



**Site Investigation Work Plan**  
**Pad SRU 32-15 (TS 2-15)**  
**Swanson River Field, Alaska**

January 2022

*Prepared by:*

A handwritten signature in dark ink, appearing to read 'M. Mayer', is written over a horizontal line.

**Melissa Mayer**

Qualified Environmental Professional

Susitna Environmental, LLC



## Table of Contents

1.0	Introduction .....	1
2.0	Site Description and Background .....	1
3.0	Field Work .....	2
3.1	Subsurface Delineation and Soil Sampling.....	2
3.2	Groundwater Sampling .....	2
4.0	Quality Assurance/Quality Control .....	3
5.0	Reporting.....	3
6.0	Schedule .....	3
7.0	References .....	3

## Acronyms

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
ADS	Arctic Data Services, LLC
bgs	below ground surface
CS	Contaminated Site
cy	cubic yards
DRO	Diesel Range Organics
ft	feet
GRO	Gasoline Range Organics
GPS	Global Position System
Hilcorp	Hilcorp Alaska, LLC
LLC	Limited Liability Company
PAHs	polycyclic aromatic hydrocarbons
PID	photoionization detector
POL	petroleum, oil, and lubricants
QA/QC	quality assurance/quality control
QEP	Qualified Environmental Professional
RCRA	Resource Conservation and Recovery Act
RPD	relative percent difference
RRO	Residual Range Organics
SDG	sample delivery group

SP      Screen Point  
SRF     Swanson River Field  
SRU     Swanson River Unit  
Susitna Susitna Environmental, LLC  
TEG     triethylene glycols  
TS      Tank Setting  
VOCs   Volatile Organic Compounds

## 1.0 Introduction

This work plan has been prepared by Susitna Environmental, LLC (Susitna), to detail environmental services that will be conducted to investigate the extent of impact to subsurface soil on pad Swanson River Unit (SRU) 32-15 at Swanson River Field (SRF), Sterling, Alaska.

## 2.0 Site Description and Background

Historical contamination was encountered during SRF 21-01 trenching activities between well pad SRU 32-15 and Tank Setting (TS) Building 2-15, located in the northern part of the Hilcorp-operated SRF. SRF 21-01 refers to two trenching routes proposed in 2021 for installation of new flowlines to convey production fluids from wells on pads SRU 21-15 and SRU 32-15 to TS 2-15 for initial processing. Although trenching north to pad SRU 21-15 was postponed, trenching south to pad SRU 32-15 was conducted in 2021. Susitna provided in-field Qualified Environmental Professional (QEP) oversight and performed field screening and sampling during the installation of the 21-01 flowline to pad SRU 32-15. The location of the project site is shown on **Figure 1** and the extent of the excavation is provided on **Figure 2**. The discovered historical contamination was added to the Alaska Department of Environmental Conservation (ADEC) Contaminated Site Report, Swanson River Tank Setting 2-15, Hazard ID: 444, File number 2334.38.022 (ADEC, 2022a). This site was initially designated a Contaminated Site (CS) in 1990 due to contamination of both subsurface soil and groundwater from historical activities.

Trenching activities associated with the flowline installation at TS 2-15 and pad SRU 32-15 took place from July 22<sup>nd</sup> to August 3<sup>rd</sup>, 2021. In July, soil staining and strong hydrocarbon odor was observed in a silty clay layer from approximately 2 feet below ground surface (ft bgs) to 4 ft bgs along a section of the trench approximately 23 feet in length. The section where contamination was observed was approximately 10 ft west of the main roadway and approximately 15-20 ft northeast of a nearby line heater. The excavation was approximately 23 ft long, 4 ft deep, and 2 ft wide (**Figure 2**).

