THE STATE of ALASKA
GOVERNOR BILL WALKER

Department of Environmental Conservation

DIVISION OF SPILL PREVENTION & RESPONSE
Contaminated Sites Program

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September 28, 2015

File No: 860.38.015

AL Weilbacher
AFCEC/CIBE
2261 Hughes Ave., Suite 155
JBSA Lackland, TX 78236-9853

Re: Decision Document: Building 1400 Former Ammunition Storage UST (Site CST009 or UST 1400) Cleanup Complete Determination.

Dear Mr. Weilbacher:

The Alaska Department of Environmental Conservation (DEC) has reviewed the environmental records for the Building 1400 Former Ammunition Storage UST (CST009 or UST 1400) Site. This decision letter memorializes the site history, cleanup actions, and standard conditions for long-term site management. No further remedial action is required.

Site Name and Location:
Building 1400
Former Ammunition Storage UST
Nulato C-2 Quadrangle
NE ¼ of Section 6, Township 9S 10E
Kateel River Meridian
Galena, Alaska 99741

Name and Mailing Address of Contact Party:
Al Weilbacher
AFCEC/CIBE
2261 Hughes Ave.,
Suite 155 JBSA Lackland, TX 78236-9853

DEC Site Identifiers:
File No: 860.38.015
Hazard ID: 1953
Designation: UST 1400 / CST009

Regulatory Authority for Determination:
18 AAC 75 and 18 AAC 78

Site Description and Background

Site UST1400, associated with former Building 1400, is located approximately 1,300 feet north of the central portion of the runway at the Former Galena Forward Operating Location (FOL) at Galena, Alaska.

Underground storage tank (UST) 1400 stored heating oil for former Building 1400 which was used as an ammunition storage building. Site UST1400 was investigated for munitions and explosives of concern, but none were detected (USACE, March 2009). Drawing number AW11-01-982 (Base Multicubicle Magazine Storage Roads and Grading, Site Grading and PCC Paving Layout Plan [undated]) indicates the UST capacity was 2,000 gallons. On August 23, 1993, soil contamination was discovered during removal

of UST 1400. Photoionization detection (PID) readings and soil samples were collected from the top, sides, and bottom (9 feet below ground surface (bgs)) of the excavation. The PID indicated results of 20-350 parts per million at sample locations. Samples were analyzed for diesel-range organics (DRO) by EPA Method 8100M and gasoline-range organics (GRO) by EPA Method 8015M. Two soil borings were subsequently installed to approximately 15 feet bgs (where groundwater was encountered), and samples were collected at 4- to 6-foot intervals. Soil samples from the borings were analyzed for DRO by EPA Method 8100M. Concentrations of DRO were detected above the DEC Method Two cleanup levels (CUL) for migration to groundwater in several of the samples, indicating that releases had occurred from the UST. The Spill was reported to DEC on August 30, 1993.

Two radiator-heating tanks located 90 feet southwest of UST 1400 that contained ethylene glycol were cleaned and abandoned in place during UST removal activities in 1993. Additionally, facility records indicated that a 4-inch-diameter pipeline extended from former Building 1400 to a septic tank and drain field at the site. This septic system was considered a possible contamination source for investigation.

Contaminants of Concern

The following contaminants of concern, those above approved cleanup levels, were identified during the course of the site investigations summarized in the Characterization and Cleanup Activities section of this decision letter.

Diesel Range Organics (DRO)
Mercury

Cleanup Levels

Migration to groundwater soil cleanup levels apply to this site. DRO was detected in soil above the migration to groundwater cleanup levels established in 18 AAC 75.341 (d), Table B2. One soil sample collected from 18-20 feet below ground surface in the septic drain field contained mercury above Table B cleanup levels. Concentrations of naphthalene and bis (2-ethylhexyl) phthalate exceeded project screening levels and were retained for cumulative risk calculations. Concentrations of contaminants in groundwater samples were below DEC Method Two, Table C Cleanup levels.

Table 1 – Approved Cleanup Levels

Contaminant	Soil (mg/kg)	Groundwater (mg/L)
DRO	250	N/A
Mercury	1.4	N/A
Naphthalene	20	N/A
Bis(2-ethylhexyl)phthalate	N/A	0.006

mg/kg = milligrams per kilogram
mg/L = milligrams per liter

Characterization and Cleanup Activities

Characterization and cleanup activities conducted under the regulatory authority of the Contaminated Sites Program began in 1993 following the UST removal. These initial investigation activities are described in the Site Description and Background section, above.

