UNDERGROUND STORAGE TANK
RELEASE INVESTIGATION WORK PLAN
GRAYLING NATIVE STORE
BLOCK 22, LOT 3
GRAYLING, ALASKA

September 14, 2023

Prepared for:
Yukon River Inter-Tribal Watershed Council

Prepared by:

Managing & Accounting Office
2400 College Road
Fairbanks, Alaska 99709
p. 907.452.5688
f. 907.452.5694

3105 Lakeshore Dr, Ste A106
Anchorage, Alaska 99517
p. 907.222.2445
f. 907.222.0915

5438 Shaune Dr, Ste B
Juneau, Alaska 99801
p: 907.586.6813
f: 907.586.6819

www.nortechengr.com

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ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
BTEX	benzene, toluene, ethylbenzene, xylenes
COCs	contaminants of concern
CSP	Contaminated Sites Program
CSM	Conceptual Site Model
CY	cubic yards
DL	detection limit
DQOs	data quality objectives
DRO	diesel range organics
EDB	ethylene dibromide
EPA	Environmental Protection Agency
FSG	2021 ADEC Field Sampling Guidance
GRO	gasoline range organics
IDW	investigation-derived waste
LDRC	Laboratory Data Review Checklist
LOQ	limit of quantitation
NVG	Native Village of Grayling
%	percent
PAHs	polycyclic aromatic hydrocarbons
PID	photoionization detector
ppm	parts per million
QA/QC	Quality Assurance/Quality Control
QEP	Qualified Environmental Professional
RI	release investigation
RPD	relative percent difference
SA	site assessment
SGS	SGS North America, Inc.
UST	underground storage tank
VOCs	volatile organic compounds
WP	work plan
YRITWC	Yukon River Inter-tribal Watershed Council

1.0 INTRODUCTION

Yukon River Inter-tribal Watershed Council (YRITWC) has contracted ***NORTECH***, Inc., to prepare this work plan (WP) for a Release Investigation (RI) associated with two Underground Storage Tanks (USTs) situated adjacent to the store in Grayling, Alaska (the Site). The USTs are assumed to have had releases associated with the use or management of the tanks and/or piping, or from tanks and piping previously decommissioned as part of an Aboveground Storage Tank (AST) system. This assessment is designed to help determine the extent of subsurface impacts associated with the USTs and the former ASTs and provide information to determine the necessary future management requirements to address formal closure of the Site.

This UST RI WP describes the methodology and procedures for evaluating the extent of subsurface impacts associated with all USTs, decommissioned ASTs and releases associated with their use and management on the Site. The USTs will not be decommissioned as part of this effort. Samples will be collected from near surface to an estimated 10 feet using local excavation equipment. Reporting will be designed to document the estimated extent of subsurface impacts and provide remedial action alternatives.

1.1 Site Concerns

The existing site conditions may include contamination that exceeds regulatory cleanup requirements while at the same time pose little risk to users of a site or the environment. However, it is also possible that site conditions appear to pose little or no risk, but impacts could be present to an unsuspecting public through contaminated groundwater, or an intrusion of petroleum vapors into indoor air space.

Assessment activities associated with regulated underground storage tanks (USTs) have specific requirements as determined by 18 AAC 78.090, *Site Characterization and Assessment*. Since previous investigations have indicated that a release may be associated with the Site, this assessment will address the requirements of 18 AAC 78.235, *Release Investigating*, of which the investigation sample requirements are prescribed in the regulations, depending on whether the tanks will be closed in place or removed, and if contamination is identified.

1.2 Lines of Authority

The project contact information and responsible parties are outlined below:

Government:
Department of Environmental Conservation
Contact: Kelly Ireland, Environmental Program Specialist 2
(907) 269-7553
kelly.ireland@alaska.gov

Responsible Party:
Native Village of Grayling (Holikachuk)
Contact: Gabriel H. Nicholi
(907) 453-5116
cityofgrayling@yahoo.com

Qualified Environmental Professionals (QEP):
NORTECH, Inc.
Ron Pratt, Sr. Environmental Professional
Field Manager and Lead
(907) 586-6813
Ron.Pratt@nortechengr.com

John Carnahan, Senior Environmental Professional
Project Manager
(907) 590-7337
John.Carnahan@nortechengr.com

Peter Beardsley, PE, CEO and Principal
Contract Manager
(907) 452-5688
Peter.Beardsley@nortechengr.com

Operator
(To be determined)
Native Village of Grayling (Holikachuk)
Contact: Gabriel H. Nicholi
(907) 453-5116
cityofgrayling@yahoo.com

Analytical Laboratory:
SGS Environmental Services, Inc. (SGS)
Contact: Jennifer Dawkins, Project Manager
(907) 562-2343
(907) 474-8656 Fairbanks Field Office
Jennifer.Dawkins@sgs.com

1.3 Services Provided

Previous investigations, discussed in Section 2.2, have identified soil contamination at the Site associated with the former tank farm and buried tanks located adjacent to the Grayling Native Store near the center of Grayling, Alaska. As part of the future management of site conditions, YRITWC has requested additional assessment requirements that will allow the Native Village of Grayling to plan remedial actions at the site that may include UST closure and/or remedial actions.

The following summarizes the general proposed services to be provided to complete the project objectives:

1. Develop a Work Plan/Sampling and Analysis Plan (SAP) for a Phase II ESA, to include Quality Assurance Plan requirements
2. Ensure that the Work Plan meets minimum DEC UST site assessment requirements
3. Address health and safety requirements, including utility locates
4. Communicate the proposed assessment approach and findings to YRITWC and Grayling stakeholders
5. Complete one UST Release Investigation using local equipment and labor

6. Provide ongoing coordination and recommended actions to further project objectives
7. Provide follow-up coordination with YRITWC as determined appropriate or as requested

Qualified personnel with current certifications and experience conduct all field assessment inspection and sampling efforts. All work completed will be managed, reviewed, and signed off by a board-Certified Industrial Hygienist (CIH), board Certified Safety Professional (CSP), or Professional Engineer (PE), as necessary.

2.0 SITE LOCATION & BACKGROUND

2.1 Site Description

The YRITWC included the community of Grayling as part of its Community Wide Assessment Grant, to include a Phase II ESA of the former Native Store Tank Farm. This site has been active on the DEC Contaminated Sites database since 1991, but funding has precluded the full assessment and characterization of site conditions.

The Site is the former location of the Native Store Tank Farm, which is an Active DEC Contaminated Site (Hazard ID 3373; file no. 2416.38.003). The location is Block 22, Lot 3. The Site originally consisted of five ASTs and two USTs with a total capacity of about 35,300 gallons. A review of the DEC UST database indicates that the Grayling Native Store has two buried tanks with varying capacity: one reportedly 7,042 gallons (Tank #4, gasoline); and a second tank at 10,137 gallons (Tank #5, gasoline). Although these tanks are listed as 'currently in use" in their status assignment, they are not in active use, but have not been rendered closed in any capacity. The USTs are identified in the DEC UST database as being owned by the Grayling Native Store, with Shirley Clark as the point of contact. Recent information indicates that the tanks are now owned by the Grayling IRA Native Council.

It is unknown if the tank dimensions referenced in the DEC UST database are the specific tanks in question, as previous documentation indicated that both tanks were of 5,000-gallon capacity. Further, reporting from 2000 during an evaluation of all tank farms in Grayling indicated that two ASTs had these specific dimensions. All ASTs have been removed, but the two USTs remain in the ground and it is anticipated that associated piping remains as well.

The location of the two buried tanks is estimated to be 50 feet east of the eastern wall of the store, 50 feet west of the Grayling Community Hall/Tribal Office, and about 200 feet south of the school. The last CS database record is from 2015 which indicated that an assessment of the Site is required, as well as an evaluation of the soil in the vicinity of the foundation of the adjacent storage building.

The Site property is described as:

> *Section 34, Township 033 North, Range 058 West, Seward Meridian. Coordinates are North 62.905015, and West 160.065396 at 69 feet above sea level. The former tank farm is located at Block 22, Lot 3 on the north side of C Street between 2,d and 3 Streets about 500 feet from the Yukon River.*

Site figures are included in Appendix 1.

2.2 Previous Investigations

2.2.1 1998 Inspection

A *Bulk-Fuel Storage Tanks* Assessment was completed in July of 1998, where seven tanks were documented onsite, including 5 above ground and two underground. The above ground tanks featured no dike or liner, and the tanks were filled from a header at the river via pipeline that has since been decommissioned up to the tank farm. The tank farm facility was also used as a fueling station where tank lines were routed to a manifold at the pump house. At this time, two aboveground riveted rail car tanks situated on logs were in use while the two additional ASTs were unused. One UST was considered still in use and the other was out of service. The

riveted tanks were observed to be leaking and had numerous pipe joint leaks. The 1998 assessment documented that the tank farm would be decommissioned when construction of the consolidated tank farm was completed that year.

A limited program of near-surface soil sampling with field screening was completed at the site, with only one sample submitted for laboratory analysis of petroleum fractions. The field screening ranged from 19 ppm to 419 ppm. One sample from between the two ASTs was submitted to the laboratory. Analytical results indicated all tested analytes exceeded their respective cleanup levels with gasoline range organics (GRO) as the highest reported result at 22,000 mg/kg. It is anticipated that elevated petroleum impacts that exceed target cleanup levels remain at depth.

2.2.2 2012 Phase I Environmental Site Assessment

A Phase I Environmental Site Assessment (ESA) with limited soil sampling and field screening was completed in 2012 (Chilkat Environmental) which further defined the area of interest, and documented site conditions at that time. The limited subsurface assessment was completed with a hand auger and olfactory observations. The tanks were not evaluated as to whether they contained fuel or not. A small stockpile was observed and miscellaneous drums were staged onsite that potentially contained fuel product and may have been leaking. Samples collected with a small hand auger indicated the presence of volatile contaminants. Although reportedly decommissioned, a community member also identified a pipeline that may have connected the barge dispensing manifold to the tank system, indicating this pipeline may remain in place. An evaluation of this pipeline could be included in the assessment if it is determined to be present. Pipelines and couplings are known to have led to leaks and fuel releases.

2.3 Tank Farm Management Issues

Older rural tank farms are known to have petroleum releases due to aging tank systems, a lack of overspill protection, a harsh operating climate, and lack of consistent oversight and tank management. Petroleum releases in the hundreds and even thousands of gallons are typical. Overspill protection was insufficient or non-existent in many tank farm designs. Members of the Grayling community have expressed concerns related to the potential health impacts from this site. The objective is to determine whether impacts cause any risk to human health and/or the environment, and if the tanks and residual impacts impact future land use.

Tank farms in rural Alaska have undergone consolidation and upgrading, leaving many of the former tank farms abandoned and without assessment data. It is our understanding that a previous assessment of the tank farm was not fully completed as part of the upgrade/decommissioning process. The Alaska Energy Authority (AEA) was tasked with completing many of the upgrades as well as completing assessments. However, insufficient funding plagued the assessment portion of AEA's projects and many assessments were not completed. ***NORTECH*** will further review whether AEA completed the assessment at this tank farm and use the information for planning purposes.

3.0 SCOPE OF WORK

The following summarizes the proposed scope of work in detail.

3.1 Data Quality Objectives

The project data quality objectives (DQOs) focus on producing adequate data to confirm if the existing USTs and associated AST farm have contaminated the surrounding soil (and GW, if appropriate). DQOs are also intended to enable a revised conceptual site model (CSM) and identify potentially complete exposure pathways from the contamination in soil, whether indoor air is a potential concern, and whether groundwater is likely to be impacted and resulting in a potential exposure. Groundwater is unlikely to be encountered as part of this investigation.

The soil results will be compared to the ADEC Method Two Cleanup Levels for the Under 40-inch zone as defined in 18 AAC 75.341 Tables B1 and B2 (soil) as amended through November 18, 2021. The results will be used to assess whether Site COCs exist and whether they pose a potential threat to human health under different exposure pathways.

DQO's for the project are summarized below:

- The main objective is to estimate the extent of petroleum releases across the site such that an evaluation of practical cleanup approaches can be completed
    - Data collection will be limited by the capacity of the available equipment
    - Assessment time will be limited to between one and three days
- Questions that should be addressed include:
    - What are the sizes of the buried USTs?
    - What is the extent of petroleum impacts at the site?
    - Are there any immediate risks to human health and/or environment?
    - What are the concentrations in proximity to occupied buildings?
    - What are potential offsite receptors?
    - What are reasonable approaches to managing identified contamination?
- Information necessary to address questions include:
    - Review of historical information in the records
    - Collection of near- and sub-surface soil data (field screening and analytical) to address extent of impacts
    - Visual observations and interviews with local residents to determine historical site use and potential known spills
    - Depending on the field observations, photoionization detector (PID) readings and/or samples may be collected from trenches adjacent to occupied buildings to west and east
- The area to be investigated is estimated to not exceed 0.1 acre
    - The surface evaluation will be limited to the area between the Native Store Warehouse to west, the Tribal Hall to east, and to a distance north and south that are adequate to encompass the former AST farm, fuel management area, and extent of potential releases
- Equipment will include excavator owned and managed by the Grayling Tribal Council, sufficient to collect samples at depth, with only discrete samples collected
- Field personnel will advance the trench excavation investigation based on positive field screening results, in an effort to determine lateral extents (and depth of impacts to the extent that equipment can accommodate)

  - The number of trenches will be modified based on the field observations, with an estimate of 8 to 10 trenches at a minimum
  - Near-surface screening/sampling with shovels may be completed to determine if surface releases are evident
- Laboratory sampling will be used to confirm the presence of contamination in locations, and calibrate field screening results
  - Laboratory samples will be submitted from samples with the highest PID results
  - Laboratory samples will be submitted from samples representing some average PID results

3.2 Develop Work Plan/Quality Assurance Plan

Prior to developing this Work Plan, ***NORTECH*** reviewed all available information specific to the Site, including the Phase I ESA results. We will further discuss concerns associated with the site with YRITWC and Grayling stakeholders to obtain as much site-specific information as possible and determine concerns the community may have.

Our RI assessment will extend to areas across the Site that may have been impacted from operation and management of the AST farm, or from the storage of other chemicals or materials. This might entail observations that identify a need to manage/cleanup debris or drums, the presence of other tanks or vessels, offsite sources of contamination that are visually evident, or poor site management practices, such as storage of chemicals or leaking equipment on the property.

We will coordinate with the proper authorities to ensure that utilities are located so that they are not encountered during excavation. We may recommend additional testing as part of this assessment or propose future actions, if determined appropriate and beneficial to the project.

3.3 Health and Safety

The field activities require the development of a Health and Safety Plan which is summarized in Appendix 4. This will include identification of site conditions and specify any interim actions necessary to remove immediate risks prior to the proposed fieldwork. Based on the estimated contaminants of concern, field sampling personnel will take precautions to avoid exposure to contaminants through dermal contact and inhalation.