Six soil screening samples were collected to guide segregation of impacted soil from unimpacted soil. Photoionization detector (PID) results ranged from 0.8 to 2,056 ppm. Approximately 12 cubic yards (cy) of petroleum, oil, and lubricants (POL) impacted soil was excavated and disposed. Three primary confirmation soil samples, 1 duplicate, and 1 characterization soil sample were collected and submitted for laboratory analysis. Although the characterization sample and the floor sample contained several volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), gasoline range organics (GRO), and diesel range organics (DRO) exceeding ADEC cleanup levels, the sidewall samples only contained naphthalene (north and south sidewalls) and DRO (south sidewall) above cleanup levels. Details are provided in *SRF 21-01 2021 Trenching and Flowline Installation Project, Swanson River Field*, November 3, 2021.

The trench was backfilled after the flowline was installed; however, soil contamination remains in the subsurface from 2-4 ft bgs; the contamination is not vertically or horizontally delineated. Depth to groundwater ranges from 10.01 to 14.42 ft bgs and the estimated direction of groundwater is northwest.

The nearby water well was last used in October 2015 and the downhole pump has since been removed and the well capped. The depth to water in this well was approximately 175 ft bgs. This well is likely drilled into a lower confined aquifer and not likely connected to near surface contamination.

## 3.0 Field Work

Field work will include installation of up to 8 soil borings to the north and south of the contaminated trench perimeter (**Figure 2**), a minimum of 5 feet from all identified subsurface lines or utilities. Hilcorp will provide utility locates prior to drilling activities. Borings will be drilled to a depth beneath the contamination, and step-out borings will be advanced 5 to 10 ft laterally from contaminated borings until unimpacted soil is evident based on screening results as practicable. If contamination is observed to extend to the smear zone, a smear zone sample will be collected and a groundwater grab sample will be collected (Section 3.1).

### 3.1 Subsurface Delineation and Soil Sampling

Soil borings will be advanced by Geotek using a track-mounted Geoprobe™ direct-push hydraulic percussion drill rig with the Macro-core® soil sampling system. Each 5-ft soil core from each boring will be logged to identify soil types. In situ PID readings will be recorded on the boring log. Up to two soil samples will be collected from each boring to support the vertical profile delineation objectives. The field samplers will use field screening results to guide collection of the samples at depth intervals below the vertical extents of impact and the depth with the highest PID screening result. For delineation borings where no impacted soil is encountered, the field team will collect a sample from the same depth interval where the highest contaminant concentrations were detected in the nearest source area boring. Soil samples will be analyzed for GRO, DRO, residual range organics (RRO), petroleum-related VOCs, PAHs, Resource Conservation and Recovery Act (RCRA) metals, and ethylene and triethylene glycols (TEG) by SGS Anchorage. An associated heated headspace sample will be analyzed with the PID.

The location of each boring will be recorded with a Global Position System (GPS) with submeter accuracy and plotted on a map at the end of the investigation. Field activities will follow procedures outlined in the *ADEC Field Sampling Guidance* (ADEC, 2022b).

Soil cuttings will be containerized in 55-gallon drums and stored at SRF until disposed offsite. Waste such as nitrile gloves and paper towels will be disposed of as household waste.

### 3.2 Groundwater Sampling

If contamination is observed in the smear zone, a groundwater grab sample will be collected from a Geoprobe® Screen Point-16 (SP-16) groundwater sampler. Geotek will install the SP-16 using direct push drilling technologies to sufficient depth to expose the well screen across the top of the groundwater interface. Upon reaching the desired depth, the SP-16 rod casing will be raised approximately 3 ft to expose the stainless-steel mesh screen and enable sample collection from within the top foot of the water table.

Following installation, the field sampler will deploy a peristaltic pump into the SP-16 rod and purge three casing volumes prior to the collection of analytical samples. Water quality parameters (temperature, pH, conductivity, redox potential, dissolved oxygen) will be measured using a water quality meter and a turbidimeter. Sampling will be conducted in accordance with the *ADEC Field Sampling Guidance* (ADEC, 2022b). The groundwater grab sample will be submitted for analysis of GRO, DRO/RRO, petroleum-related VOCs, PAHs, RCRA Metals, and ethylene and TEG.