This site was next investigated in 2009, when a Preliminary Assessment (PA) was conducted. This reconnaissance-level site visit and ecological site survey was completed in October 2009. It was determined that ecological habitat at and around UST1400 is of marginal quality, dominated by gravel with sparse, low grass. This marginal habitat does not meet any criterion determined to support valued species thus further terrestrial ecological evaluation was not necessary. Because Site UST1400 is located more than 1,000 feet from the Yukon River and there is no surface water onsite, it was also concluded that no further aquatic ecological evaluation was necessary. No visible stains (or other evidence of contamination) were noted at the time of the site visit.

In 2010 a combination Site Investigation (SI) and Site Characterization (SC) was conducted at this site. A geophysical survey using magnetic field and electromagnetic induction survey equipment was also completed in order to locate unknown subsurface features. The geophysical survey confirmed the location of the abandoned-in-place glycol tanks, as well as features associated with the septic drain field. The purpose of the SI portion of the investigation at Site UST1400 was to confirm whether a release had occurred or environmental contamination was present at the septic drain field or at the location of the glycol tanks. The purpose of the SC portion of the investigation at Site UST1400 was to characterize the nature and extent of soil and groundwater contamination associated with the former heating oil UST.

During the 2010 effort, six soil borings were advanced in the assumed area of the former UST, three soil borings were advanced in the area of the radiator heating glycol tanks and two soil borings were advanced within and down gradient from the septic drain field. Laboratory submitted samples were analyzed for DRO, GRO, RRO, SVOCs, VOCs and metals. All analytes in the samples collected within the assumed UST location were below ADEC Method Two cleanup levels. One sample (UST1400GP010SO_18-20) collected at a depth of 18-20 feet below ground surface from the septic drain field exceeded the Method two, Table B cleanup level for mercury. One sample from the glycol tanks location exceeded the project screening level for Naphthalene. However, naphthalene was not detected in groundwater samples. Groundwater samples collected within the septic drain field location exceeded project screening levels for bis (2-ethylhexyl) phthalate in one location and Methylene Chloride was exceeded in several samples. However, bis (2-ethylhexyl) phthalate was not detected in any soil sample. Bis (2-ethylhexyl) phthalate and naphthalene were retained as contaminants of interest for cumulative risk calculations. The methylene chloride detections were attributed to the Laboratory since project trip blanks also returned positive results for methylene chloride. Several samples collected also had concentrations of arsenic and barium above the Method two cleanup levels, but are within the range of background concentrations at Galena.

After the 2010 SI/SC investigation, historical records were found that indicated the location of the former UST was approximately 60 feet northeast of the location used as the basis for the 2010 SC sample locations. The revised former UST location was investigated in 2013. Additional sampling was necessary to determine whether petroleum contamination was present at the revised former tank location. No additional samples were required at the former septic system or glycol tanks because no location discrepancy was identified for these features.

In 2013 the revised former tank location was investigated. Three soil borings (locations UST1400_GP012 - UST1400_GP014) were advanced within and adjacent to the area where DRO had been detected above cleanup levels in 1993. One boring location UST1401_GP013, was advanced down gradient (south) of the estimated UST excavation area, to confirm that contamination had not migrated. This boring was also used as a temporary groundwater sampling point. Both soil and groundwater samples were analyzed for GRO (Method AK101), DRO and RRO (Methods AK102/3), VOCs (Method SW8260B) and VOCs-Low (Method M8260B), and SVOCs/PAHs (Method SW8270CSIM/BNASIM).

Soil samples collected from UST1400_GP012 returned results (7,450 mg/kg) above the Method Two, Table B Cleanup level for DRO. Groundwater samples from UST1400_GP013 detected DRO at a concentration below the Method two Table C Cleanup level. No other analytes exceeded screening levels in the 2013 sampling effort.

