



THE STATE  
of **ALASKA**  
GOVERNOR MIKE DUNLEAVY

**Department of Environmental  
Conservation**

DIVISION OF SPILL PREVENTION AND RESPONSE  
Contaminated Sites Program

610 University Avenue  
Fairbanks, AK 99709-3643  
Phone: 907-451-2143  
Fax: 907-451-2155  
www.dec.alaska.gov

File: 2542.38.023  
Hazard ID: 2888

November 6, 2023

Rena Flint  
USACE, Alaska District  
PO Box 6898  
JBER, AK 99506-0809

Re: Decision Document: Dutch Hbr-Unalaska Vly UST 3075  
Cleanup Complete Determination

Dear Ms. Flint,

The Alaska Department of Environmental Conservation, Contaminated Sites Program (DEC) has completed a review of the environmental records associated with the Dutch Hbr-Unalaska Vly UST 3075, located on upper East Broadway Avenue in Unalaska, Alaska. Based on the information provided to date, it has been determined that the contaminant concentrations remaining on site do not pose an unacceptable risk to human health or the environment, and no further remedial action will be required unless information becomes available that indicates residual contaminants may pose an unacceptable risk.

This Cleanup Complete determination is based on the administrative record for the Dutch Hbr-Unalaska Vly UST 3075, which is located in the DEC office in Anchorage, Alaska. This decision letter summarizes the site history, cleanup actions and levels, and standard site closure conditions that apply.

**Site Name and Location:**

Dutch Hbr-Unalaska Vly UST 3075  
Bldg 3075  
East Broadway Avenue  
Unalaska, AK, 99685

**Name and Mailing Address of Contact Party:**

Rena Flint  
USACE, Alaska District  
PO Box 6898  
JBER, AK 99506-0809

**DEC Site Identifiers:**

File No.: 2542.38.023  
Hazard ID.: 2888

**Regulatory Authority for Determination:**

18 AAC 78 and 18 AAC 75

**Site Description and Background**

Underground Storage Tank (UST) 3075 was associated with the remnants of a former latrine, Building 3075, located on upper East Broadway Avenue in Unalaska, Alaska. During a Remedial Investigation

(RI) and interim removal actions (IRA) in 1997, a single-walled steel 300-gallon UST with heavy corrosion was located near the former latrine building, on a small bluff bound by the Iliukliuk River and a small creek. Approximately 80 gallons of water were pumped from the tank prior to its removal. The UST and 40 to 45 cubic yards (cy) of impacted soil were removed from the site in 1997, resulting in a 184 square foot excavation ranging from 7 feet below ground surface (bgs) to 11.5 feet bgs. Four samples were collected to characterize the soil remaining in the excavation, and a groundwater monitoring well was installed northeast of the excavation. Diesel range organics (DRO) exceeded the DEC Method Two Soil Cleanup Levels, at concentrations ranging from 53 milligrams per kilogram (mg/kg) to 7,800 mg/kg. DRO and RRO were detected in the groundwater sample above Table C groundwater cleanup levels, at concentration of 16 milligram per liter (mg/L) and 1.96 mg/L, respectively.

### Contaminants of Concern

During the site characterization and cleanup activities at this site, soil and groundwater samples were collected and analyzed for DRO, residual range organics (RRO), benzene, toluene, ethylbenzene, and xylenes (BTEX), and polycyclic aromatic hydrocarbons (PAHs). Based on these analyses, the following contaminant was detected above the default DEC soil cleanup levels and/or the Table C groundwater cleanup levels, and are considered Contaminants of Concern at this site:

- DRO
- RRO
- Ethylbenzene

### Cleanup Levels

The applicable cleanup levels at the site are the calculated method three site-specific alternative cleanup level (ACL) under 18 AAC 75.340 (e). A site-specific organic carbon content of soil (foc) value of 0.045 grams per gram (g/g) was used in the Petroleum Cleanup Level Calculator, as opposed to the default Method Two foc value of 0.001 g/g. The applicable groundwater cleanup levels are the Table C cleanup levels under 18 AAC 75.345.