Proper Personal Protective Equipment (PPE) for this field sampling program will include Level D PPE such as nitrile gloves, eye protection, hearing protection, a safety vest, and hard hat when working next to the excavation equipment. Clean gloves will be donned when collecting laboratory samples. The review of all safety planning will be coordinated and reviewed by Mr. Affinito, who is a QEP and spent 27 years with the Coast Guard, including more than a decade as a health and safety officer. In this capacity, he worked directly to protect the health and safety of USCG personnel from all manner of hazards.

3.4 Chemicals of Concern

The following summarizes the potential chemicals of concern (COCs) for this project based on the type of site to be evaluated, and the included number of samples that are budgeted as part of this effort:

Table 1 - Potential Chemicals of Concern
(For Diesel and Gasoline Tanks)

Analyte	Method	Included # Samples
RRO	AK 103	20
DRO	AK 102	20
GRO	AK 101	20
VOCs	EPA 8260D	10
SVOCs	EPA 8270E	10
PAHs (10%)	EPA 8270E-SIM	2
EDB	EPA 8260D	2
Total Lead	EPA 6010D	10
MTBE	EPA 8260D	2
Duplicates	Various	10% of primary samples

Additional analytical methods may be required by the DEC Project Manager. In the event that these additional analytical methods or the expected numbers of samples changes, ***NORTECH*** will work with YRITWC to obtain approval and develop an equitable adjustment to the analytical budget.

3.5 Preliminary Conceptual Site Model

A conceptual site model (CSM) has not been previously developed for this site. A CSM qualitatively assesses the risk to potential and ecological receptors from the petroleum release at the former Native Store tank farm site.

The following exposure pathways are determined to be potentially complete:

- Incidental soil ingestion
- Dermal absorption of contaminants from soil
- Ingestion of groundwater
- Inhalation of outdoor air
- Ingestion of surface water
- Dermal absorption of contaminants in groundwater
- Dermal absorption of contaminants in surface water
- Inhalation of volatile compounds in tap water.

Current and future receptors were identified to include residents (future); commercial or industrial workers (future); construction workers (future); site visitors, trespassers, or recreational users (current and future); and subsistence harvesters and consumers (current and future). The preliminary *Human Health Conceptual Site Model Scoping Form* and Standardized Graphic are included in Appendix 3.

3.6 Sampling Strategy

Several types of samples may be collected as part of this effort:

- Soil samples from near surface, and at depth
- Sediment samples from within or adjacent to water bodies (as applicable)

- Water samples, from surface water, trenches, or shallow probes (as applicable)
- Air samples from occupied structures (if determined appropriate)
- Media samples from materials that are stored onsite, such as in buckets or drums (not currently budgeted, but may be accommodated as determined necessary)

Samples will be required associated with each UST location, based on size and aerial extent of the surface overlying the tanks. Additionally, samples should be collected from other locations at the site as review and site conditions warrant. The following are areas that are likely to require sampling:

- UST locations
- All former AST locations
- The fuel dispenser station
- Pipelines running to and from the dispenser and tanks (remaining onsite)
- Stockpile locations (current or past)
- Areas known to have stored drums (targeting fuel storage as indicated)

In addition, ***NORTECH*** will be prepared to do preliminary screening in any buildings located adjacent to soil that has indicated an elevated level of volatile readings. An estimate of the sample locations and type is provided in Figure 3, in Appendix 1.

3.7 Field Effort

The RI will be completed at the subject site with the support of local equipment and labor. ***NORTECH*** will coordinate with NVG to solicit the use of their 320D Cat Excavator and labor rates for City personnel to operate the equipment, which is capable of completing trenching and excavations for sample collection. In this manner, we expect to be able to collect sufficient data while also utilizing local knowledge of each site and general conditions.

The field program will generally consist of the following:

- One or two ***NORTECH*** staff (to include a QEP) to oversee field work, collect screening and analytical samples, and document all activities:
- Coordinate with the tribe to operate a local piece of equipment, such as an excavator
- One local City laborer to assist with readying the site for field work and to support the equipment operator and/or QEP during excavation
- A shovel, hand auger and/or other sampling equipment for sampling in close proximity to tanks or other structures, or for field screening near surface soil
- Subsurface water collection probes that may be advanced by hand (slide hammer) through an excavation bottom, or adjacent to a water body for water samples (if determined necessary)
- A hand-held Air Monitor/PID for field screening
- Laboratory prepared sample containers and coolers
- Field tools, sampling tools, measuring tapes, personal protective equipment, etc.

In order to do installation, testing, and closure of a UST system, a person must be certified by the State of Alaska in the category for which work is done. Although the site includes regulated tanks, activities will not include closure of the UST system, and a certified UST worker is not required.

Subsurface sampling of the site will likely be limited to less than 10 feet, unless the equipment is capable of deeper depths, and contamination is evident. Samples will be collected adjacent to the USTs as well as beneath former AST and pipeline locations. Additional trenching may be advanced radially away from signs of release or toward the edge of the property. Multiple excavations, potentially in a modified grid fashion if needed, can be used to obtain soil samples, and determine whether contaminated soil appears to be present. Confirmation soil testing can be used and compared to field screen results to provide a qualitative evaluation of concentrations in many locations. Samples collected for laboratory analysis use for delineation purposes should be limited to areas designed to determine either maximum contamination levels, to determine “clean” areas, or for comparing to field screening results in order to provide an increased understanding of average field screening results across the site.

In addition to sample collection, general field activities will include:

- Proper communication and coordination with stakeholders and community representatives
- Interviews with knowledgeable residents about the site and proposed activities
- Photo-documentation of all activities
- Evaluation of the site management practices enabling us to provide observations and recommendations going forward

Assessing and understanding the extent of contamination is also a critical step in completing this evaluation and must be combined with identification of potential receptors. Evaluating human health risk from an old tank farm will include determining whether water wells and other potential receptors are present in the path of a potentially migrating plume.

An estimated number of samples are included in the cost proposal based on available information. Should tank size differ than what is expected, or the footprint overlying the tanks be significantly different, the number of samples necessary to meet site assessment objectives may require modification to meet the DEC guidance documents.

Any significant variance from the proposed scope of services will be coordinated with YRITWC and the DEC Project Manager by **NORTECH**, with a request for written approval for the change from DEC. Confirmation of the change may be confirmed via telephone if agreed to with the DEC at the time (to be followed with written documentation), or email correspondence. If direct communication is not possible at the time, field changes and reasoning will be documented, forwarded to the YRITWC and DEC at the earliest opportunity, and documented in the report.

3.8 Schedule

Following work plan finalization, field work planning and preparations will begin. It is anticipated that the field work will be completed in August 2023, with reporting to follow within 45 to 60 days, depending on the return of laboratory analysis results. All work is anticipated to be completed before December 30, 2023.

4.0 METHODOLOGY

NORTECH will complete this assessment work in accordance with the following:

- AAC 78.090 Site Assessment (September 2019)
- AAC 75.335 Site Characterization (November 2021)
- ADEC *Field Sampling Guidance* (FSG) (January 2022)
- ***NORTECH*** PID Field Screening Standardized Methodology (June 2019)
- ADEC *Underground Storage Tanks Procedures Manual Guidance for Treatment of Petroleum-Contaminated Soil and Water and Standard Sampling Procedures* dated (March 22 2017)
- This RI WP (following approval)

Work will be completed by ***NORTECH*** staff professionals meeting ADEC requirements as Qualified Environmental Professionals (QEPs). Field screening and laboratory sampling methods will be in general accordance with the UST Procedures Manual, the FSG and the WP. All samples will be collected by a DEC QEP as defined in 18 AAC 75. Laboratory sampling will include field duplicates and other quality assurance/quality control (QA/QC) samples as outlined in Section 4.5.2 below.

4.1 Field Documentation

Staff will document all field readings, observations and sample locations in a logbook designated for this project. The field book will be a bound book permanently assigned to this project. ***NORTECH*** will also use field forms for safety and a camera to document site conditions and complement the reporting. All logbooks and field form entries should be printed legibly using ink and a copy of the entries will be included with the reporting. All field forms will be completed in full on a daily basis as appropriate.

4.2 Site Preparations

This work will not involve permanent closure, removal or disposal of the UST system. Contamination has been previously documented associated with the AST farm, piping, and dispenser area. This work will focus on determining the risk of exposure to historical releases of fuel at the Site and collect information sufficient to provide recommendations for future corrective action.

Before field work begins, ***NORTECH*** will coordinate with GTC representatives to locate onsite underground utilities and clarify property boundaries. All precautions will be taken to ensure that utilities will be identified to the extent possible prior to advancing exploration trenches. All noted areas will be flagged or marked to ensure that excavation activities do not encounter buried utilities and remain on GTC property.

NORTECH staff will inspect the property upon arrival for surface staining or other visual signs of contamination. Areas that are identified will be marked with flag or stake for future excavation if hand boring or hand-dug holes indicate the potential for significant release in that area. Field screening will be completed as described below.

The tanks will be dipped to determine the level of product liquid that remains in the tanks, and recommend that it be removed prior to, or after our assessment activities, as appropriate. Care will be taken to avoid the generation of static electricity during work, and grounding and/or

bonding will be completed if determined necessary. No work or excavation encountering either tank is anticipated.

There will be no dewatering expected for this project. The location of the riser pipes for each tank and any associated piping (if found) will be documented. The sizes of the two USTs are estimated to be between 5,000 gallons and 10,000 gallons. Since the tanks will not be removed nor disturbed, inerting the tanks is not required.

4.3 Trenching

NORTECH proposes to investigate impacted soils at the Site via excavation of soils using a backhoe provided by GTC. Hand tools may be used as necessary for sampling in areas where heavy equipment is not safe or appropriate (e.g., around utilidors, pipes, or adjacent to structures, as appropriate). ***NORTECH*** will field screen soils during excavation in order to guide the direction and depth of soil excavation. ***NORTECH*** will collect soil field screening samples from both clean and impacted soils in accordance with ***NORTECH***'s standard operating procedure, and at the estimated number of samples summarized in Table 2 below.

Initial exploration will begin by removing soil overlying each UST to determine the ends of the tanks. Once this is determined, additional trenching along the sides and ends can be completed. This will also allow a better assessment of the size of the tanks.

Exploration trenches will be advanced within 5 feet of the edge of each tank, surrounding each tank system. The excavations will extend to the extent practicable with the available equipment and soil will be removed and stockpiled adjacent to each trench on 6-mil liner. Field screening samples will be collected from the soil as it is removed to determine the approximate range of concentrations with depth. The final samples selected for laboratory analyses will include the samples with the greatest field screening reading in the trench, or the sample from the base of the excavation.

If excavation of impacted soils ceases prior to clean limits being achieved, ***NORTECH*** will document the reason for ceasing excavation as well as the location of impacted soils left in place in the field notes. After collection of field screening and laboratory samples from the final limits of the excavation, the excavation will be backfilled even to the surrounding ground surface using the same material from the excavation, returning it to the approximate depth from which it was removed. No open holes will remain on the Site.

Excavation of soils will continue until one of the following is encountered:

- Excavation has extended to the extent practicable for the equipment
- Concern for a structure's foundation, or close proximity to electrical, water, or sewer conduits
- Excavation encounters a perceived confining layer or permafrost
    - Excavation past the depth of the confining layer would create a preferential pathway for contamination to reach groundwater
- Field screening indicates clean limits have been achieved
- The excavation has reached the depth of groundwater

Trenches will be advanced elsewhere on the Site to investigate the extent of petroleum releases that may have originated from the AST farm, piping, dispensers, or other fuel storage.

Investigation may include hand borings or trenching, as determined appropriate to fulfill project objectives.

Material likely to be below applicable ADEC Method 2 soil cleanup levels may be selected for laboratory testing to calibrate field screening across the site. A range of samples will be selected to include the highest and average field screening results.

4.4 Field Screening

During the advancement of the exploratory trenches, field screen samples will be collected from the excavator bucket (if determined safe to do so) or from the pile of material derived from the excavation, representative of the preferred location and depth. Field screen soil samples will be evaluated using a PID and the headspace method described in the ***NORTECH*** *PID Field Screening Standardized Methodology* (Appendix 2), which is designed to meet the requirements of the DEC FSG. A MiniRAE 3000 hand-held PID will be used to screen soils for VOCs.

Calibration will be performed in accordance with the manufacturer's specifications. If background air contamination is encountered, it will be zeroed out by performing the calibration in an alternate location without contamination, or by utilizing uncontaminated calibration air. The calibration of the PID will be checked at the beginning and end of each day and at least every four hours during continuous use. Calibration and calibration checks will also be recorded in the field log.

Excavated material that field screens under 20 ppm on the PID will be considered clean for purposes of our documentation, but analytical sampling will be collected to help correlate these results in areas suspected of both GRO and DRO impacts. Soils that field screen above 20 ppm, or visual or olfactory cues indicate are impacted by petroleum (e.g., a petroleum sheen or strong petroleum odor is present) will be documented as contaminated. Aged and weathered diesel petroleum may not always show volatile readings with a PID; however, both USTs reportedly contained gasoline and the PID should be a good field screening tool.

Headspace samples will be collected using disposable gloves from freshly uncovered soil from the sample location (either excavator or temporary spoils pile). A small clean zip lock bag will be partially filled (one-third to one-half) and vapors allowed to develop for at least 10 minutes but no longer than one hour. The bag will be shaken for 15 seconds at the beginning and end of headspace development to assist volatilization. The temperature of the headspace will be warmed to at least 40 degrees Fahrenheit (approximately 5° Celsius).

After headspace development, the PID probe will be inserted to a point about one-half the headspace depth with the highest meter reading recorded (approximately two to five seconds after probe insertion). The headspace reading will have a note accompanying if erratic meter response occurs at high organic vapor concentrations or conditions of elevated headspace moisture. All soil will be managed adjacent to the trench from which it was removed, and immediately returned to the trench following sample collection.

The QEP will field screen exploratory trench excavations and associated temporary stockpiles. Field screening will occur during advancement and at final limits based on the following estimated locations/frequencies:

Table 2 - Estimated Number of Screening and Laboratory Samples

Location	Rationale	# PID Field Screening	Analyses	# of Lab Samples
Tank 4 Sidewalls	Per regulation for in-place closure for tank < 250 sf	4	GRO, BTEX, PAH (naphthalene)	2
Tank 5 Sidewalls	Per regulation for in-place closure for tank < 250 sf	4	GRO, BTEX, PAH (naphthalene)	2
Visible pipelines	Every 20 feet, if present	2 - 4	GRO, BTEX, PAH (naphthalene)	1-2
Dispensing area	Per regulation and to evaluate releases during refueling (located just south of tanks)	2		2
AST Farm area	Evaluate the extent of previously identified releases. Estimate 8 trenches to be advanced	16 - 32	DRO/RRO, GRO/BTEX, PAH	6
Additional areas of concern	Expand the area of assessment to meet the needs of the project objectives	8	TBD	TBD

Note: Additional field screening and sampling will be predicated on the results of field screening and additional trenching to delineate the extent of potential subsurface impacts.

