Request for Conditional Closure

Site:

The site is known as the Combine Shop, as well as the National Oceanic and Atmospheric Administration (NOAA) Combine Shop. The site herein will be called "the site." The site is not included on the list commonly referred as Two-Party Agreement (TPA) or non-TPA (NTPA) sites. However, for consistency NOAA is addressing the site in compliance with the TPA.

Location:

St. Paul Island, Alaska is approximately 800 miles southwest of Anchorage in the Bering Sea (Figure 1). On the island, the site is at NOAA Tract 50, along the Salt Lagoon Channel between NOAA Staff Quarters and the NOAA GARCO storage garage (57°07'41.67" North Latitude, 170°16'32.58" West Longitude; Figure 2).

Legal Property Description:

The site is located within NOAA Tract 50 (Figure 2). The legal description for Tract 50 is: Township 35 South, Range 132 West, Section 25 of the Seward Meridian, Alaska, as shown on the plat of rectangular survey, officially filed April 18, 1997. The U.S. Government owns the surface and subsurface estate of Tract 50. Most of Tract 50, including the site, is scheduled for transfer to Tanadgusix Corporation (TDX) under the Transfer of Property Agreement (TOPA; NOAA 1984).

Type of Release:

The site used an underground storage tank (UST) to store heating oil used to fire a furnace to heat the Combine Shop building. Arctic-grade diesel is the assumed type of heating oil stored in the UST, with specific contaminants of concern limited to gasoline-range organics (GRO); diesel-range organics (DRO); residual-range organics (RRO); benzene, toluene, ethylbenzene, and total xylenes (BTEX); and select polynuclear aromatic hydrocarbons (PAHs). Releases from the UST are presumed limited to overfilling the tank based on observations made during UST removal as well as confirmation sample analyses (see "Summary of Corrective Actions" below). Subsequent to UST removal, an aboveground storage tank (AST) was installed at the site by a third party to supply heating oil to the building's furnace. No other release of contaminants has been documented at the site.

History and Background:

NOAA constructed the Combine Shop building, reportedly in 1974 (CESI 2001). The building is constructed with a steel frame atop a concrete slab, with corrugated steel siding and roof panels on the exterior, and plywood walls and ceilings on the interior. The metal surfaces are reportedly unpainted, with some of the interior plywood walls having a thin coat of beige paint (CESI 2001). The building has been used for several purposes: (1) storage in the main room area; (2) storage on shelving in the loft area; (3) two bathrooms on the ground floor; (4) a boiler room on the ground floor; (5) garage on the south side of the main floor; and (6) a wood shop on the north side of the main floor.

Recent building use included storing the island's volunteer fire department's fire trucks and appurtenances. Current uses include the Tribal Governments cardboard and aluminum can recycling center, and the storing of animal carcasses and skins.

Summary of Site Investigations:
In August 2000, NOAA contractor Columbia Environmental Sciences, Inc. (CESI) identified one UST at the site. CESI also identified a "modern" power transformer with no evidence of dielectric oil releases.

NOAA did not install any groundwater monitoring wells at the site. The site is approximately 400 feet south of the Diesel Seep Site (NOAA Sites 33 and 34/TPA Sites 13a and 13b), where NOAA previously installed monitoring wells at five locations (MWDS-1 through MWDS-5). Since both the Diesel Seep Site and the site are located along the Salt Lagoon Channel, it is assumed their vadose zone and upper saturated zone soil types are similar as their geologic histories are likely to be similar. Well logs for these wells suggest the vadose zone and upper saturated zone soils at and near the site building consist of a thin surface layer of imported scoriaceous rock for a heavy equipment driving surface, followed by coarse-grained sand with fines through the vadose zone and into the upper saturated zone (ADNR 2005).