Table 3 – Contaminant Concentrations Remaining at Site UST1400

Contaminant	Soil Cleanup Levels MTG (mg/kg)	Groundwater Cleanup Levels (mg/L)	Cleanup Levels: Exposure (direct contact, inhalation, ingestion) (mg/kg)	Concentrations Remaining
DRO	250	N/A	10,500	7,450 mg/kg
Mercury	1.4	N/A	N/A	2.91 mg/kg
Naphthalene	20	N/A	N/A	3.0 mg/kg
Bis(2-ethylhexyl)phthala	N/A	0.006	N/A	0.003 J *mg/L

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
* = "J" indicates that the sample result was estimated
GT= Glycol Tanks Location
MTG = migration to groundwater
N/A = not applicable

Although bis (2-ethylhexyl) phthalate was detected above screening levels in one groundwater sample collected in 2010, DEC determined that it was not a contaminant of concern at the site. Bis (2-ethyhexyl) phthalate is a plasticizer found in polyvinyl chloride pipe, tubing, bottles, and plastic bags, and is a typical laboratory contaminant for analytical samples. Polyvinyl chloride (PVC) piping is present throughout the septic drain field. Furthermore, bis (2-ethylhexyl) phthalate was not detected in soil above cleanup levels. Had a release occurred at this site it is likely that higher detectable levels of soil contamination would be present.

Cumulative Risk Evaluation

Pursuant to 18 AAC 75.325(g), when detectable contamination remains on-site following a cleanup, a cumulative risk determination must be made that the risk from hazardous substances does not exceed a cumulative carcinogenic risk standard of 1 in 100,000 across all exposure pathways and does not exceed a cumulative noncarcinogenic risk standard at a hazard index of one across all exposure pathways. Cumulative risk is calculated using all contaminant concentrations remaining on site at concentrations above 1/10th the cleanup level, per 18 AAC 75.340 (k).

For Site CST009 (UST1400) a human health risk evaluation using the Hydrocarbon Risk Calculator (HRC) and the online Method Three and Cumulative Risk Calculator under DEC Method Three (18 AAC 75.340(f) and 18 AAC 78.600(e)) was undertaken. As part of the evaluation a surrogate was developed for extractable petroleum hydrocarbon/volatile petroleum hydrocarbon (EPH/VPH) fractionation data based on the 95 percent UCL of the normalized representative data for Arctic Diesel and Gasoline contaminated sites. Because the contamination at CST009, based on site history, is arctic diesel, EPH and VPH soil data from similar Galena arctic diesel sites were used to calculate surrogate fractionation data to be used in the HRC. The surrogate EPH/VPH fractionation data were used in the hydrocarbon risk calculator (HRC) since site specific EPH/VPH data were not available. Because contaminants of interest, including non-petroleum compounds, were detected in the septic leach field area, which located outside the petroleum-

contaminated soil source area, risks at that location were characterized by the DEC online Method Three and Cumulative Risk Calculator.

The report: *ADEC Method Three Risk Evaluation for Site CST009 (UST1400) at Former Galena Forward Operating Location, Alaska (September 2015)*, presents the methods, input data and results of the risk calculations. The results of risk calculations are summarized below:

- For the UST source area, the cumulative cancer risk estimates for the current industrial and hypothetical residential exposure scenarios are below the regulatory risk standard of 1E-05 for direct contact/ingestion, outdoor air inhalation, vapor intrusion, and groundwater ingestion pathways.
- For the UST source area, the cumulative noncancer HI estimates for the current industrial and hypothetical residential exposure scenarios are below the regulatory risk standard of 1 for direct contact/ingestion, outdoor air inhalation, vapor intrusion, and groundwater ingestion pathways.
- Potential HQs posed by the GRO, DRO, and RRO aromatic and aliphatic fractions are below the regulatory risk standard of 1 for each potentially complete exposure pathway (direct contact/ingestion, outdoor air inhalation, vapor intrusion, and groundwater ingestion) for the current industrial and hypothetical residential exposure scenarios.
- The area of contamination at the former septic drain field source area is an isolated detection of mercury from 18 to 20 feet bgs and an isolated detection of naphthalene from 13 to 15 feet bgs. For the septic drain field source area, the cancer risk estimate and noncancer HQ from contaminants are below the regulatory risk standards of 1E-05 and 1, respectively, for the hypothetical residential exposure scenario for direct contact/ingestion, outdoor air inhalation, and groundwater ingestion pathways.
- The migration to groundwater criteria are attained in surface and subsurface soils in accordance with 18 AAC 75.340.
- A modeled total DRO concentration in groundwater was reported at 1.64 mg/L, which exceeds the Table C CUL of 1.5 mg/L. However, the results from the groundwater sample collected immediately down gradient of the former UST source area indicate that the groundwater DRO concentration (0.37 mg/L) is significantly below the ADEC Table C CUL. Since a 95% UCL was used to develop the surrogate fractionation data, it was expected that the HRC modeled DRO concentrations were likely to be overestimated.