4.5 Soil Sampling

Soil samples will be collected as part of trenching activities (field screening and laboratory) and will be collected as grab samples (not composited) within a soil horizon at the area most likely to be contaminated, such as on top of confining layers, at the base of more porous layers, at the GW interface, or along any other preferential pathways identified in the field. Locations of samples will be marked in the field and documented in drawings.

4.5.1 Soil Sample Procedures

Samples will be collected in accordance with ***NORTECH**'s Soil Sample Collection, Field Procedure – Grayling Native Store* **(**May 2023) included in Appendix 2, and in accordance with this work plan. Where there is a discrepancy between the two documents, the procedures identified in this WP will take precedence. For volatile samples, 2-6 inches of soil will be removed immediately before sample collection to minimize the loss of volatiles. Samples will be collected in real time and excavations will not be left open prior to sample collection. Samples from disturbed soil fallen into the bottom of the trench excavation will not be collected. Soil samples will be collected from the center of the bucket, away from the bucket sides, with at least six inches of soil removed immediately before collection.

Soil samples will be collected using containers received from the laboratory. The laboratory containers and preservatives will comply with Table 1 Part A and B of the UST Procedures Manual. Unused disposable gloves will be worn to collect samples. Gloves will be changed between sample collections. Sample containers will be filled quickly, and immediately preserved as necessary (VOCs). VOC samples will be collected in pre-labeled, pre-weighted jars, with a minimum of 50 grams of soil and immediately immersed in the methanol preservative. Samples will be collected in the order of volatility, quickly and adequately sealed, with rims cleaned before tightening the lid.

Teflon-lined screw caps provided by the laboratory will be used to seal the container. Containers will be labeled with laboratory-supplied labels, placed in a laboratory-supplied cooler, and immediately cooled to 4±2 °C. This temperature will be maintained through delivery

to the laboratory until samples are analyzed. Samples will be given unique identifications and shipped under laboratory Chain of Custody procedures. ***NORTECH*** will use SGS Environmental Services (SGS) in Anchorage, Alaska, an ADEC approved laboratory, as the analytical laboratory for all laboratory samples needed for this project.

4.5.2 Quality Control Samples

The primary tool used to assess data quality will be the ADEC Laboratory Data Review Checklist (LDRC). A LDRC will be completed for each laboratory work order and included in the report with the laboratory reports. The laboratory report case narrative will be reviewed against the ADEC LDRC for potential laboratory QA/QC issues. Required QA/QC will include:

- 10% laboratory blind field duplicate soil & GW samples (with a minimum of one per day)
- Five % laboratory supplied soil & GW trip blank (with a minimum of one per matrix)
- Five % equipment blank (GW)

Results of field duplicate pairs are a QC check on field sampling techniques and laboratory error. Precision, expressed as the relative percent difference (RPD) between field duplicate sample results, is an indication of consistency in sampling, sample handling, preservation, and laboratory analysis. Another QC check will be to compare the laboratory limit of quantitation (LOQ) and the lab detection limit (DL) with ADEC cleanup levels.

4.6 Groundwater Sampling

Temporary sampling points (TSP) were identified as a potential requirement for this project; however, the location of the nearest water body is more than 500 feet distant. No other water bodies have been observed and groundwater sampling is not anticipated as part of this field effort.

4.7 Investigation-Derived Waste Management

No soil waste will be generated as part of this field effort. All used liner and disposable sampling equipment supplies will be double-bagged and disposed with other nonhazardous waste in a trash receptacle.

5.0 REPORTING

NORTECH will provide draft and final copies of the Release Investigation reports for review by YRITWC, DEC and the community of Grayling. The reports will meet the requirements of DEC UST site assessment (18 AAC 78.090) and release investigation (18 AAC 78.235) requirements. Level II data deliverables will be requested from SGS. Each laboratory analytical report generated for the field assessment will be reviewed by ***NORTECH*** and DEC Laboratory Data Quality Review checklists will be prepared for each. A copy of each laboratory report and completed checklist will be included in the final report appendices.

The reports will be presented to all parties in complied PDF format and will generally adhere to the DEC recommended elements of a complete characterization report.

- Cover page and QEP documentation
- Table of contents
- Summary of acronyms and abbreviations
- Executive summary
- Introduction to the site and known history
- Tank owner and site information
- A summary of all field work and sample locations
- Analytical data results, observations, and findings
- Recommendations for remedial techniques that may be applied
- Proposed cleanup levels for the site
- A quality assurance summary of the data
- Conclusions and recommendations for further action, as appropriate
- Appropriate tables, figures, and photographs
- All necessary appendices to meet regulatory reporting requirements

In addition, ***NORTECH*** will complete the '*Site Assessment and Release Investigation Summary* Form' and include it with the report. It was also requested that the EPA's '*All Appropriate Inquiries Rule: Reporting Requirements Checklist for Assessment Grant Recipients,'* be completed as well. (These forms are included in Appendix 3). This will be included in the reporting. We will also coordinate with YRITWC and stakeholders to determine how the findings intersect with the future use of the site. This may include a discussion of closing the tanks in place, removal, construction on or adjacent to the site, or providing further insight as to long-term management requirements.

6.0 LIMITATIONS

The scope of work outlined in this work plan provides a framework for evaluating potential petroleum impacts resulting from historical above and underground fuel storage and dispensing. The methods and locations described herein will provide a basis for conducting the field assessment and meeting project objectives but may change depending on field conditions. The extent of subsurface impacts may vary from those anticipated based upon prior investigations therefore, ***NORTECH*** may deviate from the approved scope of work. In the event a deviation is deemed necessary, efforts will be made to coordinate with YRITWC staff and the DEC project manager to keep them informed. All deviations and the supporting rationale shall be well documented in field notes and in the final reporting.

7.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

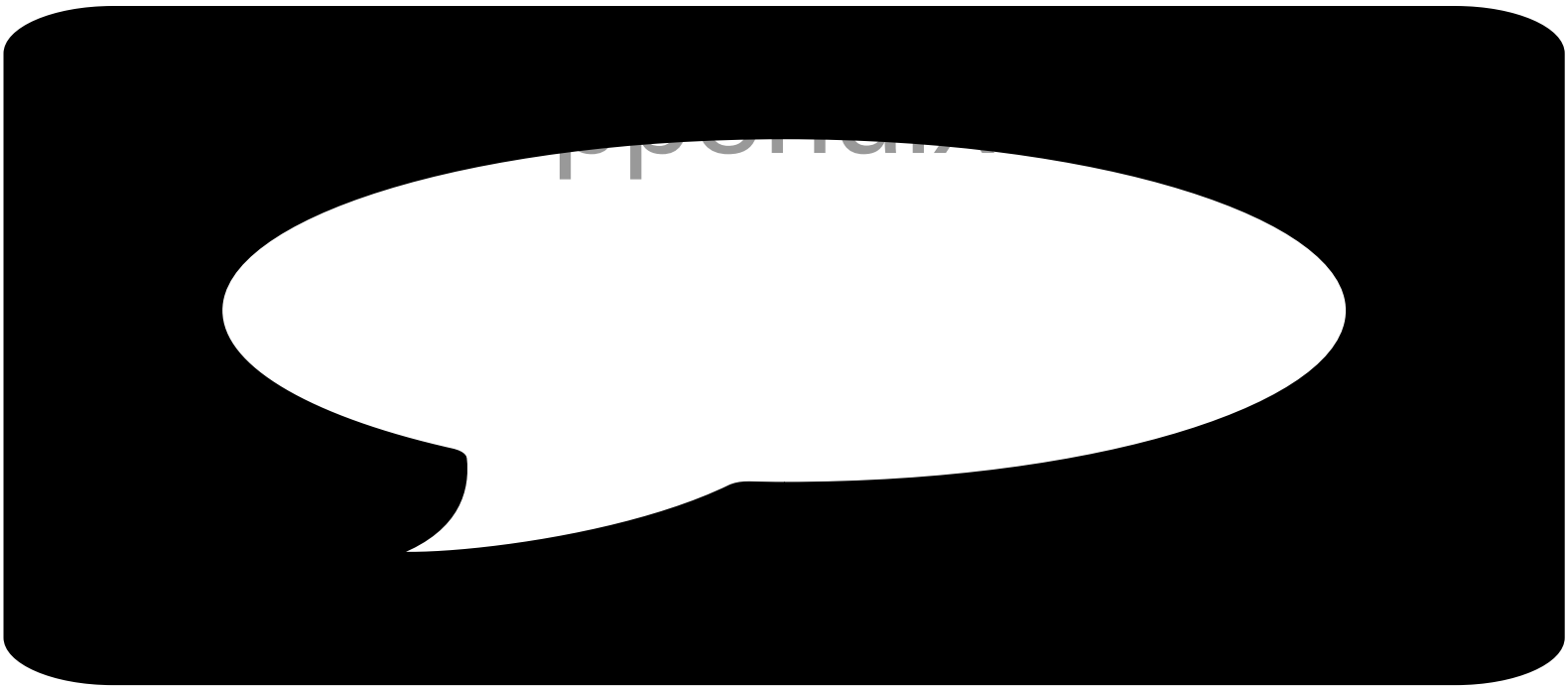
John Carnahan of ***NORTECH*** holds a B.S. Degree in Geology and an M.S. in Environmental Quality Science. He is a Qualified Environmental Professional (QEP) as defined in 18AAC75.333 and has more than three decades of experience managing contaminated sites and brownfield investigations across Interior Alaska as both regulator and consultant. Mr. Carnahan spent more than 20 years with the DEC, working several years in the UST Program, three years as the Manager of Field Operations in Interior and Southeast Alaska, 10 years overseeing the development of the DEC Brownfield Program, and 5 years overseeing DoD cleanups in Northern Alaska. He specializes in brownfield revitalization projects and helping communities address environmental issues, working to identify and achieve reuse objectives. He has developed scopes of work, managed contracts and maintained oversight of scope and budget on more than 100 brownfield and state-owned site assessments/cleanups across Alaska.

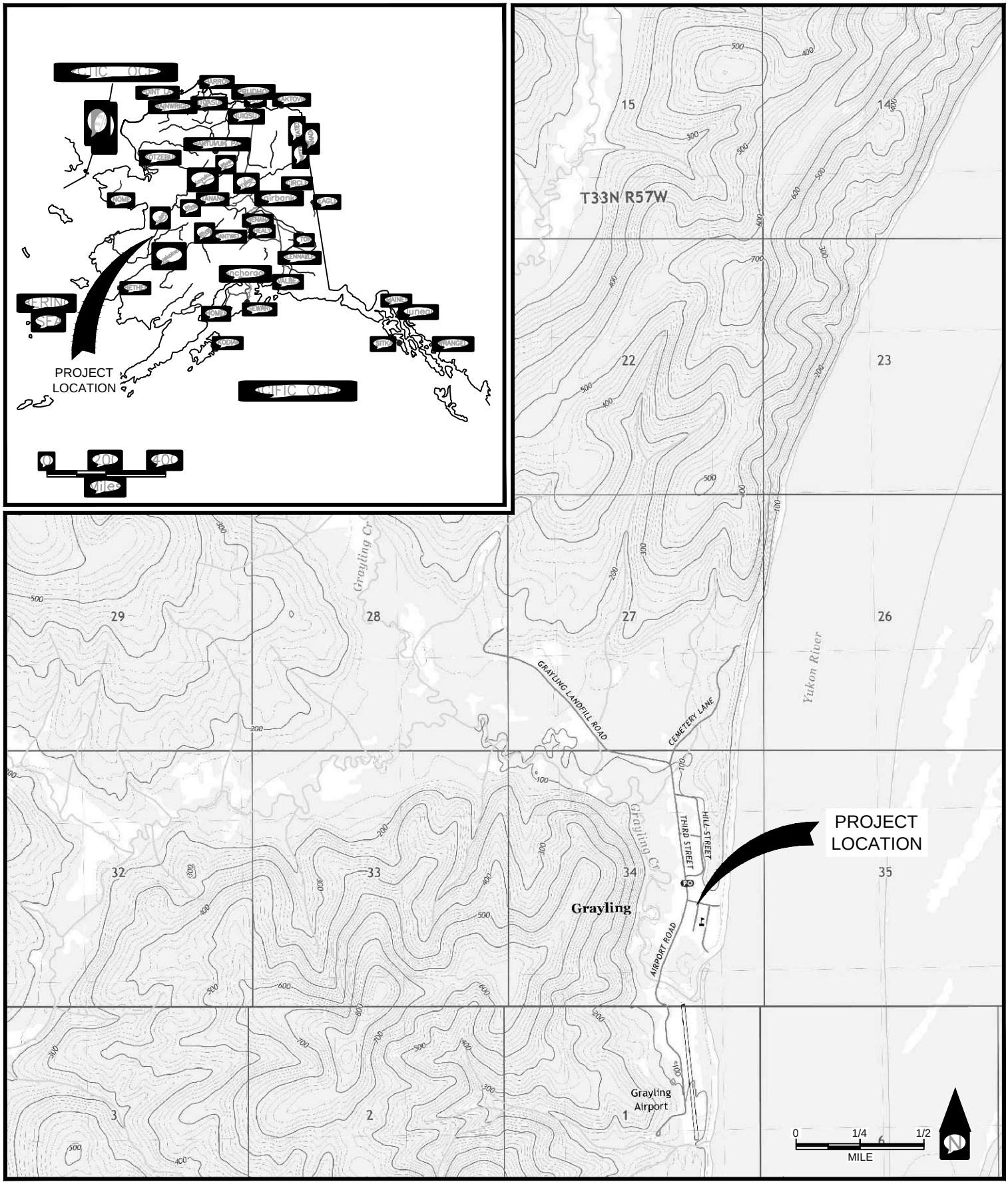
Peter Beardsley, PE, Environmental Engineer of ***NORTECH*** is the Contract Manager and has contractual responsibility for the Grayling project. Peter has over 23 years of experience in environmental engineering design, data analysis, and fieldwork. Peter has designed and/or administered a wide range of environmental projects, including onsite and off-site remediation projects across the state. He also has experience conducting asbestos, lead-based paint, and hazardous materials investigations, spill prevention countermeasures and control (SPCC) and storm water pollution prevention plan (SWPPP) compliance audits, and occupational safety audits. He has extensive project management and field experience in urban and rural Alaska, including multiple projects in the Fairbanks/North Pole area, Alakanuk, Marshall, Kaktovik, Coldfoot, and other villages.

John Carnahan, Project Manager
Sr. Environmental Scientist

8.0 References

- Alaska Energy Authority, Community Profile: Grayling.
- Chilkat Environmental, Phase I Environmental Site Assessment, Former Naïve Store Tank Farm, Grayling, Alaska, Nov 2012.
- DEC Contaminated Sites Database Search: https://dec.alaska.gov/Applications/SPAR/PublicMVC/CSP/SiteReport/3373
- DEC Field Sampling Guidance, January 2022
- DEC CIAP Wear Trip Report, Grayling, Sept 2013.
- DEC Underground Storage Tank Database Search: https://dec.alaska.gov/Applications/SPAR/PublicUST/USTSearch/
- Shannon & Wilson, Inc., Site Reconnaissance, Abandoned Bulk Fuel Storage Facilities, Village of Grayling, Alaska, Nov 2017.