Summary of Applied Closure Standards:
NOAA employed ADEC Method One cleanup criteria for GRO, DRO, and RRO in soil, as discussed at 18 Alaska Administrative Code (AAC) Chapter 75.341(a), and ADEC Method Two cleanup criteria for BTEX and select PAHs as discussed at 18 AAC 75.341(c) (ADEC 2003a). NOAA calculated a Method One matrix score to determine the site's cleanup levels for GRO, DRO, and RRO (18 AAC 75.341(a)). A copy of the calculation is attached to this conditional closure request. According to 18 AAC 75.340(d), "the soil cleanup levels provided under method one and method two apply at a contaminated site unless the department approves an alternative cleanup level that the responsible person has proposed under method three or method four." When using Method One for GRO, DRO, and RRO soil cleanup levels, 18 AAC 75.341(a)(4) indicates the site must meet the most stringent standards for benzene, toluene, ethylbenzene, and total xylenes for the applicable exposure pathway in ADEC's Method Two cleanup level table. The site-specific cleanup levels are summarized in Table 1 of this conditional closure request.

Summary of Corrective and Closure Actions:
NOAA tasked CESI with removing the UST and its appurtenances from the site, as well as any PCS. CESI removed the UST and appurtenances on August 24, 2000. CESI observed the tank in good condition, with minimal corrosion and no holes. CESI observed visual and olfactory evidence of releases in shallow soils around the fill pipe, but did not observe evidence of releases in the deeper excavation soils (*i.e.,* to 6 ft bgs). Available documentation does not indicate the size of the UST, however, other NOAA sites on St. Paul Island normally used 1,000-gallon capacity USTs for heating oil storage. CESI inerted the UST then hauled it to a nearby metallic debris staging area. Nortech, another NOAA contractor, cut up the UST and appurtenances for scrap and transported the scrap off-island on NOAA's September 2000 debris barge (CESI 2001, Nortech 2001).

CESI removed an unspecified volume of PCS from the area surrounding the UST (Figure 3). The bottom of the excavation extended to the top of the saturated zone, approximately 6 ft bgs. Groundwater observed in the bottom of the excavation did not have a visible petroleum sheen (CESI 2001). CESI indicated the excavation's west sidewall was adjacent to the east wall of the Combine Shop building, and that further excavation to the west was not possible due to the excavation's close proximity to the building wall.

CESI collected five confirmation samples from the excavation: one sample from the bottom of the excavation and one sample from each of the four excavation sidewalls. All five confirmation samples were below their closure standards, as listed in the previous section (Figure 3, Table 1). One should note that CESI did not survey the locations of each confirmation sample location, so their locations as shown on Figure 3 are approximate and are based on CESI's report text (CESI 2001). One should also note the sample from the west sidewall, which is closest to the Combine Shop building, contained DRO at 340 mg/kg. This value is below the site cleanup level of 1,000 mg/kg, though it is above the ADEC Method Two DRO cleanup level of 250 mg/kg.

CESI hauled the removed PCS to NOAA's permitted PCS stockpile at the Blubber Dump, located approximately 1 mile northwest of the site. CESI collected a characterization sample to represent the PCS, with fixed laboratory results indicating the PCS did not exceed the site-specific cleanup levels though site contaminants DRO and RRO were detected in the sample. NOAA subsequently remediated the PCS using its Enhanced Thermal Conduction treatment system, with treated soil hauled to NOAA's Tract 42 for use as landfill day cover (NOAA 2005).

CESI backfilled the excavation and restored the site to the surrounding grade. An AST was installed in September 2000 to replace the removed UST. The AST was purportedly installed by a third party.

CESI advanced one soil boring immediately west of the Combine Shop building in October 2000 (Figure 3) to determine the potential migration of DRO and RRO associated with petroleum-contaminated soil (PCS) identified during removal of UST. CESI collected soil samples from three separate boring depth intervals: 0 to 2 feet (ft) below ground surface (bgs), 2 to 4 ft bgs, and 4 to 6 ft bgs. The 4 to 6 ft bgs sample represented soil at the bottom of the vadose zone and the top of the saturated ("groundwater") zone. CESI indicated the purpose of this boring was to collect soil samples at the water table to determine if the closest, downgradient (relative to assumed groundwater flow direction) soils were contaminated (CESI 2001). All three samples were analyzed on island using a colorimetric field screening technique (Dexil® Petroflag), with screening results indicating no petroleum contamination was present near State of Alaska Department of Environmental Conservation (ADEC) regulatory limits. CESI sent the 0 to 2 ft bgs and 4 to 6 ft bgs soil samples to an off-island laboratory for quantitative analysis using ADEC-approved methods. The laboratory determined these samples did not contain DRO or RRO above their ADEC Method One Category C cleanup levels or Method Two for BTEX and select PAHs.

