | J | 166 | 125 |
| 24ELI-TP15 (5.5') | | | | 93.6 | J | 167 | 125 |
| 24ELI-TP16 (2') | | | | 1040 | --- | 121 | 90.8 |
| 24ELI-TP16 (2') DUP | | | | 1070 | --- | 122 | 91.5 |
| 24ELI-TP01 (5') | Acetone | 8.1E+07 | 38,000 | 700 | --- | 506 | 380 |
| 24ELI-TP08 (6') | | | | 438 | J | 544 | 408 |
| 24ELI-TP13 (9') | | | | 210 | J | 476 | 357 |
| 24ELI-TP14 (8') | | | | 848 | --- | 519 | 389 |
| 24ELI-TP15 (5.5') | | | | 670 | --- | 522 | 392 |
| 24ELI-TP17 (6') | | | | 442 | --- | 368 | 276 |
| 24ELI-TP21 (7') | | | | 1040 | --- | 794 | 596 |
| 24ELI-TP20 (2') | Ethylbenzene | 49,000 | 130 | 29.7 | J | 33.4 | 25 |
| 24ELI-TP08 (1') | Isopropylbenzene (Cumene) | 1.7E+06 | 5,600 | 508 | --- | 334 | 251 |
| 24ELI-TP08 (1') DUP | | | | 590 | --- | 344 | 258 |
| 24ELI-TP20 (2') | | | | 15 | J | 33.4 | 25 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 24ELI-TP01 (5') | Methylene chloride | 460,000 | 330 | 70.1 | J | 203 | 152 |
| 24ELI-TP04 (8') | | | | 57.3 | J | 165 | 124 |
| 24ELI-TP06 (9') | | | | 72.1 | J | 173 | 130 |
| 24ELI-TP08 (6') | | | | 89.3 | J | 217 | 163 |
| 24ELI-TP09 (10') | | | | 88.2 | J | 153 | 115 |
| 24ELI-TP10 (3') | | | | 53.8 | J | 140 | 105 |
| 24ELI-TP13 (9') | | | | 75.2 | J | 190 | 143 |
| 24ELI-TP14 (8') | | | | 67 | J | 208 | 156 |
| 24ELI-TP16 (2') | | | | 57.9 | J | 151 | 113 |
| 24ELI-TP16 (2') DUP | | | | 57.1 | J | 152 | 114 |
| 24ELI-TP16 (5') | | | | 55.3 | J | 165 | 124 |
| 24ELI-TP17 (6') | | | | 61.8 | J | 147 | 110 |
| 24ELI-TP19 (1') | | | | 57.1 | J | 141 | 106 |
| 24ELI-TP21 (7') | | | | 119 | J | 317 | 238 |
| 24ELI-TP08 (1') | n-Butylbenzene | 5.0E+06 | 23,000 | 8650 | --- | 334 | 251 |
| 24ELI-TP08 (1') DUP | | | | 10300 | --- | 344 | 258 |
| 24ELI-TP08 (1') | n-Propylbenzene | 3.7E+06 | 9,100 | 2190 | --- | 334 | 251 |
| 24ELI-TP08 (1') DUP | | | | 2730 | --- | 344 | 258 |
| 24ELI-TP20 (2') | | | | 39.1 | --- | 33.4 | 25 |
| 24ELI-TP08 (1') | o-Xylene | --- | --- | 1790 | --- | 334 | 251 |
| 24ELI-TP08 (1') DUP | | | | 1910 | --- | 344 | 258 |
| 24ELI-TP16 (2') | | | | 54 | --- | 37.8 | 28.3 |
| 24ELI-TP16 (2') DUP | | | | 53.1 | --- | 38 | 28.5 |
| 24ELI-TP20 (2') | | | | 426 | --- | 33.4 | 25 |
| 24ELI-TP08 (1') | P & M -Xylene | --- | --- | 1300 | --- | 668 | 501 |
| 24ELI-TP08 (1') DUP | | | | 1510 | --- | 688 | 516 |
| 24ELI-TP20 (2') | | | | 138 | --- | 66.9 | 50.2 |
| 24ELI-TP08 (1') | sec-Butylbenzene | 1.0E+07 | 42,000 | 3030 | --- | 334 | 251 |
| 24ELI-TP08 (1') DUP | | | | 3490 | --- | 344 | 258 |
| 24ELI-TP16 (2') | | | | 38.2 | --- | 37.8 | 28.3 |
| 24ELI-TP16 (2') DUP | | | | 41.4 | --- | 38 | 28.5 |
| 24ELI-TP20 (2') | | | | 64.7 | --- | 33.4 | 25 |
| 24ELI-TP16 (2') DUP | tert-Butylbenzene | 1.0E+07 | 11,000 | 38.5 | --- | 38 | 28.5 |
| 24ELI-TP14 (8') | Toluene | 5.8E+06 | 6,700 | 17.5 | J | 51.9 | 38.9 |
| 24ELI-TP15 (5.5') | | | | 31.8 | J | 52.2 | 39.2 |
| 24ELI-TP08 (6') | Trichlorofluoromethane | 3.0E+07 | 41,000 | 124 | --- | 109 | 81.8 |
| 24ELI-TP15 (5.5') | | | | 105 | --- | 104 | 78 |