**Table 1 – Approved Cleanup Levels**

Contaminant	Soil <sup>1</sup> (mg/kg)	Groundwater (mg/L)
DRO	8,300	1.5
RRO	n/a	1.1
Ethylbenzene	0.13	n/a

<sup>1</sup> Alternative Cleanup Level based on approved site-specific soil data and the equations set out in the department's *Procedures for Calculating Cleanup Levels*, dated February 1, 2018  
mg/kg = milligrams per kilogram

### Characterization and Cleanup Activities

In the mid 1990's, the Formerly Used Defense Sites (FUDS) program conducted site inspections (SI) in Unalaska to find and dispose of remaining debris, USTs, and other potential contaminant sources. During the RI and IRA activities in 1997, a single-walled steel 300-gallon UST with heavy corrosion was identified near the former latrine building. Approximately 80 gallons of water were pumped from

the tank prior to its removal. The UST and 40 to 45 cubic yards (cy) of impacted soil were removed from the site in 1997 and transported offsite for treatment, resulting in a 184 square foot excavation to bedrock, with depths ranging from 7 feet bgs to 11.5 feet bgs. The presence of bedrock and the steep cut bank of the Oliuliuk River limited further excavation activities. Groundwater was observed in the base of the excavation on top of bedrock, and a groundwater monitoring well was installed northeast of the excavation to see if contamination had impacted the groundwater. Four samples were collected to characterize the soil remaining in the excavation, and one groundwater sample was collected from the groundwater monitoring well. The excavation was then backfilled with clean soil provided by the City of Unalaska.

Soil samples were collected at the base of the excavation from 7.0 to 11.5 feet bgs and submitted for DRO, RRO, and BTEX analyses. Two of the soil samples were also submitted for PAH analyses. One groundwater sample was collected from 9.31 feet bgs and submitted for DRO, BTEX, and PAH analyses.

RRO was detected at three of the four soil sample locations with concentrations ranging between 17 mg/kg and 240 mg/kg. BTEX constituents were detected in one of the four soil samples with toluene reported at a concentration of 0.1078 mg/kg; ethylbenzene was detected at a concentration of 0.1439 mg/kg and total xylenes at a concentration of 0.8076 mg/kg. Ethylbenzene slightly exceeded DEC's Method 2, Table B1 soil cleanup level of 0.13 mg/kg. Both soil samples submitted for PAH analyses had detected concentrations below soil cleanup levels. DRO was detected in all four soil samples with concentrations ranging between 53 mg/kg and 7,800 mg/kg. Two of the samples exceeded the most stringent DEC Method Two soil cleanup level of 230 mg/kg for DRO, at values of 660 and 7,800 mg/kg. The location of the 660 mg/kg exceedance was located in the center of the excavation in wet fractured bedrock. Field screening suggested that elevated levels of DRO remain in the fractured bedrock and in the sidewall soil northeast from the center of the excavation where the highest level of contamination was identified. However, the bedrock and steep cut-bank above the Oliuliuk River made excavation of the remaining impacted soil in the direction of the river impractical.

DRO and RRO were detected in the groundwater sample above Table C groundwater cleanup levels at concentrations of 16 mg/L and 1.96 mg/L, respectively. BTEX was not detected in the groundwater sample, and PAH constituents were detected below Table C cleanup levels. Two test pits were advanced around the excavation to determine if sources other than the UST were contributing to contamination detected in the excavation. No analytical samples were collected in either test pit; however, no indications of petroleum hydrocarbon contamination were present. Following the 1997 RI and IRA activities, the site was recommended for further action.

During a Site Investigation (SI) in 2000, due to the 1997 exceedances of DEC soil and groundwater cleanup levels, two test pits were dug to the north of the 1997 excavation to determine the limits of contamination. Potentially contaminated soil was encountered at four feet bgs in the first test pit (TP-1), and approximately 15 cubic yards of soil were removed to bedrock at 11 feet bgs. TP-01 was then backfilled with clean fill and re-seeded. Contamination was not observed in the second test pit (TP-2). Soil samples were collected from the bottom of the two test pits and did not detect contaminants above Method Two soil cleanup levels. Additional excavation in the vicinity of the 1997 exceedances was not possible due to the proximity of the Oliuliuk River. One soil sample was also collected from the cut bank below the former UST location, approximately 8 feet above the Oliuliuk River. This sample did not exceed Method Two soil cleanup levels. Ethylbenzene was not retained as a COC due to no longer being

detected in the soil, and groundwater samples demonstrating that the contaminant had not migrated to groundwater.