Recommended Action:

Site confirmation results from the UST excavation indicate no contaminants of concern remain above their site cleanup levels. In accordance with paragraph 59 of the Two Party Agreement (NOAA 1996), NOAA requests written confirmation that NOAA completed all appropriate corrective and closure actions, to the maximum extent practicable, at the Combine Shop site, in accordance with the TPA and that ADEC grant a conditional closure that will not require further remedial action from NOAA. ADEC will/may require additional containment, investigation, or cleanup if subsequent information indicates that the level of contamination that remains does not protect human health, safety, or welfare, or the environment.

References:

Alaska Department of Environmental Conservation (ADEC). 1991. *Interim Guidance for Non-UST Contaminated Soil Cleanup Levels.* Contaminated Sites Program. July 17.

ADEC. 2003a. Title 18 Alaska Administrative Code (AAC) Chapter 75, Articles 3 and 9. *Oil and Hazardous Substances Pollution Control Regulations.* State of Alaska. Amended through January 30.

ADEC. 2003b. 18 AAC 78. *Underground Storage Tanks*. State of Alaska. Amended through January 30.

Alaska Department of Natural Resources (ADNR). 2005. Well Log Tracking System (WELTS). Division of Mining, Land and Water, Alaska Hydrologic Survey. http://info.dec.state.ak.us/welts/default.asp . Database accessed October 31, 2005.

Columbia Environmental Sciences, Inc. (CESI). 2001. *Draft Building Assessment Report, Combine Shop, St. Paul Island, Alaska*. Version 2.0. May 29.

National Oceanic and Atmospheric Administration (NOAA). 1984. *Transfer of Property on the Pribilof Islands ("Transfer of Property Agreement (TOPA)").* February 10.

NOAA. 1996. *Pribilof Islands Environmental Restoration Two-Party Agreement, Attorney General's Office File No. 66-1-95-0126*. January 26.

NOAA. 2005. *2002 Petroleum Contaminated Soil Remediation.* February.

Nortech. 2001. Scrap Recycle Receipt, Seattle Iron and Metal Corp. Receipt number 014854. November 8.

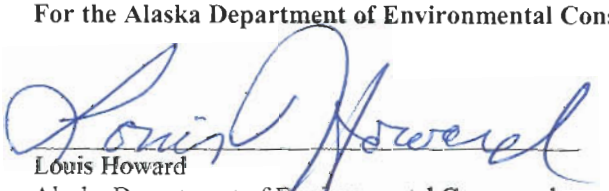
For the National Oceanic and Atmospheric Administration

John Lindsay
NOAA, Pribilof Project Office

16 Nov 2005
Date

Approvals: In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed to the maximum extent practicable at the Combine Shop site at NOAA Tract 50 on St. Paul Island, in accordance with the Agreement and that no further remedial action is required as a part of this conditional closure granted by ADEC.

For the Alaska Department of Environmental Conservation



Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

Nov 39 2005
Date

TABLES

Table 1 – Summary of Site Soil Cleanup Levels

Analytical Parameter	Laboratory Method	Soil Cleanup Objective [a] (mg/kg)
GRO	AK101	500
DRO	AK102	1,000
RRO	AK103	2,000
Benzene	EPA 8021B	0.5 [b]
Ethylbenzene	EPA 8021B	5.5
Toluene	EPA 8021B	5.4
Xylenes, total	EPA 8021B	78
Acenaphthene	EPA 8270C	210
Anthracene	EPA 8270C	4,300
Benzo(a)anthracene	EPA 8270C	6
Benzo(b)fluoranthene	EPA 8270C	11
Benzo(k)fluoranthene	EPA 8270C	110
Benzo(a)pyrene	EPA 8270C	1
Chrysene	EPA 8270C	620
Dibenzo(a,h)anthracene	EPA 8270C	1
Fluorene	EPA 8270C	270
Indeno(1,2,3-c,d)pyrene	EPA 8270C	11
Naphthalene	EPA 8270C	21
Pyrene	EPA 8270C	1,500