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ENVIRONMENT, ENERGY, HEALTH & SAFETY CONSULTANTS
2400 College Road, Fairbanks, AK. 99709, 907-452-5688
3105 Lakeshore Dr., Anchorage, AK. 99517 907-222-2445
5438 Shaune Dr., Juneau, AK. 99801 907-586-6813

Location Map

Native Store UST Investigation

Grayling, Alaska

SCALE: As Shown	FIGURE: 1
DESIGN: JBC	
DRAWN: SPH	
PROJECT NO: 23-1009	
DWG: 231009(gray)a	
DATE: 07/26/2023	

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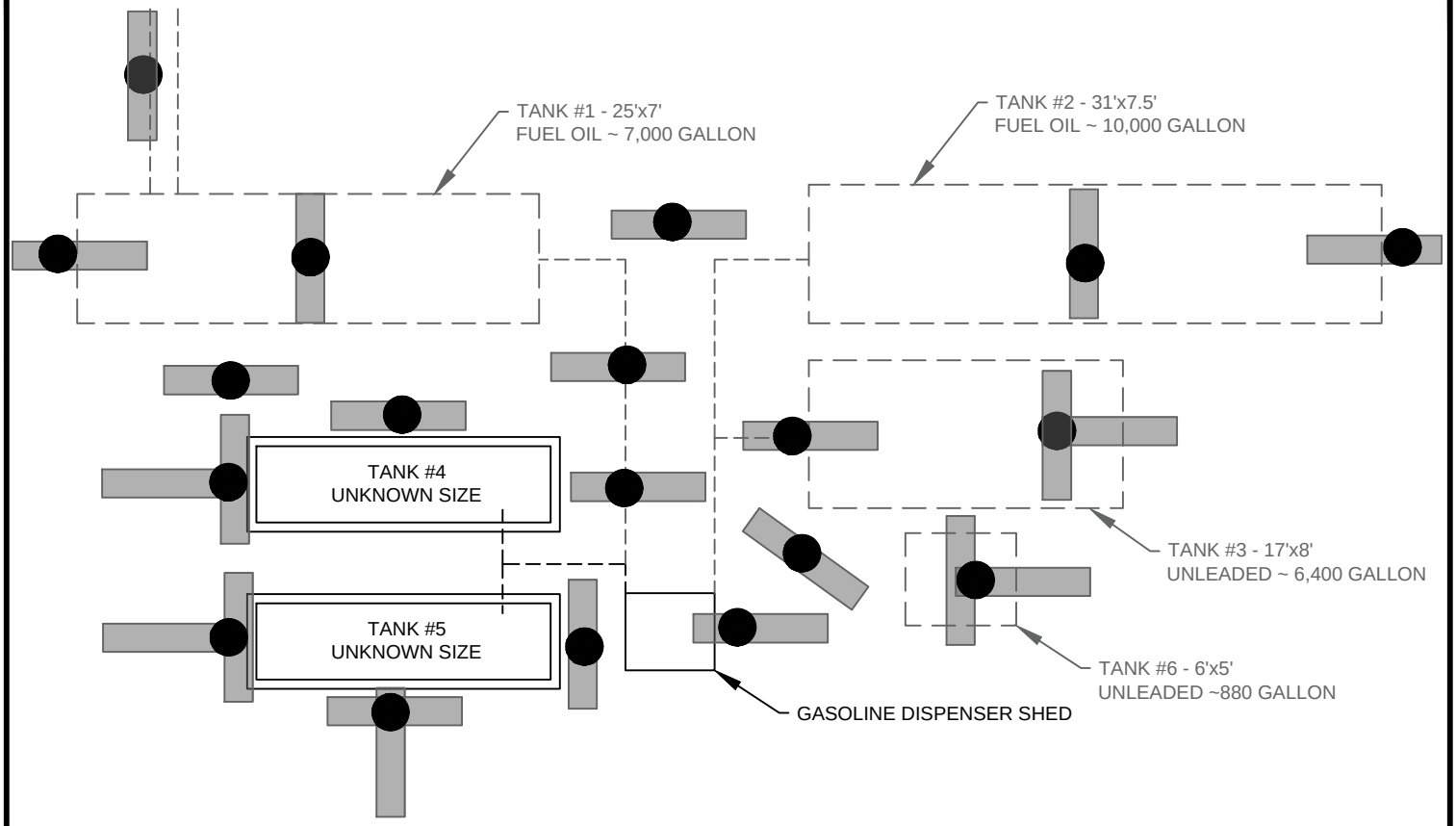
2400 College Road, Fairbanks, AK. 99709, 907-452-5688
3105 Lakeshore Dr., Anchorage, AK. 99517 907-222-2445
5438 Shaune Dr., Juneau, AK. 99801 907-586-6813

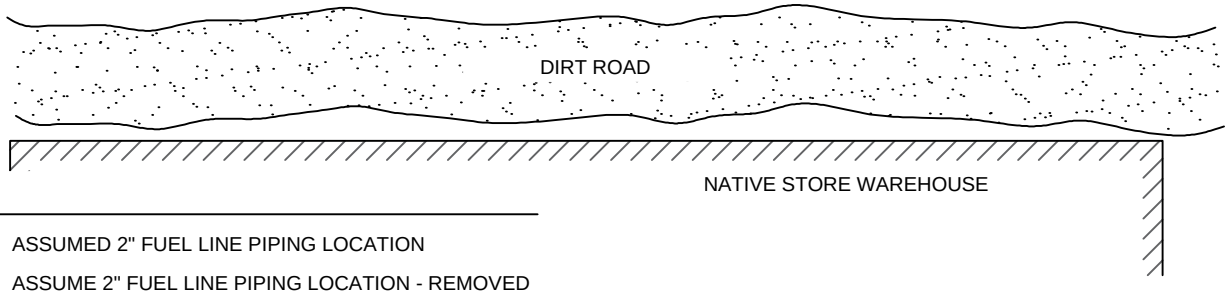
Village Map

Native Store UST Investigation

Grayling, Alaska

SCALE:	As Shown	FIGURE: 2
DESIGN:	JBC	
DRAWN:	SPH	
PROJECT NO:	23-1009	
DWG:	231009(gray)a	
DATE:	07/26/2023	





LEGEND

- ASSUMED 2" FUEL LINE PIPING LOCATION
- ASSUME 2" FUEL LINE PIPING LOCATION - REMOVED
- IN-PLACE UST
- REMOVED AST
- PROPOSED TRENCH LOCATION
- PROPOSED SOIL SAMPLE LOCATION

N

NOTE: TANKS #1 & #2 WERE RIVETED RAIL CARS. TANK #3 WAS A WELDED STEEL TANK MOUNTED ON LOGS.

0 5 10
FEET

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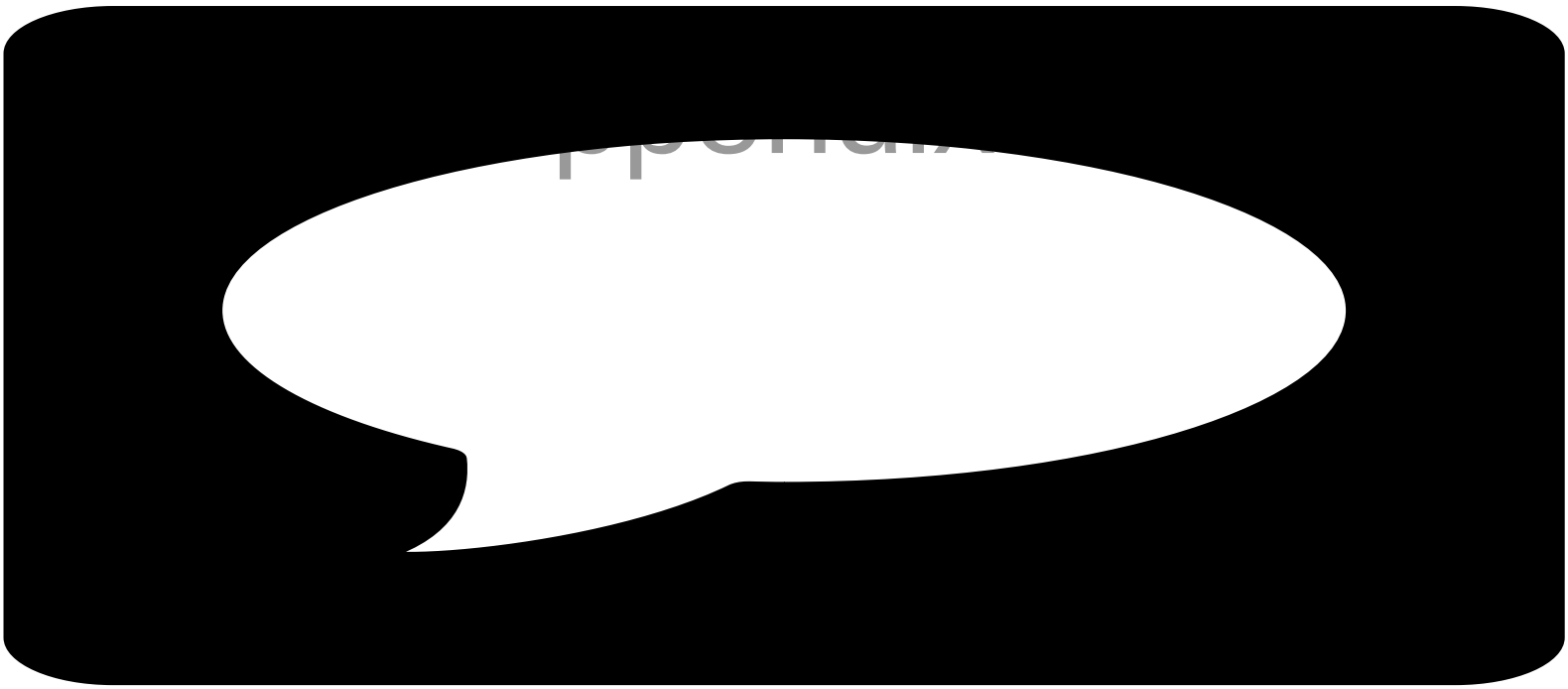
ENVIRONMENT, ENERGY, HEALTH & SAFETY CONSULTANTS
2400 College Road, Fairbanks, AK. 99709, 907-452-5688
3105 Lakeshore Dr., Anchorage, AK. 99517 907-222-2445
5438 Shaune Dr., Juneau, AK. 99801 907-586-6813

Site Map and Proposed Trenching & Sample Locations

Native Store UST Investigation

Grayling, Alaska

SCALE:	As Shown	FIGURE: 3
DESIGN:	JBC	
DRAWN:	SPH	
PROJECT NO:	23-1009	
DWG:	231009(gray)a	
DATE:	07/26/2023	



SOIL SAMPLE COLLECTION
Field Procedure – Grayling Native Store

Version 1.0
May 16, 2023

This document describes general and specific procedures, methods and considerations to be used and observed when collecting soil samples for field screening or laboratory analysis. It is the intent of this Field Procedure to meet the requirements of current *ADEC Field Sampling Guidance* at the time of sampling.

Objectives

- Provide for the collection of the most representative soil sample for laboratory analyses.

Associated Methods and Materials

1. Field documentation sheets as appropriate (Safety Meeting, Purge Data Sheet, COC, etc.)
2. Field sampling kit (tools, decontamination equipment, replacement parts, etc.)

Equipment

1. Sampling tools as appropriate for the sampling approach (Field Sampling Kit)
2. Appropriate Personal Protective Equipment for site conditions

Procedures

1. Precautions for Trace Contaminant Soil Sampling

a. A clean pair of new, non-powdered, disposable gloves will be worn each time a different sample is collected, and the gloves should be donned immediately prior to sampling. The gloves should not come in contact with the media being sampled and should be changed any time during sample collection when their cleanliness is compromised.

b. Sample containers with samples suspected of containing high concentrations of contaminants shall be handled and stored separately.

c. All background samples shall be segregated from obvious high-concentration or waste samples. Sample collection activities shall proceed progressively from the least suspected contaminated area to the most suspected contaminated area. Samples of waste or highly contaminated media must not be placed in the same ice chest as environmental (i.e., containing low contaminant levels) or background samples.

d. If possible, one member of the field sampling team should take all the notes and photographs, fill out tags, etc., while the other member(s) collect the samples.

e. Samplers must use new, verified/certified-clean disposable or non-disposable equipment cleaned according to decontamination procedures (Field Procedure No. 2, March 10, 2021), for collection of samples for trace metals or organic compound analyses.

2. Homogenization

a. If sub-sampling of the primary sample is to be performed in the laboratory, transfer the entire primary sample directly into an appropriate, labeled sample container(s). Proceed to step (d).

b. If sub-sampling the primary sample in the field or compositing multiple primary samples in the field, place the sample into a stainless-steel container and mix thoroughly. Each aliquot of a composite sample should be of the same approximate volume.

c. All soil samples must be thoroughly mixed to ensure that the sample is as representative as possible of the sample media. Samples for VOC analysis are not homogenized. The most common method of mixing is referred to as quartering. The quartering procedure should be performed as follows:

   i. The material in the sample pan should be divided into quarters and each quarter should be mixed individually.

   ii. Two quarters should then be mixed to form halves.

   iii. The two halves should be mixed to form a homogenous matrix.

d. Place the sample into an appropriate, labeled container(s) by using the alternate shoveling method and secure the cap(s) tightly. The alternate shoveling method involves placing a spoonful of soil in each container in sequence and repeating until the containers are full or the sample volume has been exhausted. Threads on the container and lid should be cleaned to ensure a tight seal when closed.

3. **'Dressing' Soil Surfaces** - Any time a vertical or near vertical surface is sampled, such as achieved when shovels or similar devices are used for subsurface sampling, the surface should be dressed (scraped) to remove smeared soil to allow for sample collection of no less than 6 inches, but preferably 12 inches. This is necessary to minimize the effects of contaminant migration interferences due to smearing of material from other levels.

4. **Soil Sample Collection for Volatile Organic Compounds (VOC) Analysis** - If samples are to be analyzed for VOCs, they will be collected in a manner that minimizes disturbance of the sample. Samples for VOC analysis are not homogenized. Preservatives may be required for some samples with certain variations of Method 5035. Consult the method or the principal analytical chemist to determine if preservatives are necessary.