Based on a review of the environmental record and the results of the risk calculations, DEC has determined that residual contaminant concentrations do not pose a cumulative human health risk.

Exposure Pathway Evaluation

Following investigation and cleanup at the site, exposure to the remaining contaminants was evaluated using DEC's Exposure Tracking Model (ETM). Exposure pathways are the conduits by which contamination may reach human or ecological receptors. ETM results show all pathways to be one of the following: De-Minimis Exposure, Exposure Controlled, or Pathway Incomplete. A summary of this pathway evaluation is included in Table 2.

Table 2 – Exposure Pathway Evaluation

Pathway	Result	Explanation
Surface Soil Contact	Pathway Incomplete	Contamination is not present in surface soil (0 to 2 feet below ground surface). The release was from a UST.
Sub-Surface Soil Contact	De-Minimis Exposure	Contamination in the sub-surface is below Method Two Table B2 ingestion and inhalation cleanup levels.
Inhalation – Outdoor Air	Pathway Incomplete	Contamination in the sub-surface is below inhalation cleanup levels.
Inhalation – Indoor Air (vap intrusion)	Pathway Incomplete	Contamination in the sub-surface is below inhalation cleanup levels. The site is located on the Galena air stri

		in an area that is non- residential. Land use controls are effect.
Groundwater Ingestion	De-Minimis Exposure	Soil concentrations for DRO are above the migration to groundwater cleanup level. However, groundwater contamination above Method Two, Table C cleanup lev was was not detected.
Surface Water Ingestion	Pathway Incomplete	Surface water is over 1,000 feet from the site. Migration from the site to any surface water body is highly unlikely given the remaining contaminant concentrations.
Wild and Farmed Foods Ingestion	Pathway Incomplete	Ecological habitat at and around UST1400 is of margina quality, dominated by gravel with sparse, low grass. Thi marginal habitat does not meet any criterion determined to support valued wild species, and is highly unlikely to farmed in the future. This location is within the Air Fiel
Exposure to Ecological Receptors	Pathway Incomplete	Ecological habitat at and around UST1400 is of margina quality, and the contamination remaining at the site is o low concentration, at depths where burrowing or diggin animals will not likely reach.

Notes to Table 2: "De-Minimis Exposure" means that in DEC's judgment receptors are unlikely to be affected by the minimal volume or concentration of remaining contamination. "Pathway Incomplete" means that in DEC's judgment contamination has no potential to contact receptors. "Exposure Controlled" means there is an administrative mechanism in place limiting land or groundwater use, or a physical barrier in place that deters contact with residual contamination.

ADEC Decision

A de minimis volume of petroleum contaminated soil was left in place approximately 10 feet below ground surface with concentrations above the migration to groundwater cleanup levels but below direct contact, ingestion and inhalation cleanup levels. However, groundwater samples indicate that all analytes in groundwater are below Table C cleanup levels. Migration to groundwater is not a concern at this site. All remaining contamination in soil and groundwater is either below approved cleanup levels or has been deemed "De-Minimis" by DEC. Therefore, this site will be updated in the Contaminated Sites Database to reflect that the UST1400 area is no longer of concern and will be considered "Closed", without Institutional Controls, subject to the following standard conditions.

Standard Conditions

1. Any proposal to transport soil or groundwater off-site requires DEC approval in accordance with 18 AAC 75.325. A "site" [as defined by 18 AAC 75.990 (115)] means an area that is contaminated, including areas contaminated by the migration of hazardous substances from a source area, regardless of property ownership. (See enclosed site map).

2. Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited.

3. Groundwater in the state of Alaska is protected for aquaculture use. In the event that an aquaculture facility uses groundwater from this site in the future, additional testing may be required to ensure that aquatic life criteria under 18 AAC 70 are not exceeded.

This determination is in accordance with 18 AAC 75.380 and does not preclude DEC from requiring additional assessment and/or cleanup action if future information indicates that this site may pose an unacceptable risk to human health or the environment.