Notes:

(a) Unless otherwise noted, the cleanup objective listed is the ADEC Method One cleanup level for GRO, DRO, and RRO, and the ADEC Method Two cleanup level for BTEX and select PAHs obtained from Title 18 of the Alaska Administrative Code 75, "Oil and Hazardous Substances Pollution Control Regulations," published by the State of Alaska and amended through January 30, 2003. Contaminants of concern for this site are limited to BTEX, GRO, DRO, RRO, and select PAHs; although not identified as a contaminant of concern in the corrective action plan, lead is included because lead analyses were conducted on some samples.

(b) Under the TPA, NOAA is required to comply with the 1991 ADEC cleanup level for benzene (0.5 mg/kg); however, NOAA has attempted to remove benzene to within the current ADEC Method Two cleanup level (0.02 mg/kg) when possible.

FIGURES

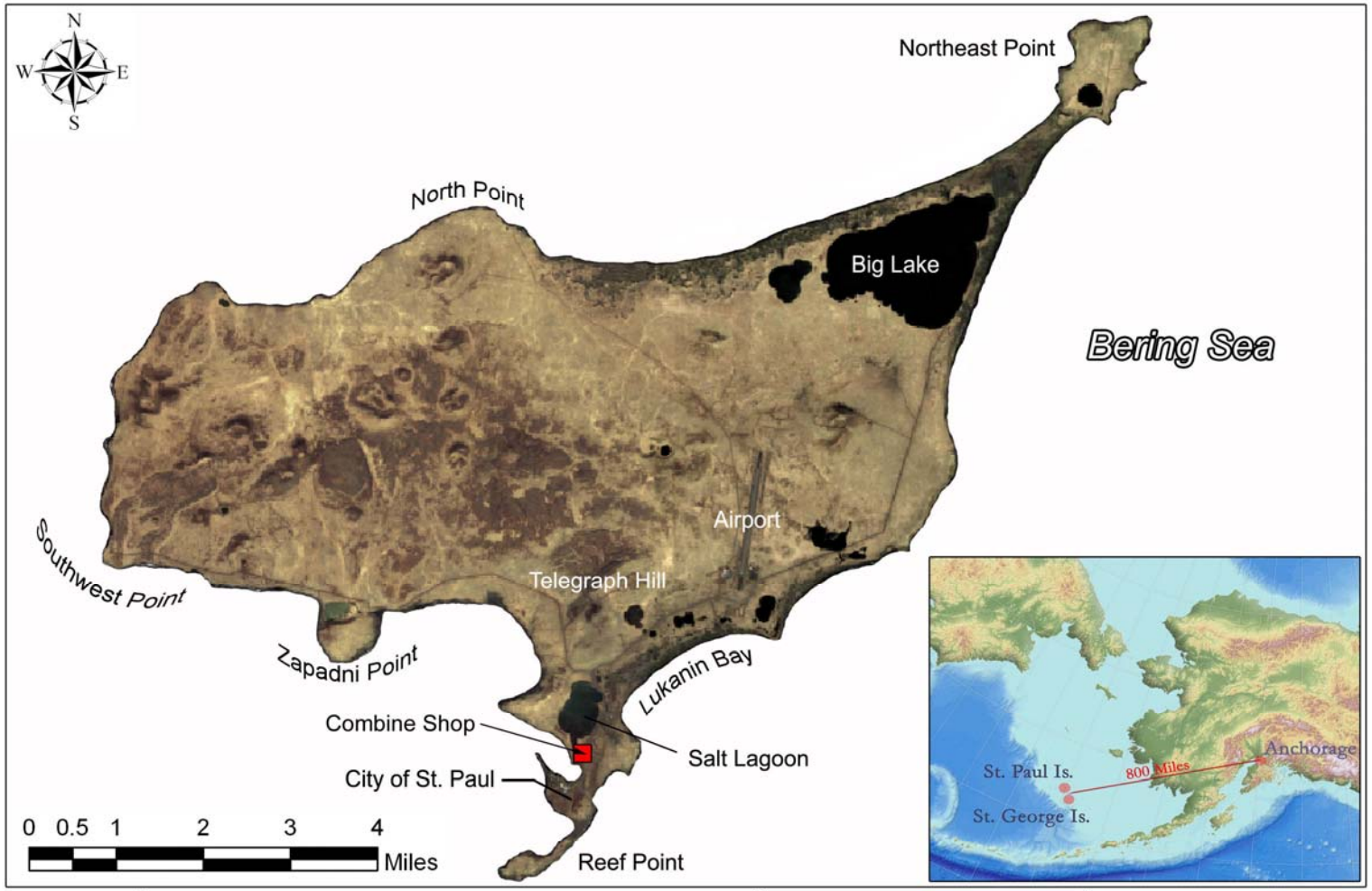


Figure 1	St. Paul Island Vicinity Map Combine Shop Location St. Paul Island, Alaska	Source: Ikonos Satellite Imagery, 2001

Pribilof Islands Restoration Project

Figure 2	NOAA Tract 50 Combine Shop Location St. Paul Island, Alaska	Sources: Tracts (BLM 1983), Satellite Imagery (Ikonos 2001).	Pribilof Islands Restoration Project