   Core type samplers are preferred to reduce loss of volatiles during sampling. A stainless-steel spoon or scoop may also be used. The sampling tools will be called out in the field sampling work plan.

   a. Collection of AK101 or VOC samples – VOCs will be preserved in the field with methanol.

      i. Dress the sampling area to enable collection of samples at a depth of 6 -12 inches below present exposed face.

      ii. Collect a minimum of 25 grams of soil with minimum disturbance directly into tared 4-oz or larger jar with a Teflon®-lined septum fused to the lid. Interim storage/containers (e.g., re-sealable polyethylene bags) are not allowed.

iii. Immediately after collection, if the jars are not pre-preserved with methanol, carefully add 25-mL aliquot of methanol (methanol must include a surrogate for method AK101) until the sample is submerged and then seal the lid on the jar. This step must be completed as quickly as possible, within approximately 10 seconds of placing the soil in the sample jar.

iv. For low level VOC analysis, place a five-gram soil sample into a 40 mL vial with 10 mL of deionized water. Quickly brush any soil off the vial threads and immediately seal the vial and freeze the sample to less than 0˚C. The sample vial should be placed on its side while being frozen and transported to the laboratory.

v. Do not place tape, including evidence tape, on the sample container directly.

vi. Cool and retain samples at less than 6°C except for frozen low-level VOC samples.

vii. Collect a sample of the same material from the same location in an unpreserved jar for percent moisture determination.

viii. Collect appropriate field and laboratory quality control samples (see workplan for sampling requirements).

ix. Collect sample parameters in the following order:

1. Volatile Organic Compounds (VOCs, AK101 GRO, BTEX),
2. Semi-volatile organic compounds (SVOCs); including pesticides, herbicides, DRO, RRO, and PCBs,
3. Total Organic Carbon (TOC), and
4. Metals.

x. Soils that are frozen in-situ (< -7˚C) may not be required to be preserved immediately for VOC analysis as specified above. In these cases, the soil must be maintained frozen (< -7˚C) in appropriate containers and sub-sampled and preserved as soon as practical. The soil must not be thawed prior to sub-sampling and preservation. Sub-sampling and preservation must follow the procedure specified above.

5. **Manual Sampling Methods** – These methods are used primarily to collect surface soil samples (within 2 feet of surface). Remove near surface matted root zone, gravel, concrete, etc., prior to sample collection.

a. Spoons/Scoops – May be used for to depths of approximately 6 inches from the exposed area. The use a core sampler may preclude volatile loss when sampling for volatiles.

b. Hand Augers - Hand augers may be used to advance boreholes and collect soil samples in the surface and shallow subsurface intervals. Typically, 4-inch stainless steel auger buckets with cutting heads are used. The bucket is advanced by simultaneously pushing and turning using an attached handle with extensions (if needed).

i. Surface soil sampling – Advance bucket to appropriate depth, remove and transfer contents to homogenization container, unless sampling for volatiles whereby the sample is collected directly from the auger bucket and retained in accordance with volatile sampling procedures.

ii. Subsurface soil sampling - Auger holes are advanced one bucket at a time until the sample depth is achieved. When the sample depth is reached, the bucket used to advance the hole is removed and a clean bucket is attached. The clean auger bucket is then placed in the hole and filled with soil to make up the sample and removed. Transfer contents to homogenization container, unless sampling for volatiles whereby the sample is collected directly from the auger bucket and retained in accordance with volatile sampling procedures.

6. **Backhoe Sampling Method** – Backhoes may be used in the collection of surface and shallow subsurface soil samples. The trenches created by excavation with a backhoe offer the capability of collecting samples from very specific intervals and allow visual correlation with vertically and horizontally adjacent material. If possible, the sample should be collected without entering the trench or excavation. Samples may be obtained from the trench wall or they may be obtained directly from the bucket at the surface. The following sections describe various techniques for safely collecting representative soil samples with the aid of a backhoe.

   a. **Scoop and Bracket Method** - If a sample interval is targeted from the surface, it can be sampled using a stainless-steel scoop and connecting bracket.

      i. First a scoop and bracket are affixed to a length of conduit or extension pole and is lowered into the backhoe pit.

      ii. Use the scoop and scrape away the soil comprising the surface of the excavated wall to a sampling depth of 6 – 12 inches. This material likely represents soil that has been smeared by the backhoe bucket from adjacent material.

      iii. After the smeared material has been scraped off, the original stainless-steel scoop is removed and a clean stainless-steel scoop is placed on the bracket.

      iv. Use the clean scoop to remove sufficient volume of soil from the excavation wall to make up the required sample volume.

   b. **Direct from Bucket Method** - It may be effective to collect soil samples directly from the backhoe bucket at the surface. To ensure representativeness, it is important to dress the surface to be sampled by scraping off any smeared material that may cross-contaminate the sample prior to sample collection. Remove 6 – 12 inches of surface cover prior to sample collection. Collect sample parameters in the following order:

      i. Volatile Organic Compounds (VOCs, AK101 GRO, BTEX),

      ii. Semi-volatile organic compounds (SVOCs); including pesticides, herbicides, DRO, RRO, and PCBs,

      iii. Total Organic Carbon (TOC), and

      iv. Metals.

7. **Direct Push Sampling Methods** – For the collection of samples within a thin-walled liner. Ensure that the surface is free of concrete, gravel, asphalt prior to sample collection.

   a. Special Considerations

      i. Liners are available in brass, stainless steel, cellulose acetate butyrate (CAB), polyethylene terephthalate glycol (PETG), polyvinyl chloride (PVC) and Teflon®.

For most field investigations, the standard polymer liner material for a sampling tool will be acceptable. When the study objectives require very low reporting levels or unusual contaminants of concern, the use of more inert liner materials such as Teflon® or stainless steel may be necessary and will be identified in the field sampling plan.

ii. Core catchers may be necessary to use if the material being sampled lacks cohesiveness. The suitability of the material will be evaluated prior to use.

iii. The cutting shoe and piston rod point must be decontaminated between each sample location using the appropriate field decontamination procedure. Additional components of the sample barrel, rods, drive head may be subject to an abbreviated cleaning to remove loose material between boreholes.

iv. Boreholes must be decommissioned after completion using 30% solids bentonite grout or pellets, poured from the surface and hydrated in lifts.

b. Large Bore Sampler

i. A solid barrel direct push sampler equipped with a piston-rod point assembly used primarily for collection of depth-discrete subsurface soil samples. The sample barrel is approximately 30-inches (762 mm) long and has a 1.5-inch (38 mm) outside diameter. The LB® sampler is capable of recovering a discrete sample core 22 inches x 1.0 inch (559 mm x 25 mm) contained inside a removable liner. The resultant sample volume is a maximum of 283 mL

ii. After the LB® sample barrel is equipped with the cutting shoe and liner, the piston-rod point assembly is inserted, along with the drive head and piston stop assembly. The assembled sampler is driven to the desired sampling depth, at which time the piston stop pin is removed, freeing the push point. The LB® sampler is then pushed into the soil a distance equal to the length of the LB® sample barrel. The probe rod string, with the LB® sampler attached, is then removed from the subsurface. After retrieval, the LB® sampler is then removed from the probe rod string. The drive head is then removed to allow removal of the liner and soil sample.

c. Macro-Core Soil Sampler

i. The Macro-Core® (MC) sampler is a solid barrel direct push sampler equipped with a piston-rod point assembly used primarily for collection of either continuous or depth-discrete subsurface soil samples. The standard MC® sampler has an assembled length of approximately 52 inches (1321 mm) with an outside diameter of 2.2 inches (56 mm). The MC® sampler is capable of recovering a discrete sample core 45 inches x 1.5 inches (1143 mm x 38 mm) contained inside a removable liner. The resultant sample volume is a maximum of 1300 mL. The MC® sampler may be used in either an open-tube or closed-point configuration.

d. Dual Tube Soil Sampling

i. The Dual Tube 21 allows for collecting continuous core samples of unconsolidated materials from within a sealed outer casing of 2.125-inch (54 mm) OD probe rod. The samples are collected within a liner that is threaded onto the leading end of a string of 1.0-inch diameter probe rod. Collected samples have a volume of up to 800 mL in the form of a 1.125-inch x 48-inch (29 mm x

1219 mm) core. Use of this method allows for collection of a continuous core inside a cased hole, minimizing or preventing cross-contamination between different intervals during sample collection. The outer casing is advanced, one core length at a time, with only the inner probe rod and core being removed and replaced between samples. If the sampling zone of interest begins at some depth below ground surface, a solid drive tip must be used to drive the dual tube assembly and core to its initial sample depth.

8. **Split Spoon Sampling/Drill Rig Methods** – Split spoons are split cylindrical barrels that are threaded on each end. The leading end is held together with a beveled threaded collar that functions as a cutting shoe. The other end is held together with a threaded collar that serves to attach the spoon to the string of drill rod.

   A drill rig is used to advance a borehole to the target depth. The drill string is then removed and a standard split spoon is attached to a string of drill rod. Split spoons used for soil sampling must be constructed of stainless steel and are typically 2.0-inches OD (1.5-inches ID) and 18-inches to 24-inches in length. Other diameters and lengths are common and may be used if constructed of the proper material. The following general procedures are used to obtain the sample.

   a. After the spoon is attached to the string of drill rod, it is lowered into the borehole.
   b. The safety hammer is then used to drive the split spoon into the soil at the bottom of the borehole.
   c. After the split spoon has been driven into the soil, filling the spoon, it is retrieved to the surface, where it is removed from the drill rod string and opened for sample acquisition.
   d. Disregard the top 3 inches of the sample, and collect potential samples from individual layers, or across length of exposed core, depending on field work plan objectives.
   e. Collect field screening samples in similar manner order to record associated PID readings.
   f. Discard samples not submitted for laboratory analyses.

References

1. 18 AAC 75 Oil and Other Hazardous Substances Pollution Control (November 2021)
2. 18 AAC 78 Underground Storage Tanks (September 2019)
3. ADEC Division of Spill Prevention and Response, Contaminated Sites Program, Field Sampling Guidance (January 2022)
4. ADEC Underground Storage Tanks Procedures Manual Guidance for Treatment of Petroleum-Contaminated Soil and Water and Standard Sampling Procedures (March 2017)
5. Region 4 USEPA Science and Ecosystems Support Division, Operating Procedure, Soil Sampling, SESDPROC-300-R3 (August 2014)

Attachments

1. Sample Collection Reference Guide – Soil, Sediment, Sludge, Fill Material

Analytical SOP Requirements Tables
Sample Collection Reference Guide – Soil, Sediment, Sludge, Fill Material

Parameter	Analytical Method[1]	Container Description (Minimum) [Clear glass may be substituted for amber if samples are protected from exposure to light]	Preservation/ Holding Time
Gasoline Range Organics**	AK101*	4 oz. amber glass, TLS	Methanol preservative, 0º to 6ºC / 28 days
Diesel Range Organics	AK102*	4 oz. amber glass, TLC	0º to 6ºC / 14 days to extraction, 40 days to analysis of extract
Residual Range Organics	AK103*	4 oz. amber glass, TLC	0º to 6ºC / 14 days to extraction, 40 days to analysis of extract
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)[4]	8021B or 8260D	4 oz. amber glass, TLS	Methanol preservative, 0º to 6ºC / 14 days
Volatile Organic Compounds (VOCs)[4]	8260D	4 oz. amber glass, TLS	Methanol preservative, 0º to 6ºC / 14 days
Volatile Aliphatic and Aromatic Petroleum Hydrocarbons (VPH)	NWTPH-GX	4 oz. amber glass, TLS	Methanol preservative, 0º to 6ºC / 14 days
Extractable Aliphatic and Aromatic Petroleum Hydrocarbons (EPH)	NWTPH-Dx	4 oz. amber glass, TLS	0º to 6ºC / 14 days to extraction, 40 days to analysis of extract
Dibromomethane 1,2-	8011 or 504.1 or 8260D	4 oz. amber glass, TLS	0º to 6ºC / 14 days to extraction, 40 days to analysis of extract
1,4-Dioxane[6]	8260D or 8260B	4 oz. amber glass, TLS	Methanol preservative, 0º to 6ºC / 14 days
Semi-volatile Organic Compounds (SVOC)	8270E	4 oz. amber glass, TLC	0º to 6ºC / 14 days to extraction, 40 days to analysis of extract
Polynuclear Aromatic Hydrocarbons (PAH)[2]	8270E or 8310	4 oz. amber glass, TLC	0º to 6ºC / 14 days to extraction, 40 days to analysis of extract
Fraction Organic Carbon	Lloyd-Kahn or 9060 or mod Walkley- Black	4 oz. amber glass, TLC	0º to 6ºC /14 days
Pesticides	8081B or 8270E	4 oz. amber glass, TLC	0º to 6ºC / 14 days to extraction, 40 days to analysis of extract
Herbicides	8151A	4 oz. amber glass, TLC	0º to 6ºC / 14 days to extraction, 40 days to analysis of extract
Polychlorinated Biphenyls (PCBs)[5]	8082A	4 oz. amber glass, TLC	0º to 6ºC /None, 40 days to analysis of extract (recommended)
Per-and Polyfluoroalkyl Substances (PFAS)	Consult with CS Program for Method, Container, and Holding Times[8]		

Parameter	Analytical Method[1]	Container Description (Minimum) [Clear glass may be substituted for amber if samples are protected from exposure to light]	Preservation/ Holding Time
Metals †	6010D or 6020B or 7000 series	100mL Wide mouth HDPE or amber glass jar[3], TLC	None / 6[7] months

Notes:
Several of the 7000 series methods have been deleted from SW846 but these methods may still be approved in a CSP site-specific work plan. Check the laboratory's approval status. The sampling and analysis of soil parameters for alternative cleanup level calculations is discussed in CSP technical memos located here: http://dec.alaska.gov/spar/csp/guidance_forms/csguidance.htm.

[1]Unless otherwise noted, all preparation and analytical methods refer to the most current of EPA's Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846.

[2]Naphthalene can be analyzed by 8021B or 8260D if naphthalene is the only PAH contaminant of concern.

[3]HDPE, High Density Polyethylene or amber glass sample collection bottles, certified clean for trace metals analysis.

[4]May be analyzed out of AK101 methanol preserved sample.

[5]PCBs must be prepared using extraction method 3540C or 3550C.

[6]High temperature sample preparation techniques by EPA Method SW-846 may be required to improve the recovery and achieve lower detection limits.

[7]If bioassays or toxicity testing is to be conducted with metals, then anoxia may need to be maintained, and analyses should occur within 24 hours after sample collection, unless the test method dictates otherwise. Consult the CSP Project Manager for more project specific guidance.

8Sampling and preservation considerations are discussed in a ITRC fact sheet located here: http://dec.alaska.gov/spar/csp/guidance_forms/csguidance.htm.

†Hexavalent Chromium can be analyzed with EPA methods 7199 (modified) or 7196A.

Table derived from 2019 ADEC Field Sampling Guidance

EQUIPMENT DECONTAMINATION
Field Procedure No. 2
Version 1.0
March 10, 2021

When possible, sufficient equipment should be transported to the field so that the investigation may be completed without decontamination. When not possible, this document describes general and specific procedures, methods and considerations to be used and observed when cleaning and decontaminating sampling equipment during the course of field investigation and remedial actions. Prior to mobilization to a site, it is expected that the types of contaminants have been evaluated to determine appropriate field cleaning and decontamination activities necessary. It is the intent of this Field Procedure to meet the requirements of current *ADEC Field Sampling Guidance* at the time of sampling.