Notes:

Concentrations reported in micrograms per kilogram (ug/kg) using Method SW8260D

TP = Test Pit; --- = not applicable; VOC = volatile organic compound

HH SCL = ADEC Human Health Soil Cleanup Level; DUP = Duplicate

MGW SCL = ADEC Migration to Groundwater Soil Cleanup Level

Highlighted cells are results detected above one or more cleanup level(s)

Non-highlighted cells are results detected below cleanup level(s)

* Cleanup levels (Method Two) from 18 AAC 75 (amended October 2023)

* Elim area receives less than 40 inches of annual precipitation

(Based on data for Moses Point and Unalakleet from Western Regional Climate Center)

Test pits without associated VOC detections are not listed in this table

**Table 7. Soil Analytical Results - Summary of PAH Detections**

Elim Shop Site

Moses Point Road, Elim, Alaska

| Sample Location and Depth (ft bgs) | PAH Analyte | HH SCL * | MGW SCL * | Result | Qualifier | LOQ | LOD |
|---|---|---|---|---|---|---|---|
| 24ELI-TP08 (1') | Naphthalene | 2.9E+04 | 38 | 46400 | --- | 11300 | 8475 |
| 24ELI-TP08 (1') DUP | | | | 56800 | --- | 2280 | 1710 |
| 24ELI-TP08 (6') | | | | 25.6 | J | 28 | 21 |
| 24ELI-TP16 (2') | | | | 2950 | --- | 466 | 350 |
| 24ELI-TP16 (2') DUP | | | | 2490 | --- | 464 | 348 |
| 24ELI-TP20 (2') | | | | 3720 | --- | 440 | 330 |
| 24ELI-TP02 (9.5') | | | | 10.3 | J | 25.2 | 18.9 |
| 24ELI-TP08 (1') | 1-Methylnaphthalene | 2.3E+05 | 410 | 106000 | --- | 14200 | 10650 |
| 24ELI-TP08 (1') DUP | | | | 120000 | --- | 14200 | 10650 |
| 24ELI-TP08 (6') | | | | 32.2 | J | 35 | 26.3 |
| 24ELI-TP16 (2') | | | | 12100 | --- | 583 | 437 |
| 24ELI-TP16 (2') DUP | | | | 11000 | --- | 580 | 435 |
| 24ELI-TP20 (2') | | | | 5240 | --- | 550 | 413 |
| 24ELI-TP02 (9.5') | | | | 12.3 | J | 31.4 | 23.5 |
| 24ELI-TP08 (1') | 2-Methylnaphthalene | 3.1E+05 | 1,300 | 125000 | --- | 14200 | 10650 |
| 24ELI-TP08 (1') DUP | | | | 150000 | --- | 14200 | 10650 |
| 24ELI-TP08 (6') | | | | 40.4 | --- | 35 | 26.3 |
| 24ELI-TP16 (2') | | | | 8290 | --- | 583 | 437 |
| 24ELI-TP16 (2') DUP | | | | 7860 | --- | 580 | 435 |
| 24ELI-TP20 (2') | | | | 3660 | --- | 550 | 413 |
| 24ELI-TP02 (9.5') | | | | 15.3 | J | 31.4 | 23.5 |
| 24ELI-TP08 (1') | Acenaphthene | 4.6E+06 | 37,000 | 1720 | --- | 1420 | 1065 |
| 24ELI-TP08 (1') DUP | | | | 2150 | J | 2850 | 2138 |
| 24ELI-TP16 (2') | | | | 254 | J | 583 | 437 |
| 24ELI-TP16 (2') DUP | | | | 197 | J | 580 | 435 |
| 24ELI-TP20 (2') | | | | 292 | J | 550 | 413 |