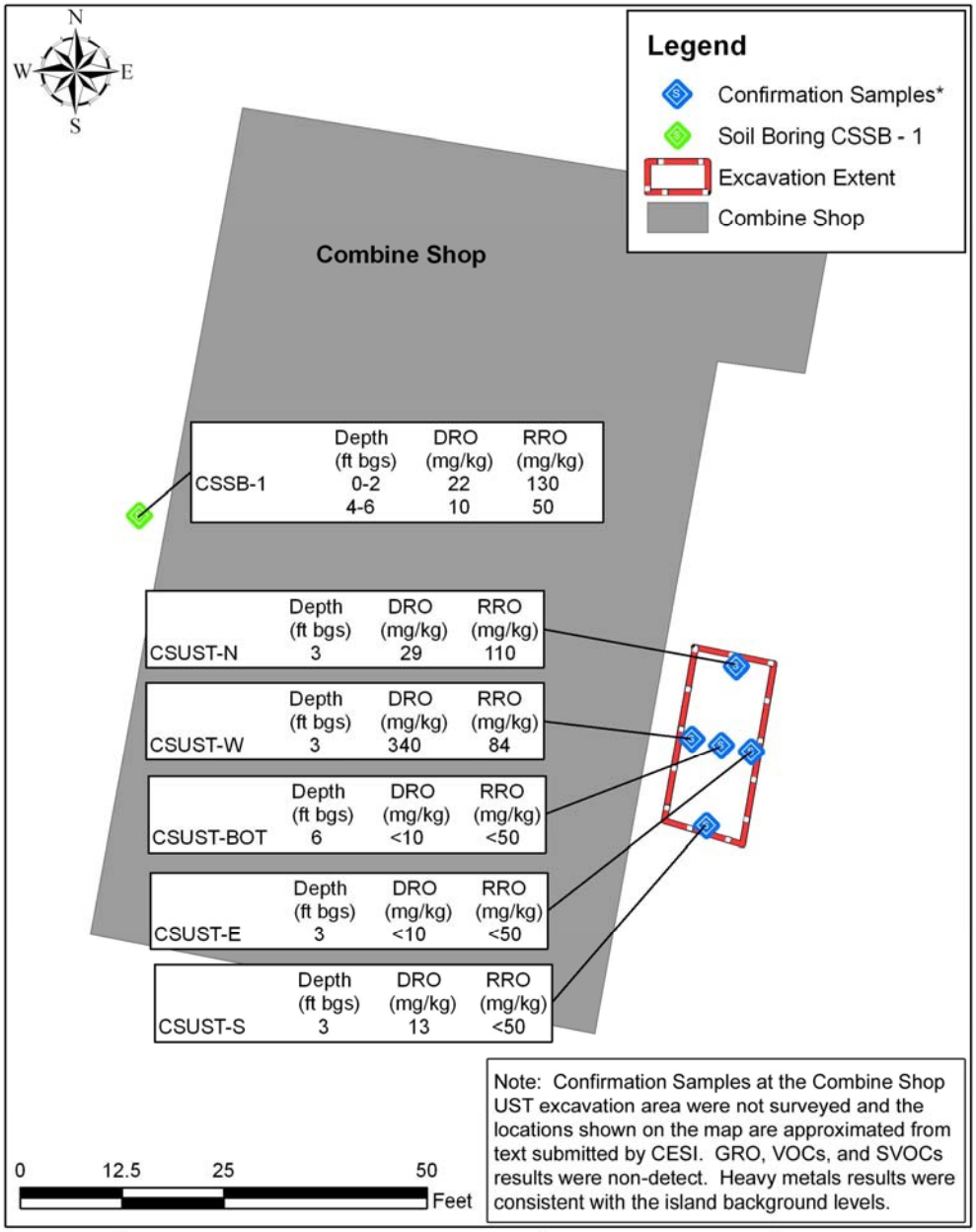


Figure 3	UST Removal, Excavation Extent, and Sampling Results Combine Shop St. Paul Island, Alaska	Sources: Combine Shop (NOAA GIS 2005), Excavation Extent and Sampling Locations (CESI GPS 2000).	Pribilof Islands Restoration Project

ATTACHMENT 1

ADEC METHOD ONE MATRIX CALCULATION

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DIVISION OF SPILL PREVENTION AND RESPONSE
CONTAMINATED SITES REMEDIATION PROGRAM

GUIDANCE FOR CLEANUP OF PETROLEUM CONTAMINATED SITES

SOIL STORAGE AND DISPOSAL

Soil storage and disposal requirements are set out at 18 AAC 75.370. The regulations allow soil to be stockpiled on a liner. The contaminated soil must be 200 feet or more from a water source serving a Class A or Class B public water system and at least 100 feet from surface water, a private water system, or a Class C public water system. At all sites, contaminated soil that is temporarily stockpiled should be treated to meet cleanup levels within two years.

Contaminated soil should not be blended with uncontaminated soil (unless approved by DEC). If the site has multiple sources, segregate the soil into different stockpiles based on source types. Segregate soil based on field screening results and knowledge of historical activities, visual observations, and the type of products spilled. For example, segregate gasoline-contaminated soil from diesel or waste oil-contaminated soil.

The regulations set out bottom liner specifications for stockpiles in Table D of 18 AAC 75.370. For petroleum-contaminated soil, a 10-mil thick liner is required for short-term storage (less than 180 days). For long-term storage (more than 180 days), a 20-mil thick bottom liner is required. Contaminated stockpiles must be