Objectives

- Provide for the safe and efficient cleaning and decontamination of equipment in the field.
- Prevent potential for cross contamination during field activities.
- Prevent the transfer of site contamination to an offsite area through implementation of proper field cleaning techniques.

Associated Methods and Materials

1. Field Documentation
2. Field documentation sheets as appropriate (Safety Meeting, Purge Data Sheet, COC, etc.)

Equipment

1. Field sampling kit (tools, decontamination equipment, replacement parts, etc.)
2. Safety kit (phone, gloves, goggles, hard hat if appropriate, emergency medical kit, etc.)

Procedure

1. Decontamination Areas

a. Select an appropriate area to conduct decontamination activities, such as sampling and drilling equipment, that is presumed free of contamination.

b. A temporary pad Use a liner placed below the decontamination area if water used in decontamination processes is not to be captured in other containers.

c. Water should be removed from the pad frequently.

d. The decontamination area should be deactivated upon completion of project, and the ground surface inspected, and sampled if there is indication of materials leaking through the pad.

2. Sampling Devices used during/for Collection of Trace Organic and Inorganic Compounds

The following procedures should be used for sampling equipment or components of equipment that come into contact with the sample (i.e., water level indicators, interface probes).

a. An optional detergent wash step may be useful to remove gross dirt and soil (i.e., Liquinox OR Simple Green).

b. Clean with tap water and detergent using brush, if necessary, to remove particulate matter and surface films.

c. Rinse thoroughly with tap water.

d. Rinse thoroughly with organic-free or deionized water and place on foil-wrapped surface to dry.

e. Wrap dry equipment with aluminum foil or bag in clean plastic.

3. Down Hole Pump Equipment

a. Purge Pump Cleaning for Sampling Groundwater

i. Disconnect and discard previously used sample tubing and remove check valve tubing adapters and clean separately using brush, detergent and tap water, followed with deionized water rinse.

ii. Prepare and Prepare and fill three containers large enough to hold the pump and one to two liters of solution. An array of 2' long 2" PVC pipes with bottom caps is a common arrangement. The solutions should be changed at least daily and contain the following decontamination solutions:

a. Container #1, a tap water/detergent washing solution. An additional pre-wash container of Liquinox® may be used;

b. Container #2, a tap water rinsing solution; and

c. Container #3, a deionized or organic-free water final rinsing solution.

d. Choice of detergent and final rinsing solution for all steps in this procedure is dependent upon project objectives (analytes and compounds of interest).

iii. Place pump in Container #1 and circulate detergent water through pump, then turn pump off.

iv. Place pump in Container #2 and circulate tap water through pump, then turn pump off.

v. Place pump in Container #3 and circulate de-ionized water through pump, then turn pump off.

vi. Disconnect power and removed pump, and rinse exterior and interior of pump with fresh deionized water.

vii. Decontaminate power lead by washing with detergent and water, followed by tap water and deionized water rinses.

viii. Reassemble check valve and tubing adapters to pump, using Teflon tape to prevent galling of threads.

ix. Place pump and reel in clean plastic bag until next use.

b. Peristaltic Pumps

i. All pump equipment is either dedicated to a site or discarded. No decontamination of equipment is anticipated.

c. Other Pumps

i. Individual pumps may require specific techniques not documented in this Field Method. In those instances, the variance will be documented in the sampling plan associated with the use, until such time that this method is revised.

4. Downhole Drilling Equipment General Requirements

a. A steam cleaner or high-pressure hot water washer capable of generating 2500 pounds per square inch (psi) and producing hot water and/or steam, with a detergent compartment is preferred.

b. All equipment arriving at a site must have been properly cleaned prior to arriving onsite.

c. Daily inspections are necessary to ensure that oils, grease and hydraulic fluids are not leaking.

5. Field Decontamination of Drilling Equipment

a. Wash with tap water and detergent, using a brush if necessary to remove particulate material and surface films. Steam cleaning with detergent may alternatively be used, including interior of hollow-stem augers.

b. Drilling equipment that is cleaned should be stored on racks or clean plastic sheeting.

c. Rinse all augers, rods, screens, and split-spoon samplers with tap water.

6. **Field Decontamination of Direct Push Equipment**

a. All equipment that encounters sample media should be cleaned per Section 2 - Sampling devices used for trace organic and inorganic compounds.

b. All equipment that does not encounter the sample media and is cleaned in the field for reuse can be cleaned in general accordance with Section 5 - Field Decontamination of Drilling Equipment.

c. Stainless steel SP15/16 well screens require special care as the narrow slots are difficult to clean under even controlled circumstances and galvanic corrosion can release chrome from the screen surface. As soon as possible after retrieval, the screen slots should be sprayed from the outside to break loose as much material as possible before it can dry in place. To prevent galvanic corrosion, the screens must be segregated from the sampler sheaths, drive rods, and other carbon steel during return transport from the field.

References

1. 18 AAC 75 Oil and Other Hazardous Substances Pollution Control, as amended through October 27, 2018.
2. ADEC Division of Spill Prevention and Response, Contaminated Sites Program, Field Sampling Guidance, October 2019.
3. USEPA Region 4 Operating Procedure, Field Equipment Cleaning and Decontamination, SESDPROC-205-R3, December 18, 2015.

PID FIELD SCREENING
STANDARDIZED METHODOLOGY
Version 4
June 2019

Field Screening Equipment Description

A hand-held Air Monitor/Photoionization Detector (PID, PhotoVac 2020, MiniRAE, or similar) will be the instrument used to field screen the soils for total volatile organic contaminants. The PID is the field-screening instrument of choice as field screening with a PID allows for semi-quantitative real time (< 10 minutes) analysis as compared to some of the other field screening methods that either use qualitative analysis or are more sensitive to temperature, humidity and hydrocarbon concentration variations.

Additionally, the MiniRAE 3000 (and other PIDs) is intrinsically safe and approved for use in Class 1, Division 2, Groups A, B, C, & D Hazardous Locations and is rugged in construction. Headspace field screening by a PID involves measuring the concentration of vapors generated by the POL contaminants in soil. The PID yields semi-quantitative concentrations for soil gas in reference to a certified isobutylene gas standard. Important specifications of the MiniRAE PID are as follows:

Instrument:	MiniRAE -3000 PID
Detection Limit:	0.1 ppm
Response Time:	Less than 5 seconds
Calibration:	Certified Isobutylene Standard (nominal 100 ppm)
Operating Temperature Range:	32 to 105^{o}F (0 to 40^{o}C)

Field Screening Methodology

NORTECH proposes to use a PID for all soil field screening to be conducted during the characterization and remedial action effort in the following manner:

The headspace method of field screening will be used in general accordance with the ADEC Field Sampling Guidance (FSG), August 2017. Headspace screening consists of partially (33%-50%) filling a clean re-sealable bag with freshly uncovered soils to be field screened. The total capacity of the bag will not be less than 8 ounces (app. 250 ml).

The bag is closed, sealed and headspace vapors are allowed to develop for at least 10 minutes and not more than one hour. The bag will be agitated for approximately 15 seconds at the beginning and end of the headspace development period. The soil and headspace will be tested at a temperature of at least 40° F (5° C). A small opening will be made in the top of the bag and the PID probe will be inserted into the bag. Headspace vapors will be drawn from the center of the space above the soils and analyzed by the PID for total volatile organic compounds. The highest PID reading from each sample will be recorded in the project field notes for inclusion in the final report.

Calibration will be performed in accordance with the manufacturer's specifications. If background air contamination is encountered, it will be zeroed out by performing the calibration in an alternate location without contamination, or by utilizing uncontaminated calibration air. The calibration of the PID will be checked at the beginning and end of each day and at least every four hours during continuous use. Calibration and calibration checks will also be recorded in the field log.

Site Specific Contamination Level Classification

Headspace field screening is a method of quickly assessing total volatile organic contaminant concentrations in the field without the need for laboratory results. However, a correlation between PID field screening results and laboratory results is generally site specific. ***NORTECH***'s experience with recent heating oil releases is that results generally show a good relationship between PID and laboratory results. PID results at this site more than 20 ppm almost always exceeding the ADEC cleanup level for one or more heating oil COCs.

It should be noted that a PID may yield different responses based on various factors including: the soil matrix being tested, soil moisture content, and the volatility of contaminants that may be present. Based on the available data and experience, for this investigation the following contamination level classifications will be used:

- PID screening results between 0-20 ppm will be considered as clean.
- PID screening results >20 will be considered above background concentrations
    - Surface soil material will be manually or mechanically excavated to apparent clean limits through subsequent field screening.
    - Or will require laboratory analysis to confirm that no contamination is present above the established cleanup concentrations.

Site-specific Field Screening and Sampling Objectives

The site-specific field screening and sampling plan for this project is relatively simple. Field screening will be conducted at all known locations that had been impacted by contamination. Field screening will be conducted for primary purposes as indicated below:

1. To assess the areas suspected of having contaminated soil and to confirm the removal of the contaminated soil
2. To identify laboratory confirmation soil sampling locations
3. To characterize any additional excavated and stockpiled soil material for disposal purposes.

For the purposes of this document, the field screening approach is described below by the following areas of assessment:

- Excavated soil
- Stained areas
- Areas with odors
- Excavation limits

Accounting Office:
2400 College Rd
Fairbanks, AK 99709
907.452.5688
907.452.5694 Fax

♦

3105 Lakeshore Drive
Suite A106
Anchorage, AK 99517
907.222.2445
907.222.0915 Fax

♦

5438 Shaune Drive
Suite B
Juneau, AK 99801
907.586.6813
907.586.6819 Fax

♦

www.nortechengr.com

STANDARDIZED METHODOLOGY
REGULATED UST CLOSURE PROCEDURES
September 2019 (Version 4)

This describes the procedures and methods to be completed by ***NORTECH*** and a contractor to close a regulated underground storage tank (UST) in Alaska.

Tank closure by removal will be completed in general accordance with the American Petroleum Institute (API) Recommended Practice 1604 *Closure of Underground Petroleum Storage Tanks*. The following summarizes the general work sequence for tank preparation, excavation, stockpiling, screening, testing, analysis, and reporting with overlap where possible. The outline is further divided into responsibility and timeline.

<u>Contractor Responsibilities</u>

- Up to one week before UST removal
  - Contact the local fire department and notify them of the removal
  - Ensure all fuel from the dispensers and fuel lines have been drained back into the tank
  - Turn off and disconnect all tank/dispenser monitoring; electrical connections at monitoring station
  - Cap and secure all openings including fill pipe, gauge pipe vapor recovery fitting and vapor return
  - Contract a vendor to remove any remaining diesel fuel from the tank
  - Complete underground utilities locate if not already completed

- One to two days before UST removal
  - Remove concrete pad over tank(s)
  - Eliminate all potential sources of ignition (i.e. smoking, sparking equipment and tools, non-essential personnel and equipment)
  - Ground and/or bond tank to avoid the generation of static electricity during work
  - Measure the remaining fuel in the tank bottom
  - Hand pump any remaining fuel/sludge/water mixture from the tank
  - Inert the tank of oxygen and flammable vapors by crushing and evenly distributing 15 pounds of dry ice for each 1000 gallons; or
  - Purge the tank of flammable vapors using an eductor or air diffuser
  - Purge the fuel lines of residual fuel
  - Plug all tank holes except for vent line
  - Remove outer dispenser housing

- UST removal day(s)
  - Excavate to the top of the tank
  - Divert surface water by berming soil around the excavation to prevent direct entry of stormwater into the excavation
  - Keep bermed soil and equipment at least two feet from the edge of excavation
  - Remove gauge pipe, submersible pump, drop tube, vapor recovery connection and/or other fixtures if any
  - If able, clean the tank in the ground using hot water spray and a vacuum truck in the ground after checking for oxygen and/or flammable vapors

- Leave the vent pipe, plug all tank holes except for a 1/8 inch vent line and stickup
- Excavate around the tank and piping for removal while ***NORTECH*** screens soil for petroleum and stockpile according to screening results
- Plug abandoned fuel lines where lines are inaccessible or are to remain
- Sweep the top of the tank and sides to remove excess soil
- Remove the tank and/or any piping not specified to remain
- Haul labeled and secured tank and piping to property for cutting and cleaning offsite or secure tank on ground away from the excavation and secure to prevent rolling for cutting and cleaning onsite
- After tank is rechecked for oxygen and flammable vapors, add additional dry ice if needed
- Cut a large hole in each end of the tank using a non-sparking tool to access removal of any sludge or scale
- Tip the tank and jet rinse the tank with water , washing the sludge to one end then pump into drum for disposal (if not completed or not thorough while tank was in the ground)
- Manually scrape any remaining caked on scale, remove and drum
- Dry the tank with absorbent pads if sheen remains and drum
- Finish cutting the tank and dispose – obtain disposal receipts
- Haul contaminated soil to treatment facility
- Backfill the open excavation
- Demobilize

NORTECH Responsibilities

In addition to overseeing tank decommissioning, ***NORTECH*** will complete a site characterization/assessment in accordance with the Alaska Administrative Code (AAC) 78.090 Site Characterization and Assessment.