Purge water will be containerized in a 5-gallon bucket with a lid and stored at SRF until disposed options can be determined based on analytical results. Waste such as tubing, nitrile gloves and paper towels will be disposed of as household waste.

## 4.0 Quality Assurance/Quality Control

Analytical sampling will include collection of duplicate samples at a frequency of ten percent. All data generated by the laboratory will be reviewed by Arctic Data Services, LLC (ADS). The data quality review conducted by ADS will evaluate precision, accuracy, sensitivity, representativeness, comparability, and completeness of the data by reviewing laboratory-supplied quality assurance/quality control (QA/QC) information as well as conducting independent QA/QC checks on the data. The review will be conducted in accordance with ADS Standard Operating Procedures for Stage 2A Data Validation v1.1, which meet requirements of the ADEC Technical Memorandum on Data Quality Objectives, Checklists, Quality Assurance Requirements for Laboratory Data, and Sample Handling (ADEC, 2017). Laboratory QC sample recoveries and relative percent differences (RPDs) will be compared to laboratory control limits. Field-duplicate RPDs will be compared to ADEC-recommended measurement quality objectives.

An ADEC data review checklist will be completed for each sample delivery group (SDG), and each will be attached to the report for this project. A table summarizing the data qualified during this review will be included at the end of each checklist.

## 5.0 Reporting

Field logbooks, boring logs and groundwater monitoring field forms will be used to record fieldwork activities, field screening results, soil & groundwater data, and observations of conditions that could affect data quality. Following receipt of analytical results, Susitna will produce a Site Investigation Report that summarizes all field activities, field screening results, and analytical results. The report will include figures depicting the excavation footprint, contaminated plume boundary, boring locations, and recommendations for future activities. Soil analytical results will be compared to Table B1 and Table B2 soil cleanup levels in Title 18 of the Alaska Administrative Code (AAC) Chapter 75 (ADEC, 2021); groundwater results will be compared to Table C cleanup levels. The report appendices will include field notes, soil boring logs, groundwater monitoring field forms, photographs, the data quality assurance report with ADEC laboratory data review checklists, and lab reports.

## 6.0 Schedule

It is anticipated that field work for this project will be completed in the summer of 2022. A report will be submitted for ADEC review following receipt and evaluation of analytical results. It is anticipated that the final report for this project will be submitted in the summer or fall of 2022.

## 7.0 References

Alaska Department of Environmental Conservation (ADEC), 2017. Data Quality Objectives, Checklists, Quality Assurance Requirements for Laboratory Data, and Sample Handling. March.