| 24ELI-TP08 (1') | Acenaphthylene | 2.3E+06 | 18,000 | 840 | J | 1420 | 1065 |
| 24ELI-TP08 (1') DUP | | | | 1050 | J | 2850 | 2138 |
| 24ELI-TP16 (2') | | | | 476 | J | 583 | 437 |
| 24ELI-TP16 (2') DUP | | | | 411 | J | 580 | 435 |
| 24ELI-TP20 (2') | Anthracene | 2.3E+07 | 390,000 | 707 | --- | 550 | 413 |
| 24ELI-TP08 (6') | Benzo(a)anthracene | 14,000 | 700 | 9.92 | J | 35 | 26.3 |
| 24ELI-TP20 (2') | | | | 186 | J | 550 | 413 |
| 24ELI-TP08 (6') | Benzo[a]pyrene | 1,500 | 1,900 | 13.1 | J | 35 | 26.3 |
| 24ELI-TP08 (6') | Benzo[b]fluoranthene | 15,000 | 20,000 | 11.9 | J | 35 | 26.3 |
| 24ELI-TP08 (6') | Benzo[g,h,i]perylene | 2.3E+06 | 1.5E+07 | 16.7 | J | 35 | 26.3 |
| 24ELI-TP20 (2') | | | | 244 | J | 550 | 413 |
| 24ELI-TP08 (6') | Chrysene | 1.5E+06 | 6.0E+05 | 21.2 | J | 35 | 26.3 |
| 24ELI-TP20 (2') | | | | 195 | J | 550 | 413 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 24ELI-TP08 (6') | Fluoranthene | 3.1E+06 | 5.9E+05 | 33.7 | J | 35 | 26.3 |
| 24ELI-TP15 (5.5') | | | | 23.6 | J | 34.3 | 25.7 |
| 24ELI-TP20 (2') | | | | 485 | J | 550 | 413 |
| 24ELI-TP08 (1') | Fluorene | 3.1E+06 | 36,000 | 3490 | --- | 1420 | 1065 |
| 24ELI-TP08 (1') DUP | | | | 4370 | --- | 2850 | 2138 |
| 24ELI-TP16 (2') | | | | 1590 | --- | 583 | 437 |
| 24ELI-TP16 (2') DUP | | | | 1390 | --- | 580 | 435 |
| 24ELI-TP20 (2') | | | | 731 | --- | 550 | 413 |
| 24ELI-TP08 (1') | Phenanthrene | 2.3E+06 | 39,000 | 1010 | J | 1420 | 1065 |
| 24ELI-TP08 (1') DUP | | | | 1190 | J | 2850 | 2138 |
| 24ELI-TP15 (5.5') | | | | 11 | J | 34.3 | 25.7 |
| 24ELI-TP16 (2') | | | | 4830 | --- | 583 | 437 |
| 24ELI-TP16 (2') DUP | | | | 4380 | --- | 580 | 435 |
| 24ELI-TP20 (2') | | | | 963 | --- | 550 | 413 |
| 24ELI-TP08 (6') | Pyrene | 2,300,000 | 87,000 | 15.4 | J | 35 | 26.3 |
| 24ELI-TP10 (3') | | | | 9.47 | J | 28.3 | 21.2 |
| 24ELI-TP15 (5.5') | | | | 23.5 | J | 34.3 | 25.7 |
| 24ELI-TP20 (2') | | | | 784 | --- | 550 | 413 |

Notes:

Concentrations reported in micrograms per kilogram (ug/kg) using Method 8270E SIM

TP = Test Pit; --- = not applicable; PAH = polycyclic aromatic hydrocarbon

HH SCL = ADEC Human Health Soil Cleanup Level; DUP = Duplicate

MGW SCL = ADEC Migration to Groundwater Soil Cleanup Level

Highlighted cells are results detected above one or more cleanup level(s)

Non-highlighted cells are results detected below cleanup level(s)

* Cleanup levels (Method Two) from 18 AAC 75 (amended October 2023)