- 15-60 days before UST removal
  - Complete and submit an Intent-To-Close to ADEC at least 15 days, but no more than 60 days, before beginning the closure and site assessment work

- Up to one week before UST removal
  - Coordinate with earthwork contractor to ensure utility locates and fire department notification are completed
  - If contamination is suspected or known, complete an ADEC *Transport, Treatment, & Disposal Approval Form* for Contaminated Media for signature

- UST removal day(s)
  - Oversee and direct operator(s) and laborer(s) during tank closure
  - Regularly test the tank atmosphere and surrounding area for oxygen content or flammable vapors using a combustible gas indicator (CGI) and oxygen meter before and during removal activities
  - Screen soil for petroleum hydrocarbons using a photoionization detector (PID) during all stages of excavation, direct stockpile location according to screening
  - Screen final UST excavation limits and collect soil samples
  - Screen stockpiles and collect soil samples for analysis at a licensed laboratory
  - Recheck the tank atmosphere for oxygen levels and flammable vapors before cutting and cleaning begins
  - Demobilize

- Post UST removal
  - Complete Post Closure notice and submit to ADEC within 30 days of closure
  - Acquire any contractor disposal receipts and/or manifests
  - Prepare SA/Tank Removal Report

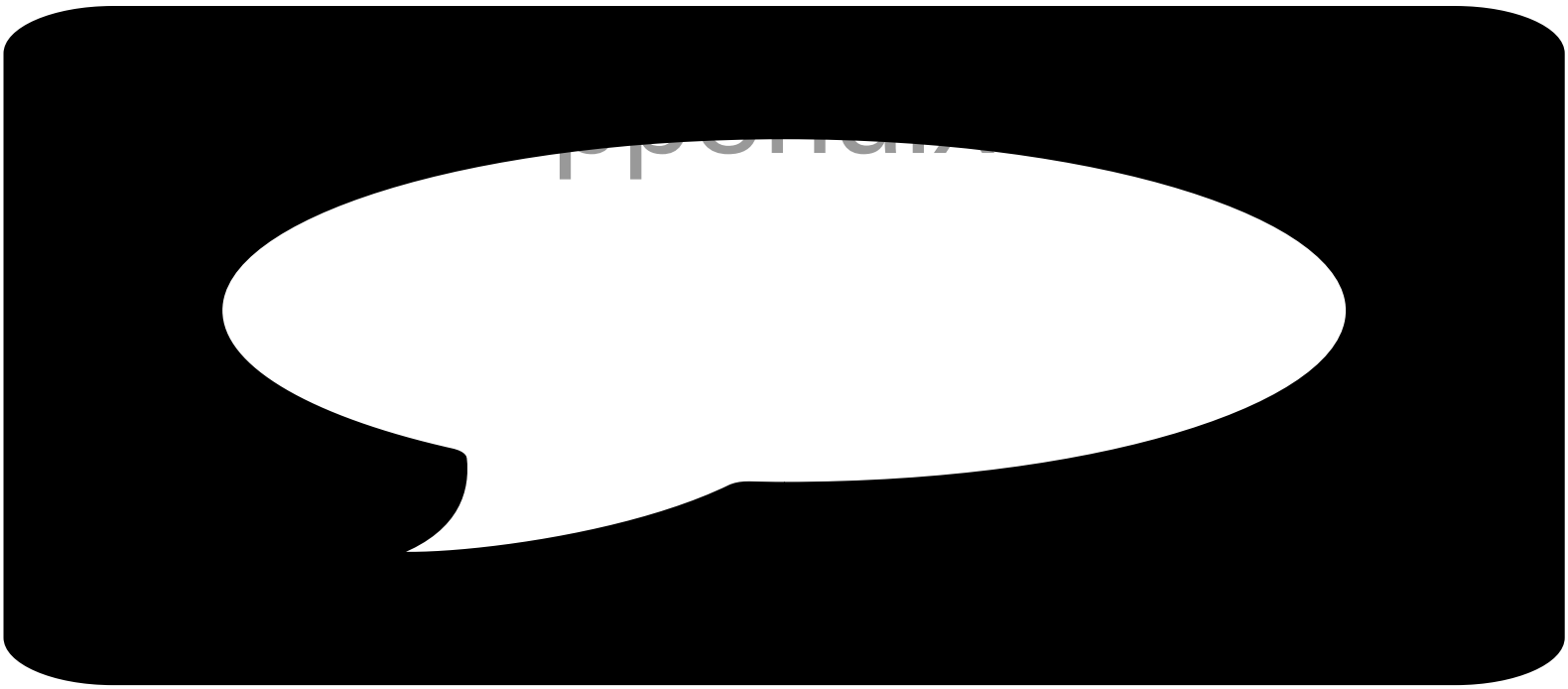
In accordance with API 1604, vapors during purging or inerting should be exhausted through the vent pipe reaching a minimum of 12 feet above grade and 3 feet above rooflines. ***NORTECH*** will routinely test air for oxygen and flammable/combustible vapor levels in the excavation and other below grade areas on-site; at ground level, especially near the vent; and, in the tank (after initiating vapor-freeing procedures). The tank will be considered inert and safe for removal when the O_2 level measured in the top, middle, and bottom of the tank reaches the target range of 6-7% 0_2.

If the tank is to be purged of flammable vapors, the tank will be considered purged and safe for removal when the lower explosive limit (LEL) reaches the target range of less than 10 % measured in the top, middle, and bottom of the tank.

If the tank is to be hauled offsite for cleaning, the contractor should place the excavated tank on a flatbed truck and secure tightly to the truck to prevent movement. As outlined in API 1604, the tank should be labeled with legible letters at least 2 inches high as shown similar to the API example:

TANK CONTAINED DIESEL
NOT VAPOR FREE
NOT SUITABLE FOR FOOD STORAGE/LIQUIDS FOR HUMAN/ANIMAL CONSUMPTION
REMOVED: MONTH/DAY/YEAR

- Before cleaning, recheck the tank atmosphere for oxygen levels or flammable vapors before cutting and cleaning begins



APPENDIX B

ADEC Storage Tank Program
Site Assessment & Release Investigation Summary Form

This document summarizes information from site assessments and release investigation reports that are required by Alaska's Underground Storage Tanks Regulations (18 AAC 78). It is intended to ensure minimum requirements are met when submitting full reports to ADEC. It cannot be substituted for comprehensive site assessment or release investigation reports. Site assessments (as defined in AS 46.03.450) are conducted to check for the presence or absence of petroleum contamination. If contamination of soil or groundwater is identified then a release investigation is required. Site assessments and release investigations must be conducted by a qualified impartial third party (as defined in 18 AAC 78) and in accordance with chapter two of the Underground Storage Tanks Procedures Manual (UST Manual).

How to fill out this form

Type or print in ink the requested information and sign in ink the "signature" blocks on page 7. Please attach this form to the comprehensive site assessment or release investigation report (or include it in the report introduction) and submit it to the nearest ADEC field operations office (Juneau, Anchorage, Fairbanks or Soldotna).

1. GENERAL INFORMATION

Purpose of Site assessment/ Release investigation: [redacted] or confirmed release

(Closure, Change-in-service, Suspected or confirmed release, Compliance check, Other)

Owner of site: [redacted] ge of Grayling, (907) 453-5116, contact Gabriel

Name of company/legal entity that owns the site — Phone number

[redacted] eet, Grayling, AK 99590

Mailing address — City, State, Zip code

Operator of site: [redacted] e - Not active

Name of company/legal entity that operates the site — Phone number

Mailing address of operator — City, State, Zip code

Location of site: G [redacted] Native Store Tank Farm, (907) 453-5153

Name of site (e.g. John Doe's Service Station) — Phone number

1 [redacted] Grayling, AK 99590

Physical address of site (be as specific as possible) — City, State, Zip code

[redacted] Township 033 North, Range 058 West, Seward M

Legal description of site — Section/township/range

[redacted] — [redacted]

Type of business at site — Facility ID # / Tank ID number(s)

Financial Assistance Applications filed (this site only)	☐ Site assessment/ tightness test	☐ Tank cleanup	☐ Tank upgrade	☐ Tank closure
Reports on file with ADEC:	☐ Tightness test	☐ Closure notice	☒ Other assesments	

2. SYSTEM AND TANK STATUS

Describe the status, size, and contents of the tanks that have been at the site:

Tank ID Number:	Tank No.	Tank No.	Tank No. ___	Tank No. ___	Tank No. ___
Tank status (check one) Currently in use	_____	_____	_____	_____	_____
Temporarily closure	☒	☒	_____	_____	_____
Closed/left in place	_____	_____	_____	_____	_____
Closed/removed	_____	_____	_____	_____	_____
Total capacity (gallons)	_____	_____	_____	_____	_____
Contents (diesel, etc)	_____	_____	_____	_____	_____

3. FIRM CONDUCTING SITE ASSESSMENT AND RELEASE INVESTIGATION

[redacted]

Name of firm — Phone number

2[redacted]e Rd, Fairbanks, AK 99709 _____

Mailing address — City, State, Zip code

[redacted]

Site assessment supervisor(s) — Person(s) collecting samples

4. SITE HISTORY

Based on the best available knowledge, please check the appropriate box below:

Y	N	
__	__	Was soil contamination observed or identified?
__	__	Was groundwater contamination observed or identified?
__	__	Did inventory control or prior tank repairs indicate a possible release?
__	__	Has a tank tightness test been performed on any USTs on the site?
__	__	Have any of the facility's USTs or piping ever failed a tightness test?
__	__	Have there been any previous site assessments performed at this site?
__	__	Do previous site assessments indicate any contamination has occurred?

If the answer to any of these questions is yes, please describe (or attach copy of report discussion). Give dates and circumstances, use continuation sheet if necessary:

5. FIELD SCREENING ANALYSIS

Date(s) of field screening:_____
Temperature(s) during screening:_____
Estimated wind speeds:_____
Weather (clear, raining, etc):_____

Type of field detection instrument used:_____
Brand:_____
Model: _____
Date calibrated: _____

Number of tests:_____
Range of results:_____

If an instrument wasn't used, what field detection method was used?_____

Number of tests:_____
Range of results:_____

6. COLLECTION OF SOIL SAMPLES

For site assessments done for USTs remaining in place

Check the appropriate boxes below (if not applicable, leave blank):

Y	N	
__	__	Were samples taken from borings (or test pits) within 5 feet of the UST?
__	__	Were samples collected from within 2 feet below the bottom of the UST?
__	__	Were dispensers connected to the UST system?
__	__	Were samples taken from borings (or test pits) adjacent to dispensers?
__	__	Were samples taken from borings (or test pits) adjacent to piping?

How many borings/pits were made?_____ How many samples were analyzed? _____

For site assessments done at excavation and removal of USTs:

Check the appropriate boxes below (if not applicable, leave blank):

Y	N	
__	__	Were any areas of obvious contamination identified or observed?
__	__	Were samples taken from areas of obvious contamination?
__	__	Were at least two discrete analytical samples taken from excavated pit area?
__	__	Was at least one sample taken from below each dispensing island's piping?
__	__	Was at least one sample taken from the piping trench?
__	__	Were the samples referenced above collected taken from native soil within two feet below the bottom of the tank pit or dispenser/piping trench?
__	__	If multiple tanks were removed, were at least three samples collected?
__	__	Were additional samples collected for each 250 square feet of excavated pit over 250 square feet?

Number of distinct points sampled:_____ Estimated excavation's surface area: _____

For all site assessments

Check the appropriate boxes below:

Y	N	
__	__	Were field duplicate samples collected and analyzed?
__	__	Were all samples kept at the appropriate temperature until analysis?
__	__	Were all samples extracted & analyzed within recommended holding times?
__	__	Did chain-of-custody/transfer logs accompany samples to laboratory?

7. LABORATORY ANALYSIS OF SOIL SAMPLES

(see Table 1 of UST Procedures Manual or Table G of 18 AAC 78.800(b))

Identify the possible contaminants (gasoline, BTEX, diesel, etc.): _____

Please list the analytical methods used to detect these contaminants in the soil samples, the number of samples analyzed by each method, and the range of results for each method:

Possible product	**Analytical method**	**Number of samples**	**Range of results**	**Location(s) of sample point(s) w/ highest level of contamination**
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

8. GROUNDWATER INVESTIGATION

Check the appropriate boxes below:

Y	N	
__	__	Was groundwater encountered during the excavation or drilling work?
__	__	Were borings drilled/pits dug at least five feet below the USTs bottom?
__	__	Is groundwater or seasonal high water table known or suspected to exist within five feet of the bottom of the USTs?
__	__	Were samples taken from borings drilled/test pits dug to this water level?
__	__	Were all these samples analyzed within recommended holding times?

How many groundwater/saturated-soil samples were collected & analyzed? _____

How many of these samples were taken from the top 6" of water table? _____

How many field QC samples were analyzed? _____ _____ _____

Trip blanks Duplicates Decon blanks

9. LABORATORY ANALYSIS OF GROUNDWATER SAMPLES

(see Table 1 of UST Procedures Manual or Table G of 18 AAC 78.800(b))

Identify the possible contaminants at the site: _____

Identify the analytical methods used to detect these contaminants in the water samples, the number of samples analyzed by each method, and the range of results for each method:

Analytical method	**Number of samples**	**Range of results (ppm)**	**Location(s) of sample point with highest level of contamination**
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

10. DISPOSAL OF MATERIALS

Check the appropriate boxes below (if not applicable, leave blank):

Y	N	
__	__	Were tanks cleaned in accordance with API 2015 (Cleaning Petroleum Storage Tanks)?
__	__	Were the tanks and piping removed and disposed in accordance with API 1604 (Removal and disposal of used petroleum Storage tanks)?

Where were the tanks and piping disposed?_____

_____

Where was the tank sludge and rinsewater disposed?_____

11. STOCKPILES

Check the appropriate boxes below:

Y	N	
__	__	Is any soil stockpiled at the site?
__	__	Are soils stockpiled in accordance with 18 AAC 78.311?

12. RELEASE INVESTIGATION

Check the appropriate box below:

Y N

__ __ Was any petroleum contamination identified during site assessment?

(Answer "yes" if any evidence a release occurred; if no, proceed to item 13)

If contamination was found, what was matrix score for site? _____

(Attach completed matrix score sheet to this form)

When did release occur?_____ When was release confirmed? _____

(Date & time) (Date & time)

When was ADEC notified? _____ List ADEC staff notified:_____

(Date & time) (Name)

What is status of UST that prompted the investigation? ____ In use; _____ Out-of-use, product still in system; _____ Out-of-use; system empty; _____ Permanently closed

Briefly describe (or attach copy of report discussion) the steps taken to prevent further migration of the release and steps taken to monitor and mitigate fire and safety hazards:_____

_____

_____

_____

13. SITE SKETCH

Sketch the site in the space below. Alternatively, attach a site map to the back of the form. The sketch (or accompanying narrative) should include the following information:

- locations of all USTs, piping, and dispensers
- distances from tanks to nearby structures
- property line locations
- location and dimensions of excavation(s)
- type of backfill used to surround system
- locations of any known historical releases
- locations of any observed contamination
- location of any boreholes and test pits
- soil types
- field screening locations and readings
- sampling locations, depths, & sample ID numbers
- water wells and monitoring wells (if present)
- depth to groundwater/seasonal high groundwater
- locations of any stockpiled soils
- north arrow
- bar scale (specify feet or meters)

For release investigations, in addition to the above information, show the groundwater gradient; surface drainages (including potential hydraulic connections with groundwater) and utility trenches.

14. QUALITY ASSURANCE

Check the appropriate boxes below:

Y	N	
__	__	Were there deviations from Chapter 2 of the UST Procedures Manual? (Note that any deviations must be documented in a section of the comprehensive report)
__	__	Is a field quality control summary included in the reports?
__	__	Is a laboratory QC summary included in the report for all samples used to verify cleanup levels have been met?

15. CERTIFICATION

The following certification is to be signed by the assessment firm's principal investigator or Quality Assurance Officer:

I certify that except as specifically noted in this report, all statements and data appearing in this report are in conformance with the provisions of Chapter 2 of the UST Procedures Manual.

_____	_____
(Print name)	(Title)
_____	_____
(Signature)	(Date)

The following certification is to be signed by the UST owner/operator (or designated representative):

I certify that I have personally examined and am familiar with the information in this and all attached documents and based on my inquiry of the individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

_____	_____
(Print name)	(Specify if owner, operator, representative)
_____	_____
(Signature)	(Date)
_____	_____
(Street Address)	(City, State, Zip)

16. ATTACHMENTS

Please check the boxes showing any comprehensive reports attached to this summary:

____ Site Assessment Report (include if no release investigation is needed)

____ Release Investigation Report (include if release investigation is needed)

All Appropriate Inquiries Rule:
Reporting Requirements Checklist for Assessment Grant Recipients

WHAT IS "ALL APPROPRIATE INQUIRIES"?