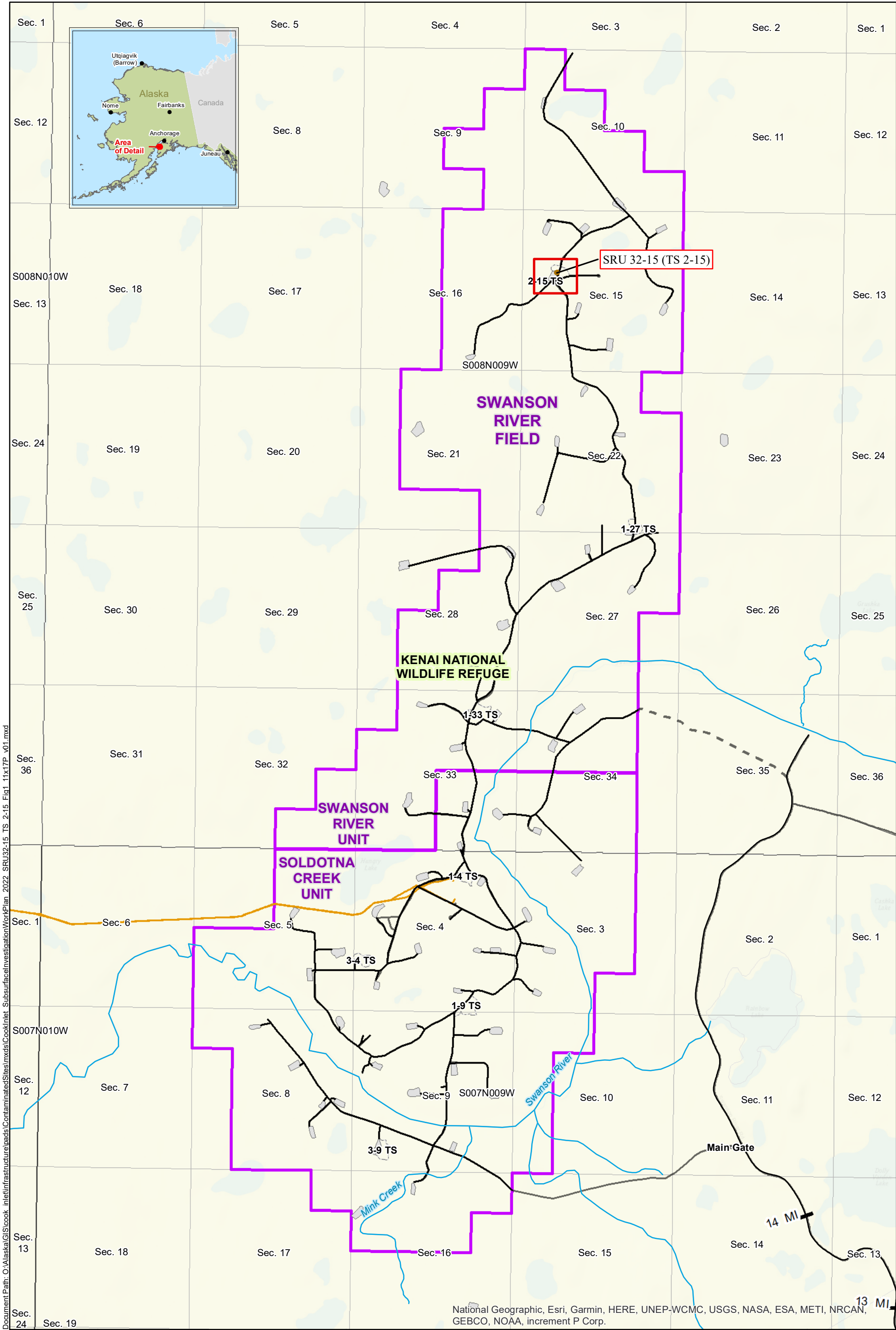
ADEC, 2022a. Division of Spill Prevention and Response, Contaminated Sites Database. Site Report: Swanson River Tank Setting 2-15. January.

ADEC, 2022b. *Field Sampling Guidance*. January.

ADEC, 2021. Title 18 of the Alaska Administrative Code (AAC) Chapter 75. November.