Appeal

Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99811-1800, within 15 days after receiving the department's decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99811-1800, within 30 days after the date of issuance of this letter, or within 30 days after the department issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

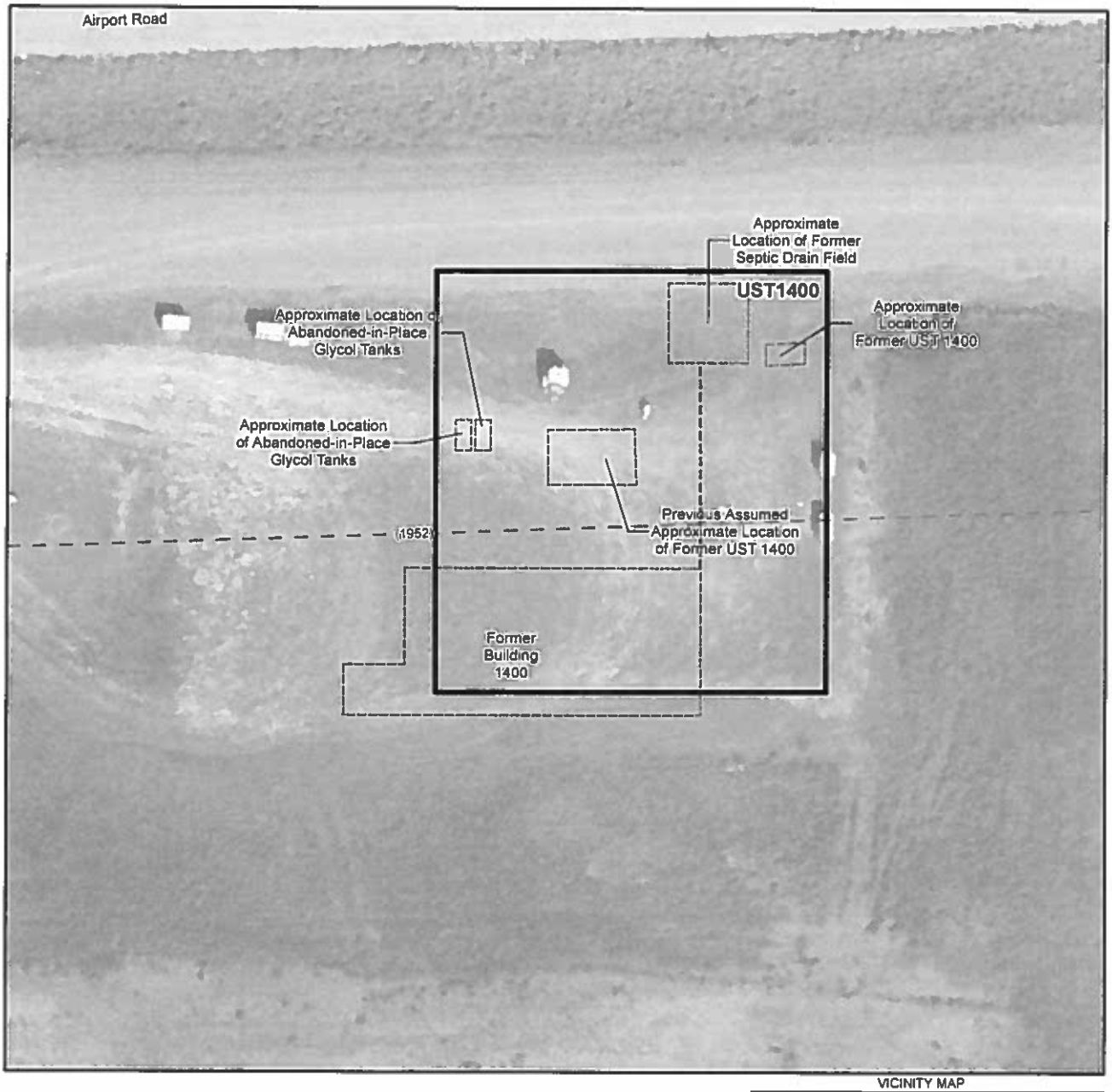
If you have questions about this closure decision, please feel free to contact me at (907) 451-2180.