"All appropriate inquiries," or AAI, is a process of evaluating a property's environmental conditions and assessing the likelihood of any contamination. Every Phase I assessment conducted with EPA Brownfields Assessment Grant funds ***must*** be conducted in compliance with the All Appropriate Inquiries Final Rule at 40 CFR Part 312. The All Appropriate Inquiries Final Rule provides that the ASTM E1527-21 and ASTM E2247-16 standards are consistent with the requirements of the final rule and may be used to comply with the provisions of the rule. In addition, all appropriate inquiries must be conducted in compliance with the Final Rule or the ASTM standard to obtain certain protections from liability under the federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, aka Superfund).

WHAT ARE THE DOCUMENTATION REQUIREMENTS FOR ALL APPROPRIATE INQUIRIES?

The final rule requires that the results of an AAI investigation be documented in a written report. The specific reporting requirements are provided in 40 CFR §312.21 and §312.31 of the final rule and in §12 of the ASTM E1527-21 standard. All AAI final reports ***must***, at a minimum include the following:

1. An ***opinion*** as to whether the inquiry identified conditions indicative of releases or threatened releases of hazardous substances, and as applicable, pollutants and contaminants, petroleum or petroleum products, or controlled substances, on, at, in, or to the subject property.

2. An identification of ***"significant" data gaps*** (as defined in §312.10 of AAI final rule and §12.5 of ASTM E1527-21), if any, in the information collected for the inquiry. Significant data gaps include missing or unattainable information that affects the ability of the environmental professional to identify conditions indicative of releases or threatened releases of hazardous substances, and as applicable, pollutants and contaminants, petroleum or petroleum products, or controlled substances, on, at, in, or to the subject property. The documentation of significant data gaps must include information regarding the significance of these data gaps.

3. ***Qualifications*** **and** ***signature*** of the environmental professional(s). The environmental professional must place the following statements in the document and sign the document:

   - *''[I, We] declare that, to the best of [my, our] professional knowledge and belief, [I, we] meet the definition of Environmental Professional as defined in §312.10 of this part.''*

   - *''[I, We] have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. [I, We] have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.''*

   Note: Please use either "I" or "We."

4. In compliance with §312.31(b) of the AAI final rule and §12.6 of ASTM E1527-21, the environmental professional must include in the final report an ***opinion regarding additional appropriate investigation***, if the environmental professional has such an opinion.

For each Phase I Environmental Site Assessment, or AAI, conducted using EPA Brownfields Grant monies, the grantee must complete, sign, date, and submit the following check list with any AAI reports submitted to EPA.

Also see U.S. EPA's website at www.epa.gov/brownfields for additional information.

Checklist for Phase I Site Assessments Conducted using EPA Brownfields Assessment Grant Funds

Contact Information

Grantee Name: Yukon River Inter-Tribal Watershed Council

Grant Number: _____

ACRES Property ID: _____

Program Manager Name: Jordan Finney
(Point of Contact)

Contact Phone Number: _____

Name / Address of Property Assessed: _____

Checklist

Please indicate that each of the following All Appropriate Inquiries documentation requirements were met for the Phase I assessment conducted at the above listed property:

☐ An ***opinion*** as to whether the inquiry has identified conditions indicative of releases or threatened releases of hazardous substances, and as applicable, pollutants and contaminants, petroleum or petroleum products, or controlled substances, on, at, in, or to the subject property.

☐ An identification of ***"significant" data gaps*** (as defined in §312.10 of AAI final rule and §12.5 of ASTM E1527-21), if any, in the information collected for the inquiry, as well as comments regarding the significance of these data gaps. Significant data gaps including missing and unattainable information that affects the ability of the environmental professional to identify conditions indicative of releases or threatened releases of hazardous substances, and as applicable, pollutants and contaminants, petroleum or petroleum products, or controlled substances, on, at, in, or to the subject property.

☐ ***Qualifications*** **and** ***signature*** of the environmental professional(s). The environmental professional must place the following statements in the document and sign the document:

- ☐ *''[I, We] declare that, to the best of [my, our] professional knowledge and belief, [I, we] meet the definition of Environmental Professional as defined in §312.10 of this part.''*
- ☐ *''[I, We] have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. [I, We] have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.''*

Note: Please use either "I" or "We."

In compliance with §312. 31(b) of the AAI final rule and §12.6 of ASTM E1527-21, the environmental professional must include in the final report an ***opinion regarding additional appropriate investigation***, if the environmental professional has such an opinion.

Signature of Grantee Program Manager _____ Date _____

Print Form

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

Site Name: Grayling Native Store Tank Farm

File Number: 2416.38.003

Completed by: John Carnahan

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:

Releases confirmed at surface

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: Complete

Comments:

Releases confirmed at surface

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: Complete

Comments:

Groundwater may be impacted. No drinking water sample at time of CSM although water supply is Grayling Creek Gallery, which is presumed upgradient, and water supply not suspected to be contaminated.

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:

Although surface water is within 550 feet, there is no evidence that this release has migrated to that distance, nor is water consumed directly from the Yukon River.

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:

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:

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: Complete

Comments:

Unlikely but buildings are potentially within 30 feet of subsurface petroleum impacts.

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:

Not suspected

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:

Not anticipated due to location of water supply; however, verification of water use is recommended

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:

Contaminants may be near surface

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:

Unlikely that significant impacts have reached sediment adjacent to Yukon River

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

This is only a preliminary CSM and subject to be modified following site assessment activities.

Print Form

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: Grayling Native Store Tank Farm

Completed By: John Carnahan - Nortech, Inc.

Date Completed: August 23, 2023

***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.*

Media	Transport Mechanisms
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil — check soil ☑ Migration to subsurface — check soil ☑ Migration to groundwater — check groundwater ☑ 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 ☑ Migration to groundwater — check groundwater ☑ Volatilization — check air ☐ Uptake by plants or animals — check biota ☐ Other (list):
☑ Ground-water	☑ Direct release to groundwater — check groundwater ☑ Volatilization — check air ☑ Flow to surface water body — check surface water ☐ Flow to sediment — check sediment ☑ Uptake by plants or animals — check biota ☐ Other (list):
☐ Surface Water	☐ Direct release to surface water — check surface water ☐ Volatilization — check air ☐ Sedimentation — check sediment ☐ Uptake by plants or animals — check biota ☐ Other (list):
☐ Sediment	☐ Direct release to sediment — check sediment ☐ Resuspension, runoff, or erosion — check surface water ☐ Uptake by plants or animals — check biota ☐ Other (list):

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

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

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

Current & Future Receptors

Exposure Media	Exposure Pathway/Route	Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ soil	☑ Incidental Soil Ingestion	C/F	C/F	C/F	C/F			
	☑ Dermal Absorption of Contaminants from Soil	C/F	C/F	C/F	C/F			
	☑ Inhalation of Fugitive Dust	F	F	F	F			
☑ groundwater	☑ Ingestion of Groundwater	C/F	C/F	C/F	C/F			
	☑ Dermal Absorption of Contaminants in Groundwater	C/F	C/F	C/F	C/F			
	☑ Inhalation of Volatile Compounds in Tap Water	C/F	C/F	C/F	C/F			
☑ air	☑ Inhalation of Outdoor Air	C/F	C/F	C/F	C/F			
	☑ Inhalation of Indoor Air	C/F	C/F	C/F	C/F			
	☑ Inhalation of Fugitive Dust	F	F	F	F			
☑ surface water	☑ Ingestion of Surface Water	C/F	C/F	C/F	C/F			
	☑ Dermal Absorption of Contaminants in Surface Water	C/F	C/F	C/F	C/F			
	☐ Inhalation of Volatile Compounds in Tap Water							
☐ sediment	☐ Direct Contact with Sediment							
☑ biota	☑ Ingestion of Wild or Farmed Foods							

Revised, 10/01/2010

Appendix 4

Managing Office:
2400 College Rd
Fairbanks, AK 99709
907.452.5688
907.452.5694 Fax

♦

3105 Lakeshore Drive
Suite A106
Anchorage, AK 99517
907.222.2445
907.222.0915 Fax

♦

5438 Shaune Drive
Suite B
Juneau, AK 99801
907.586.6813
907.586.6819 Fax

♦

www.nortechengr.com

Health and Safety Plan for Grayling Trenching and Excavations

This describes the procedures and methods employed by ***NORTECH*** and a contractor to investigate soil conditions associated with regulated underground storage tanks (USTs) in Grayling, Alaska. It is meant to be reviewed and used in accordance with the approved UST Release Investigation Work Plan, Grayling Native Store, Block 22, Lot 3, Grayling, Alaska.

Tank closure is not a part of this activity but may be included if the site scope of services warrants it, or a change order is requested. The same health and safety procedures will apply.

EMERGENCY SERVICES

The local Community Health Aide Program (CHAP) provides village-based primary health care including acute, chronic and emergency care, preventative services, and health promotion disease prevention activities to individuals, families, and their communities. The Grayling Facility is located at:

49 Main Street, Grayling, Alaska
Phone: (907) 453-5120

When a higher level of care is needed, patient referrals are often made to one of our five Sub-Regional Clinics, located in Aniak, Emmonak, Hooper Bay, St. Mary's, and Toksook Bay. Based in larger sub-regional "hub" communities, our Sub-Regional Clinics have year-round mid-level providers on staff, limited diagnostic imaging, pharmacy, and dental services. The Yukon-Kuskokwim Delta Regional Hospital in Bethel is our largest healthcare facility. If the triage or care cannot be managed at this location, preparations will be made at the facility to relocate the patient to one of the sub-regional facilities, or directly to Fairbanks or Anchorage.

1. PURPOSE

This plan describes the general and site-specific safety precautions and requirements associated with excavating and trenching at the specified location in the associated work plan.

Excavation and trenching are among the most hazardous construction operations. The Occupational Safety and Health Administration's (OSHA) Excavation standards, 29 Code of Federal Regulations (CFR) Part 1926, Subpart P, contain requirements for excavation and trenching operations.

2. SCOPE

The scope of services is detailed in the associated work plan for this project.

3. APPLICABLE REGULATIONS, CODES AND RECOMMENDED PRACTICES

OSHA 29 CFR 1926.652, "Requirements for Protective Systems"
OSHA 29 CFR 1926.651, "Specific Excavation Requirements"
OSHA 29 CFR 1926 Subpart P, "Appendix A – Soil Classification"

OSHA 29 CFR 1926 Subpart P, "Appendix B – Sloping and Benching"
OSHA 29 CFR 1926 Subpart P, "Appendix C – Timber Shoring for Trenches"
OSHA 29 CFR 1926 Subpart P, "Appendix D – Aluminum Hydraulic Shoring for Trenches"

4. DEFINITIONS

The following definitions are considered appropriate for this project. The work will consist ONLY of advancing trenches in select locations as directed by the onsite competent person, to obtain representative soil samples. **No individual will enter any excavation or hole during these activities.**

- Benching - A method of protecting personnel from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels of steps, usually with vertical or near-vertical surfaces between levels. *No benching will be employed in this project.*
- Cave-In - The separation of a mass of soil or rock material from the side of an excavation, into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and immobilize a person.
- Competent Person - One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to personnel, and who has authorization to take prompt corrective measures to eliminate them. In order to be a "competent person" for the purposes of this standard, a person must have had specific training in, and be knowledgeable about, soil analysis, the use of protective systems, and the requirements of this standard. Submits excavation plan in conjunction with confined space work permit request whenever the excavation exceeds 4 feet.
- Excavation - Any man-made cut, cavity, trench, or depression in the earth surface, formed by earth removal.
- Faces or Sides - The vertical or inclined earth surfaces formed as a result of excavation work.
- Hazardous Atmosphere - An atmosphere which, by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful, may cause death, illness, or injury.
- Sloping (Sloping system) - A method of protecting personnel from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads. *Sloping will not be necessary during these excavations as the trenches will be vertical and advanced to the front of the equipment.*
- Stable Rock - Natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed. Unstable rock is considered to be stable when the rock material on the side or sides of the excavation is secured against caving-in or movement by rock bolts or by another protective system that has been designed by a Registered Professional Engineer.
- Trench (Trench Excavation) - A narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet. If forms or other structures are installed or constructed in an excavation so as to reduce the dimension measured from the forms or structure, to the side of the excavation to 15 feet or less

(measured at the bottom of the excavation), the excavation is also considered to be a trench.

5. GENERAL REQUIREMENTS

- Surface Encumbrances - All surface encumbrances that are located so as to create a hazard to personnel shall be removed or supported, as necessary, to safeguard personnel.

- Underground Installations - The estimated location of utility installations, such as sewer, telephone, fuel, electric, water lines, or any other underground installations that reasonably may be expected to be encountered during excavation work, must be determined before excavating. This work will be managed in coordination with the **Grayling Tribal Council**, as the owners of the property. When excavation operations approach the estimated location of underground installations, the exact location of the installations must be determined by safe and acceptable means.

- Access and Egress – Access to the site is easily attained from the north or south on the property and will accommodate existing roadways or trails.

- Exposure to Vehicular Traffic - Personnel exposed to public vehicular traffic must be provided with, and must wear, warning vests or other suitable garments marked with or made of reflectorized or high-visibility material.

- Exposure to Falling Loads - Personnel are not permitted underneath loads handled by lifting or digging equipment. Personnel are required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spilled or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles are equipped to provide adequate protection for the operator during loading and unloading operations.

- Hazardous Atmospheres – No hazardous atmospheres are anticipated with this trenching work.

- Stability of Adjacent Structures - If any concerns are raised with the stability of adjacent buildings, walls, or other structures resulting from excavation operations, excavation will stop in that direction and the trench will be immediately backfilled.

- Protection of Personnel from Falling- Adequate precautions will be taken to protect personnel from tripping or falling into an excavation face. Field staff shall not approach the edge of any trench and will only collect samples from stockpiles on opposite face from trench opening.

- Protect the Public - Provide barricades, walkways, lighting, and sign postings as needed before the start of excavation to protect the public. Barricades, cones or flagging will be used to prevent access to the excavation areas by the public.

6. INSPECTIONS

Daily inspections of excavation activities, the adjacent areas, and protective barriers (as applicable) will be made by a competent person for evidence of a situation that could result in possible safety concerns or hazardous conditions. An inspection must be conducted by the competent person prior to the start of work and as needed throughout the activities. Inspections must also be made after every rainstorm or other hazard-increasing occurrence.

If the competent person finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed personnel must be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

7. TEST FOR HAZARDOUS ATMOSPHERES

The onsite competent persona and QEP shall monitor the atmosphere during work activities. It is not anticipated that significant petroleum volatile fractions will present a hazard, but if elevated levels are measured on hand-held equipment, work activities will be halted until the environment is considered acceptable.

8. PROTECT AGAINST WATER HAZARDS

Employees are not permitted to work adjacent to excavations that contain or are collecting water. Excavation work shall not interrupt the natural drainage of surface water (such as streams).