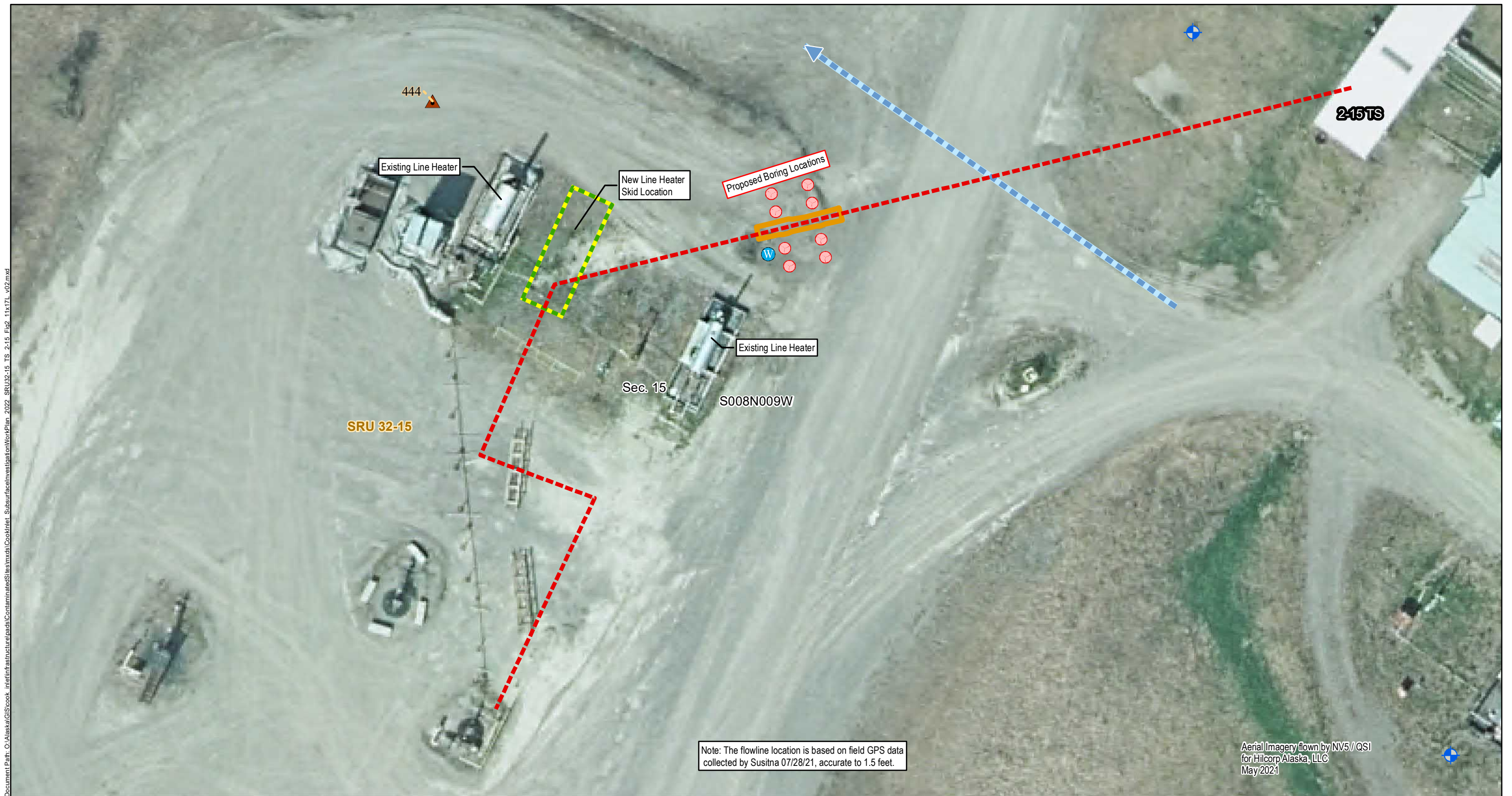
## Figures







Document Path: O:\Alaska\GIS\Cook - Inlet\Infrastructure\pads\Contaminated\Sites\mxd\CookInlet - SubsurfaceInvestigationWorkPlan - 2022 - SRU32-15 - TS 2-15 - Fig2 - 11x17L v02.mxd



3800 Centerpoint Dr. Ste. 1400  
Anchorage, AK 99503  
Map Date: 1/28/2022

Swanson River Field  
SRU 32-15 (TS 2-15)  
2022 Subsurface Investigation Work Plan  
Location

Legend

- Water Well
- General Groundwater Flow Direction
- Active (Location Approx.)
- Flowline Trench Installation
- New Line Heater Skid Location
- Trench Excavation Area
- Monitoring Well Location (Brice 2019)
- Proposed Boring Locations

1 inch = 25 feet @ 11 x 17 page size

0 5 10 15 20 25 feet



FIGURE:  
2