One sediment and one surface water sample were collected from Iliuliuk River immediately east of TP-I. At the time of sampling, the river was running clear, and no odor or sheen was present. The sediment sample did not detect contaminants above soil cleanup levels, and the surface water sample did not detect contaminants that exceeded 18 AAC 75, Table C groundwater cleanup levels or 18 AAC 70, surface water cleanup levels. One groundwater sample was collected from the monitoring well at the site and the groundwater sample did not detect any contaminants that exceeded 18 AAC 75, Table C groundwater cleanup levels or 18 AAC 70, surface water cleanup levels. Following the 2000 Islandwide SI, it was recommended that one additional groundwater sample be collected from the monitoring well to confirm levels are consistently below groundwater cleanup levels following the 1997 soil removal action.

In 2001, one groundwater sample was collected from the well point and the sample was non-detect for DRO and RRO. The 2001/2002 Islandwide SI/RI/IRA Report concluded that residual contamination in the soil that could not be removed due to the presence of bedrock and the steep cut bank of the Iliuliuk River was not contributing to groundwater contamination and the site was recommended for no further action. The site layout and sampling locations are shown in Figure 1.

In 2009, because two historical DRO sample results were above DEC Method Two migration to groundwater cleanup level, a Method Three alternative cleanup level of 8,300 mg/kg was calculated and approved in the *Final Soil Sampling and Statistical Analysis for Background Concentrations and Alternative Cleanup Levels*, dated August 2009. All DRO sample results are below this DEC Method Three alternative cleanup level as well as DEC ingestion and inhalation cleanup levels. The Method Three Alternative Cleanup Level calculations are shown in Figure 2.

### **Cumulative Risk Evaluation**

Pursuant to 18 AAC 78.600(d), 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.

Based on a review of the environmental record, DEC has determined that residual contaminant concentrations meet the human health cumulative risk criteria for residential land use.

### **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**

<b>Pathway</b>	<b>Result</b>	<b>Explanation</b>

Surface Soil Contact	Pathway Incomplete	Contamination is not present in surface soil (0-2 ft bgs)
Sub-Surface Soil Contact	De Minimis Exposure	Contamination remains in the sub-surface (>2 ft bgs) but is below the ingestion cleanup level.
Inhalation – Outdoor Air	Pathway Incomplete	Residual contaminants in soil are not volatile.
Inhalation – Indoor Air (vapor intrusion)	Pathway Incomplete	Residual contaminants in soil are not volatile. There are no occupied buildings at the site.
Groundwater Ingestion	De Minimis Exposure	Groundwater samples are below Table C cleanup levels. Contaminants in soil are below the site-specific calculated migration to groundwater cleanup levels. Site is underlaid by bedrock and groundwater in the vicinity of the site is not currently used as a drinking water source.
Surface Water Ingestion	De Minimis Exposure	Surface water samples did not detect contaminants that exceed 18 AAC 75, Table C groundwater cleanup levels or 18 AAC 70, surface water cleanup levels. Iliukliuk River is located 20 feet to the south. Contaminants in soil are below the site-specific method Three Migration to Groundwater cleanup levels for the site and contamination is not expected to significantly impact surface water.
Wild and Farmed Foods Ingestion	Pathway Incomplete	Contaminants of concern do not have the potential to bioaccumulate in plants or animals.
Exposure to Ecological Receptors	Pathway Incomplete	Contaminants are not present in surface soil and are not expected to significantly impact surface water.

**Notes to Table 2:** “De Minimis Exposure” means that in DEC’s judgment receptors are unlikely to be adversely 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.

### DEC Decision

Soil contamination at the site have been cleaned up to concentrations below the approved cleanup levels suitable for residential land use. This site will receive a “Cleanup Complete” designation on the Contaminated Sites Database, subject to the following standard conditions.