covered with a 6-mil or greater thickness of reinforced polyethylene liner. The liner should protect the contaminated stockpile from weather. The edges of the cover liner should lap over the bottom liner to prevent water from running through the soil in the stockpile. Use tires, ropes, or other materials to hold the cover in place. Inspect and maintain the stockpile regularly to ensure the cover and bottom liner material remains intact and that any liquid leachate from the soil is contained and does not migrate.

Prior DEC approval is required for offsite storage or disposal of soil or groundwater subject to the site cleanup rules (18 AAC 75.325(i)). If soil is transported offsite for treatment, it should be moved as a covered load in a manner that prevents loss of material during transport. In some cases, the disposal site may require approval of the DEC Solid Waste Program (18 AAC 60.025).

SOIL CLEANUP LEVELS

The regulations provide four different methods to determine soil cleanup levels at petroleum contaminated sites. Method one involves a table to calculate a matrix score and the cleanup level depends on the matrix score. Method two employs two different tables, one for individual contaminants and one for petroleum hydrocarbon ranges. Method three allows substitution of site-specific data parameters used in the method two equations. Method four involves the development and DEC approval of a site-specific risk assessment.

Early in the site cleanup process, the responsible party should carefully consider each of the four methods for determining the cleanup levels. The different methods have different data requirements and various advantages and disadvantages depending on the cleanup objectives and site-specific conditions.