* Elim area receives less than 40 inches of annual precipitation

(Based on data for Moses Point and Unalakleet from Western Regional Climate Center)

Test pits without associated PAH detections are not listed in this table

**Table 8. Soil Analytical Results - Metals**

Elim Shop Site

Moses Point Road, Elim, Alaska

| | Arsenic | Barium | Cadmium | Chromium | Lead | Mercury | Selenium | Silver |
|---|---|---|---|---|---|---|---|---|
| HH SCL * | 8.8 | 20000 | 92 | 1.0E+05 | 400 | 19 | 510 | 510 |
| MGW SCL * | 0.2 | 2100 | 9.1 | 1.0E+05 | --- | 0.36 | 6.9 | 11 |
| 24ELI-TP01 (5') | 5.85 | 127 | 0.309 | 23.6 | 12.1 | 0.091 | 1.29 | 0 |
| 24ELI-TP02 (9.5') | 4.21 | 85.4 | 0.479 | 53.4 | 13.1 | 0 | 6.9 | 0 |
| 24ELI-TP03 (7') | 6.76 | 86.2 | 0.178 | 14.7 | 8.63 | 0 | 1.84 | 0 |
| 24ELI-TP04 (8') | 8.01 | 138 | 0.273 | 27.5 | 13.5 | 0 | 1.73 | 0 |
| 24ELI-TP05 (4') | 5.42 | 72.8 | 0.297 | 16.1 | 8.85 | 0 | 1.48 | 0 |
| 24ELI-TP06 (9') | 8.91 | 174 | 0.255 | 29.1 | 14.8 | 0 | 1.2 | 0 |
| 24ELI-TP08 (1') | 3.50 | 37.9 | 0.273 | 7.75 | 7.74 | 0 | 0.699 | 0 |
| 24ELI-TP08 (1') DUP | 4.43 | 41 | 0.284 | 9.24 | 6.35 | 0 | 0.762 | 0 |
| 24ELI-TP08 (6') | 6.34 | 117 | 0.604 | 19.6 | 133 | 0.231 | 1.35 | 0 |
| 24ELI-TP09 (10') | 5.57 | 74.9 | 0.562 | 20.2 | 10.1 | 0 | 1.13 | 0 |
| 24ELI-TP10 (3') | 2.84 | 31.6 | 0.167 | 6.06 | 3.75 | 0 | 1.15 | 0 |
| 24ELI-TP11 (9') | 7.72 | 181 | 0.486 | 32.6 | 13.2 | 0.097 | 1.14 | 0 |
| 24ELI-TP12 (9') | 7.37 | 111 | 0.19 | 20.2 | 10.4 | 0 | 1.81 | 0 |
| 24ELI-TP12 (9') DUP | 8.95 | 130 | 0.28 | 24.8 | 12.7 | 0 | 1.68 | 0 |
| 24ELI-TP13 (9') | 8.77 | 299 | 0.256 | 32.4 | 16.4 | 0 | 1.43 | 0 |
| 24ELI-TP14 (8') | 8.21 | 147 | 0.416 | 23.9 | 81.3 | 0.128 | 1.66 | 0 |
| 24ELI-TP15 (5.5') | 8.51 | 109 | 0.301 | 43.4 | 193 | 0 | 1.07 | 0 |
| 24ELI-TP16 (2') | 3.26 | 49.7 | 0.306 | 9.16 | 5.86 | 0 | 1.46 | 0 |
| 24ELI-TP16 (2') DUP | 3.16 | 46 | 0.274 | 8.6 | 5.82 | 0 | 1.28 | 0 |
| 24ELI-TP16 (5') | 5.74 | 80.9 | 0.294 | 23.3 | 17.8 | 0 | 1.27 | 0 |
| 24ELI-TP17 (6') | 5.12 | 65.1 | 0.194 | 11.8 | 7.52 | 0 | 0 | 0 |
| 24ELI-TP19 (1') | 3.48 | 39.1 | 1.76 | 11.6 | 3.79 | 0 | 1.33 | 0 |
| 24ELI-TP20 (2') | 2.94 | 33.7 | 0.279 | 14 | 6.29 | 0 | 1.03 | 0 |
| 24ELI-TP21 (7') | 4.94 | 136 | 0.25 | 20.2 | 10.5 | 0 | 2.12 | 0 |

Notes:

Concentrations reported in milligrams per kilogram (mg/kg) using Method SW6020B

TP = Test Pit; --- = not applicable; HH SCL = ADEC Human Health Soil Cleanup Level

MGW SCL = ADEC Migration to Groundwater Soil Cleanup Level; DUP = Duplicate

Highlighted cells are results detected above one or more cleanup level(s)

Non-highlighted cells are results detected below cleanup level(s)

* Cleanup levels (Method Two) from 18 AAC 75 (amended October 2023)

* Elim area receives less than 40 inches of annual precipitation

(Based on data for Moses Point and Unalakleet from Western Regional Climate Center)

Data qualifiers and laboratory limits are listed in the laboratory report

Arsenic exceedances are shown relative to the human health cleanup level only

# Appendix A

## Health and Safety Documentation

**ChemTrack, Alaska Inc.**
**11711 S. Gambell St., Anchorage, Alaska 99515**
**Telephone: (907) 349-2511 Facsimile: (907) 522-3150**

# HEALTH & SAFETY MEETING REPORT

Supervisor: Lauren Jennings Date: 09/25/24 Project No.: # 6474

Project Name: Elim Old City Shop

Project Location: Elim, Alaska

Contract Number: # 6474

**ITEMS DISCUSSED:**

Scheduled Work Activities:
Discussion of buried utilities, overview of old shop & cleanup completed before arrival onsite.

Potential Job Hazards:
Buried lines and pinch points associated with tight areas.

Personal Protective Equipment:
Level D PPE

Special Precautions:
Overhead lines, buried lines and hazardous materials onsite.

Report a near miss or safety concern:

Other:
Tight access areas + new crew with operator, discuss hand signals
C.L.S. - GRO/DRO/RRO/VOCs/PAHs/RCRA Metals

**ATTENDEES**

| ATTENDEE NAME: | SIGNATURE: | DATE: |
|---|---|---|
| Lauren Jennings | Lauren Jennings | 09/25/24 |
| Jackie Rowley | Jacquelyn Rowley | 09/25/24 |
| Kayla Bourdon | Kayla | 09/25/24 |
| Russell McEachern | Russell McEachern | 09/25/24 |

REVISED 7/2/2024

**ChemTrack, Alaska Inc.**
**11711 S. Gambell St., Anchorage, Alaska 99515**
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# HEALTH & SAFETY MEETING REPORT

Supervisor: Lauren Jennings Date: 09/26/24 Project No.: # 6474

Project Name: Elim Old City Shop

Project Location: Elim, AK

Contract Number: # 6474

**ITEMS DISCUSSED:**

Scheduled Work Activities:
Excavation of around 16 more test pits and potential well install.

Potential Job Hazards:
Pinch points, slips, trips + falls

Personal Protective Equipment:
Level D PPE

Special Precautions:
Overhead powerlines, contaminated soil.

Report a near miss or safety concern:

Other:
When doing multiple tasks, make sure everyone knows their role.

**ATTENDEES**

| ATTENDEE NAME: | SIGNATURE: | DATE: |
|---|---|---|
| Lauren Jennings | | 09/26/24 |
| Russell Jacheus | | |
| Jackie Fawley | | |
| Kayla Reardon | | |

**ChemTrack, Alaska Inc.**
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# HEALTH & SAFETY MEETING REPORT

Supervisor: Lauren Jennings Date: 09/27/24 Project No.: # 6474

Project Name: Elim Old City Shop

Project Location: Elim, Alaska

Contract Number: # 6474

**ITEMS DISCUSSED:**

Scheduled Work Activities:
Completion of up to 7 more test pits within the Old City Shop area.

Potential Job Hazards:
Leaking drums are a major concern as we enter the heaviest occupied area with remaining drums.

Personal Protective Equipment:
Level D PPE.

Special Precautions:
Pinch points are major concern after access issues yesterday. Watch backhoe feet to ensure crew isn't caught.

Report a near miss or safety concern:

Other:
Cultural material discovered. Watch and monitor for any items of cultural significance.

**ATTENDEES**

| ATTENDEE NAME: | SIGNATURE: | DATE: |
|---|---|---|
| Lauren Jennings | Lauren Jen | 09/27/24 |
| Russell Sacchetti | Russell Sacchetti | |
| Kayla Bardon | Kayla Bardon | 9/27/24 |
| Jackie Pankey | Jackie Pankey | 9/27/24 |