### Standard Conditions

1. Any proposal to transport soil or groundwater from a site that is subject to the site cleanup rules or for which a written determination from the department has been made under 18 AAC 75.380(d)(1) that allows contamination to remain at the site above method two soil cleanup levels or groundwater cleanup levels listed in Table C requires DEC approval in accordance with 18 AAC 78.600(h). A “site” [as defined by 18 AAC 78.995(134)] means an area that is contaminated, including areas contaminated by the migration of hazardous substances from a source area, regardless of property ownership. (See attached site figure.)
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 throughout Alaska is protected for use as a water supply for drinking, culinary and food processing, agriculture including irrigation and stock watering, aquaculture, and industrial use. Contaminated site cleanup complete determinations are based on groundwater being considered a potential drinking water source. In the event that groundwater from this site is to be used for other purposes in the future, such as aquaculture, additional testing and treatment may be required to ensure the water is suitable for its intended use.

This determination is in accordance with 18 AAC 78.276(f) and does not preclude DEC from requiring additional assessment and/or cleanup action if information indicates that contaminants at this site may pose an unacceptable risk to human health, safety, or welfare or to the environment.

### **Informal Reviews and Adjudicatory Hearings**

A person authorized under a provision of 18 AAC 15 may request an informal review of a contested decision by the Division Director in accordance with 18 AAC 15.185 and/or an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340. See DEC's "Appeal a DEC Decision" web page <https://dec.alaska.gov/commish/review-guidance/> for access to the required forms and guidance on the appeal process. Please provide a courtesy copy of the adjudicatory hearing request in an electronic format to the parties required to be served under 18 AAC 15.200. Requests must be submitted no later than the deadline specified in 18 AAC 15.

If you have questions about this closure decision, please feel free to contact me at (907) 451-2181, or email at [cascade.galasso-irish@alaska.gov](mailto:cascade.galasso-irish@alaska.gov).