Method one

Method one involves a table to determine the soil cleanup level for three different hydrocarbon ranges: gasoline range organics (GRO), diesel range organics (DRO), and residual range organics (RRO). Two different tables are provided at 18 AAC 75.341. Table A1 applies to non-arctic zones and Table A2 applies to manmade gravel pads in arctic zones. "Arctic zone" is defined at 18 AAC 75.990 and generally means areas north of latitude 68 degrees North. Other areas may be considered "arctic zone" based on a demonstration that the site is underlain by continuous permafrost.

Table A1 – Cleanup Levels in Non-arctic Zones

Table A1 is used to determine soil cleanup levels for GRO, DRO, and RRO. A matrix table is used to tally scores for five parameters: Depth to Groundwater, Mean Annual Precipitation, Soil Type, Potential Receptors, and Volume of Contaminated Soil. Each parameter has four to six possible scores, depending on site conditions. The five individual scores are added together to determine a total matrix score. Table A1 includes several notes to define terms and to assist with determining scores.

The matrix score is used to determine the soil cleanup level for GRO, DRO, and RRO. Based on the total matrix score, the site falls into one of four categories: Category A, Category B, Category C, or Category D. Each category has corresponding cleanup levels for GRO and DRO. The cleanup level for RRO is the same (2,000 mg/kg) for all categories.

For site cleanup under method one, sampling is not required for polynuclear aromatic compounds (PAHs) unless DEC requires a modification or site-specific analysis under 18 AAC 75.340(i). However, in addition to the soil cleanup levels for GRO, DRO, and RRO at Table A1, the site needs to also meet the most stringent levels for benzene, toluene, ethylbenzene, and total xylenes for the applicable exposure pathway as follows:

Table 2: BTEX cleanup levels from Table B1 of 18 AAC 75.341(c)

	Under 40 Inch Zone			**Over 40 Inch Zone**		
CHEMICAL NAME (**Carcinogenics in Bold Type**)	Ingestion	Inhalation	Migration to Groundwater (mg/kg)	Ingestion	Inhalation	Migration to Groundwater (mg/kg)
Benzene	290	9	0.02	230	6.4	0.02
Ethylbenzene	10000	89	5.5	8300	89	5
Toluene	20300	180	5.4	17000	180	4.8
Xylenes (total)	203000	81	78	166000	81	69

TABLE A1. METHOD ONE – PETROLEUM HYDROCARBON SOIL CLEANUP LEVELS IN NONARCTIC ZONES

(See notes to table for further requirements)

Part A: Determine score for each item*

1. Depth to Groundwater		
Less than 5 feet {Deepest contamination @ 3ft bgs, GW assumed 6ft bgs}	(10)	
5 feet to 15 feet	(8)	
More than 15 feet to 25 feet	(6)	
More than 25 feet to 50 feet	(4)	
More than 50 feet	(1)	
2. Mean Annual Precipitation		
More than 40 inches	(10)	
More than 25 inches to 40 inches	(5)	
15 inches to 25 inches {NWS says 23 in/yr}	(3)	
Less than 15 inches	(1)	
3. Soil Type (Unified Soil Classification)		
Clean, coarse-grained soils	(10)	
Coarse-grained soils with fines {based on Diesel Seep soils}	(8)	
Fine-grained soils (low organic carbon)	(3)	
Fine-grained soils (high organic carbon)	(1)	
4. Potential Receptors		
(Select the most applicable category)		
a. Public water system within 1000 feet, or private water system within 500 feet	(15)	
b. Public/private water system within 1/2 mile	(12)	
c. Public/private water system within one mile	(8)	
d. No water system within one mile	(4)	
e. Nonpotable groundwater {based on proximity to brackish SL Channel}	(1)	
5. Volume of Contaminated Soil		
More than 500 cubic yards	(10)	
More than 100 cubic yards to 500 cubic yards	(8)	
More than 25 cubic yards to 100 cubic yards	(5)	
10 cubic yards to 25 cubic yards {rough estimate based on CESI info}	(2)	
Less than 10 cubic yards	(0)	

*The items to be scored are defined in note 1 to this table.