Sincerely,

Dennis Shepard
Project Manager

Enclosure: UST1400 Site Map
Remaining Soil Contamination
Remaining Groundwater Contamination

cc: Donna Kozak, Booz Allen Hamilton, via email
Angela Sederquist, Booz Allen Hamilton, via email
Bruce Henry, Parsons, via email
Win Westervelt, CH2MHill, via email
Andi Lord, CH2MHill, via email
Penny Adler, ADOT&PF, via email
Margaret Moody, ADOT&PF, via email
Sam Myers, ADOT&PF, via email



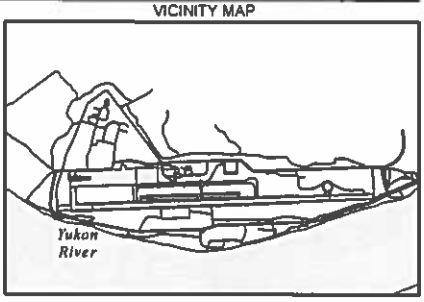
LEGEND

- UST1400
- Approximate Location of Former Feature
- Approximate Location of Former Septic Drain Pipe
- Abandoned Fuel Line (1952)

Notes:

1. Aerial photography courtesy Alaska Department of Commerce, Community and Economic Development, Division of Community and Regional Affairs. July 7, 2009. Pixel size 6 inch.
2. No 2010 utility locate data for this site.

VICINITY MAP

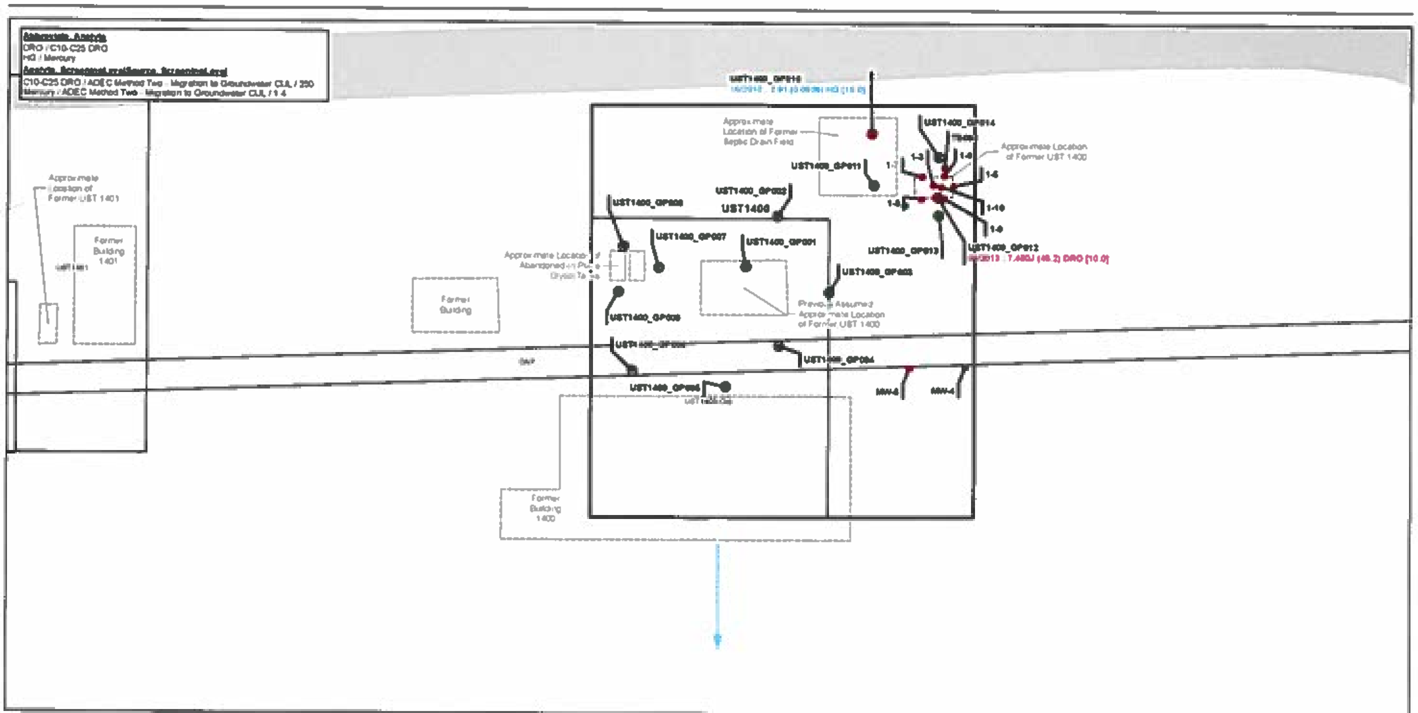


N

0 25 50

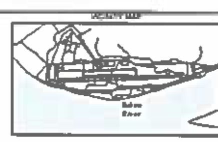
Feet

FIGURE 1
Site UST1400 Layout
Site Characterization Report
Former Galena Forward Operating Location, Alaska