Sincerely,



Cas Galasso  
Project Manager

cc: Spill Prevention and Response, Cost Recovery Unit

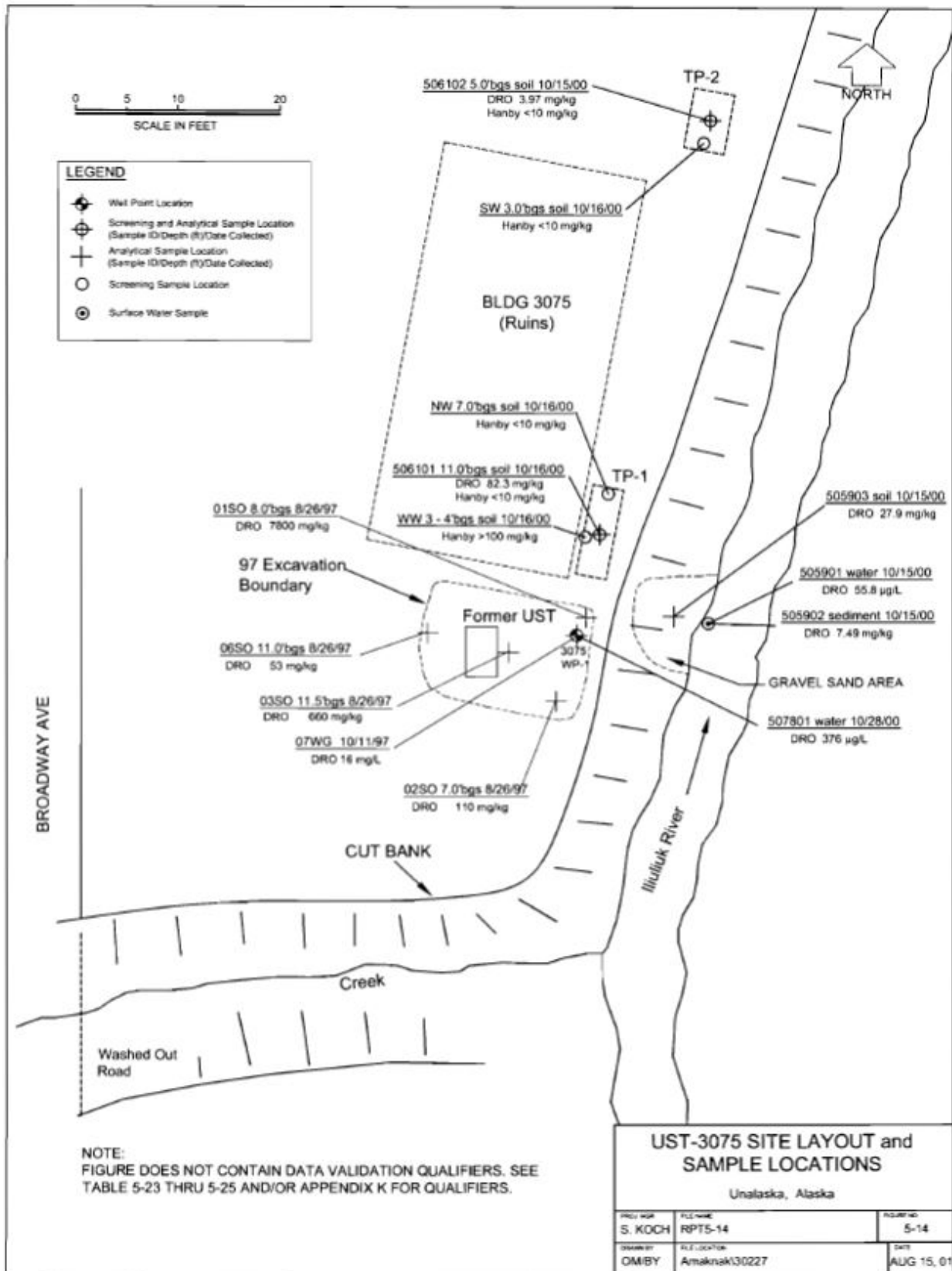


Figure 1 - Site figure of sampling locations and results from the 1997 and 2000 fieldwork

## Petroleum Cleanup Level Calculator

Site zone and exposure scenario: Over 40-inch Zone - Residential Exposures

### Cleanup Level Calculations

10/3/2023

Chemical	CAS	Type	Calculations
DRO Aliphatic		Organic Non-Carcinogenic Petroleum	Ingestion Cleanup Level: 8300 mg/kg
			Inhalation Cleanup Level: 129000 mg/kg
			Groundwater Cleanup Level: 3.7 mg/L
			Migration to Groundwater: 288000 mg/kg
DRO Aromatic		Organic Non-Carcinogenic Petroleum	Ingestion Cleanup Level: 3300 mg/kg
			Inhalation Cleanup Level: 39400 mg/kg
			Groundwater Cleanup Level: 1.5 mg/L
			Migration to Groundwater: 3900 mg/kg
DRO (Total)		Organic Non-Carcinogenic Petroleum	Ingestion Cleanup Level: 8300 mg/kg
			Inhalation Cleanup Level: 98500 mg/kg
			Groundwater Cleanup Level: 1.5 mg/L
			Migration to Groundwater: 9800 mg/kg

### Please Note

Chemical	Notes
DRO Aliphatic	The Maximum Allowable DRO Aliphatic concentration is 10000 mg/kg
DRO Aromatic	The Maximum Allowable DRO Aromatic concentration is 5000 mg/kg
DRO (Total)	The Maximum Allowable DRO concentration is 12500 mg/kg

The parameters used to calculate the above cleanup levels and the parameters' default values are as follows:

### Volatilization Pathway Parameters

Symbol	Description	Value	Default	Units
$\rho_b$	Dry soil bulk density	1.5	1.5	g/cm <sup>3</sup>
$\alpha$	Total soil porosity	0.434	0.434	L <sub>pore</sub> /L <sub>soil</sub>
$\theta_w$	Water-filled soil porosity	0.15	0.15	L <sub>water</sub> /L <sub>soil</sub>
$\theta_a$	Air-filled soil porosity	0.284	0.284	L <sub>air</sub> /L <sub>soil</sub>
$w$	Average soil moisture content	0.1	0.1	$\theta_{water}/\rho_{soil}$
$f_{oc}$	Organic carbon content of soil	0.045	0.001	g/g

### Groundwater Pathway Parameters

Symbol	Description	Value	Default	Units
$\theta_w$	Water-filled soil porosity	0.3	0.3	L <sub>water</sub> /L <sub>soil</sub>
$\theta_a$	Air-filled soil porosity	0.13	0.13	L <sub>air</sub> /L <sub>soil</sub>

[https://dec.alaska.gov/applications/spar/webcalc/dsp\\_fullLevels.asp?hdn\\_scenCode=Res040](https://dec.alaska.gov/applications/spar/webcalc/dsp_fullLevels.asp?hdn_scenCode=Res040)

1/2

Figure 2 - Unalaska Valley UST 3075 Method 3 Alternative Cleanup Level calculations