Part B: Add scores from Part A to determine matrix score and cleanup level

Matrix Score for Each Category	**Cleanup Level in mg/kg**		
	Gasoline Range Organics	**Diesel Range Organics**	**Residual Range Organics**
Category A: More than 40	50	100	2000
Category B: More than 26 to 40	100	200	2000
Category C: 21-26 {total of 24}	500	1000	2000
Category D: Less than 21	1000	2000	2000

Notes to Table A1:
1. The following definitions for items 1 - 5 in Part A, apply for purposes of using method one:

a. "depth to groundwater" means the measurement from the lowest point of the zone of soil contamination to the seasonal high groundwater table; a responsible person may not claim a lower matrix score for soil by moving contaminated soil to a higher elevation relative to the groundwater table;

b. "mean annual precipitation" is defined at 18 AAC 75.990 and means the measurement of average yearly rainfall and the water equivalent of snowfall; this measurement may be obtained from the nearest weather station;

c. "soil type" means the predominant Unified Soil Classification (USC) soil type between the deepest point of contamination and the seasonal high groundwater table; a responsible person may seek to demonstrate that otherwise coarse-grained soil has an organic carbon content that might enable a lower point classification. Soil types using the USC system are further defined as shown in Figure 1:

Figure 1.

SOIL TYPE	UNIFIED SOIL CLASSIFICATIONS
Clean coarse-grained	GW, GP, SW, SP
Coarse-grained with fines	GM, GC, SM, SC, GP-GC, SP-SM, GW-GM, SW-SM, SW-SC
Fine-grained with low organic carbon	ML, CL, HM, CH
Fine-grained with high organic carbon	OL, OH, Pt

d. for the "potential receptors" categories,

(i) "public water system" and "private water system" have the meaning given those terms in 18 AAC 80.1990;

(ii) "nonpotable" means unusable for drinking water due to a water quality condition, such as salinity, that was not caused by or that does not arise from contamination at the site;

e. "volume of contaminated soil" means the total estimated volume of soil that is contaminated above the applicable cleanup level before a responsible person begins a removal or cleanup action.

2. For the potential receptors categories, a responsible person shall submit a demonstration supporting the score assigned, including the results of an approved water well survey; the most conservative score must be used to determine the proximity of potential receptors; for example, if a water system is within one-quarter mile, the category "public/private water system within one mile" that would score 8 would be superseded by the category "public/private water system within 1/2 mile" that would score 12.

3. The identity of a released refined petroleum product must be assumed to be unknown unless a responsible person demonstrates that the product is only gasoline, or only a refined nongasoline product; the department will waive the requirement that a product be identified by analysis if a responsible person demonstrates that only one type of product was stored or distributed at the site; the soil cleanup levels in Part B are based on gas chromatographic analytical measurements corresponding to a specific measured range of petroleum hydrocarbons as follows:

a. gasoline range organics: light-range petroleum products such as gasoline, with petroleum hydrocarbon compounds corresponding to an alkane range from the beginning of C_6 to the beginning of C_{10} and a boiling point range between approximately 60° Centigrade and 170° Centigrade;

b. diesel range organics: mid-range petroleum products such as diesel fuel, with petroleum hydrocarbon compounds corresponding to an alkane range from the beginning of C_{10} to the beginning of C_{25} and a boiling point range between approximately 170° Centigrade and 400° Centigrade;

c. residual range organics: heavy-range petroleum products such as lubricating oils, with petroleum hydrocarbon compounds corresponding to an alkane range from the beginning of C_{25} to the beginning of C_{36} and a boiling point range between approximately 400° Centigrade and 500° Centigrade.

4. In addition to meeting the soil cleanup levels in Part B, a responsible person shall ensure that the site meets the most stringent standards for benzene, toluene, ethylbenzene, and total xylenes for the applicable exposure pathway in Table B1 in (c) of this section.

(b) If a responsible person uses method one for an Arctic zone under 18 AAC 75.340, the soil cleanup levels must be based on Table A2 in this subsection.