LEGEND

- UST1400
- Adjacent Site
- Approximate Location of Former Feature
- Road
- Approximate Groundwater Flow Direction
- 2010/2013 Sample Exceeds Method 2 CUL
- 2010/2013 Sample Does Not Exceed Method 2 CUL
- Previous Sample Exceeds Method 2 CUL
- Previous Sample Does Not Exceed Method 2 CUL



Notes

1. J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
2. The groundwater flow direction shown is the predominant direction that persists from late August through breakup of the Yukon River (approximately May 15). Groundwater flow directions during the remainder of the year are variable depending on the timing of fluctuations in Yukon River stage
3. CULs are presented in units of mg/kg for SO (soil) samples

FIGURE 8
Site UST1400 Migration to Groundwater Method Two CUL Screening for Soil Samples (All Depths bgs)
Site Characterization Report
Former Galena Forward Operating Location, Alaska

CH2MHILL.

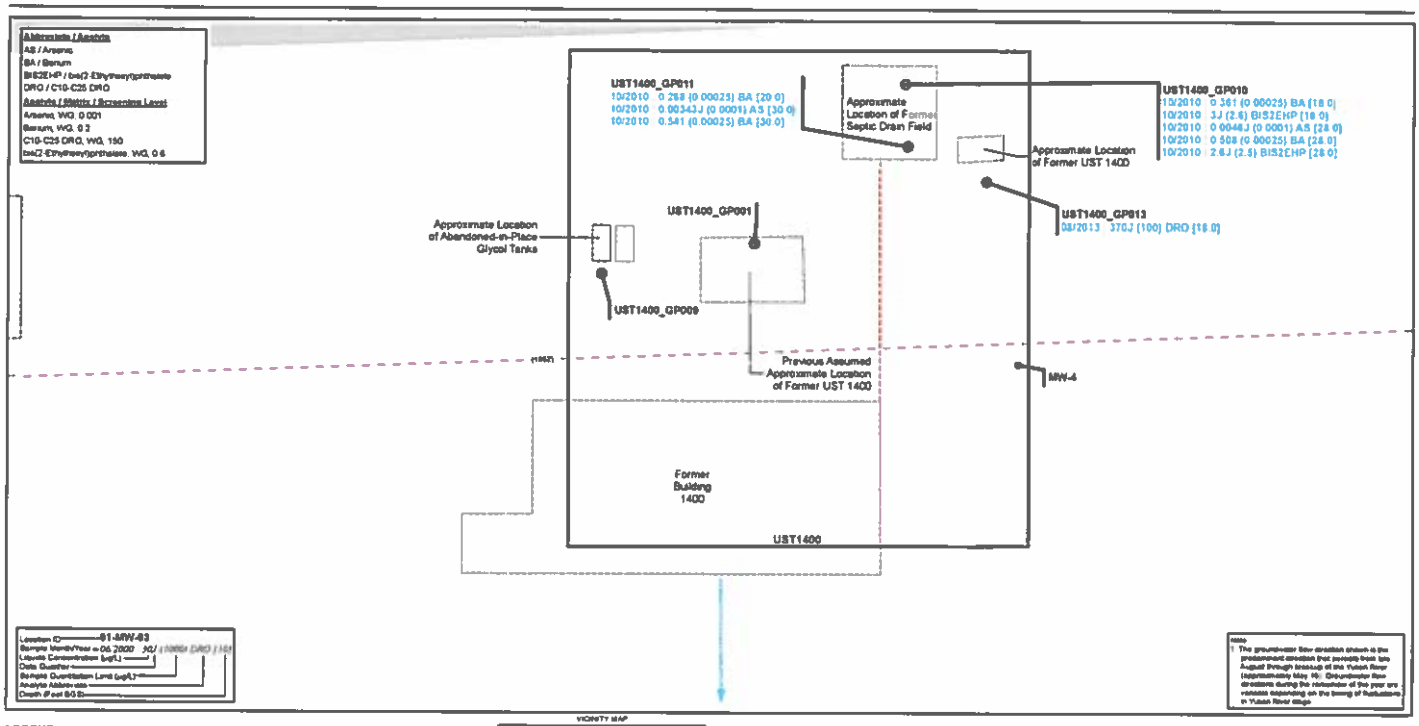


FIGURE 7
Site UST1400 Screening Level Exceedances in Groundwater
Site Characterization Report
Former Galena Forward Operating Location, Alaska

CH2MHILL