



THE STATE
of **ALASKA**
GOVERNOR SEAN PARNELL

**Department of Environmental
Conservation**

Division of Spill Prevention and Response
Contaminated Sites Program

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File No: 620.38.002

March 18, 2014

Larry Beck
BLM Anchorage Field Office
4700 BLM Road
Anchorage, AK 99507

Re: Decision Document: BLM Ungalik Airstrip Drum Spill Site
Cleanup Complete Determination

Dear Mr. Beck,

The Alaska Department of Environmental Conservation (ADEC) has reviewed the environmental records for the Bureau of Land Management (BLM) Ungalik Airstrip Drum Spill Site. This decision letter memorializes the site history, cleanup actions, and standard conditions for long-term site management. No further remedial action will be required once BLM and the Shaktoolik Native Corporation (the future site landowners) provide their concurrence with this decision document (Attachment A, enclosed).

Site Name and Location:

BLM Ungalik Airstrip Drum Spill Site
~23 Miles northeast of Shaktoolik
Shaktoolik, Alaska 99771

Name and Mailing Address of Contact Party:

Larry Beck
BLM Anchorage Field Office
4700 BLM Road
Anchorage, AK 99507

DEC Site Identifiers:

File No: 620.8.002
Hazard ID: 4592

Regulatory Authority for Determination:

18 AAC 75

Site Description and Background

In 1993, it was reported to the Bureau of Land Management (BLM) that approximately 150 metal drums were found at the south end of the Ungalik Airstrip, located four miles east of Norton Bay and 23 miles northeast of Shaktoolik. As the landowners of the site, BLM investigated the area in 1995 and discovered that there were many full drums of #2 diesel fuel around the site, several empty drums, and several more fuel drums that were marked as full but had apparently leaked into the soil.

In 2003 and 2004, the drums were removed in a coordinated effort between BLM and several other local groups. In total, 71 empty drums and 54 diesel-filled drums were taken to Shaktoolik for disposal. Based on conversations and correspondence with the people who participated in the removal, it is

believed that the airstrip was built by a miner who is now deceased; he used the airstrip to stage drums for transport to and from his mining camp on the Ungalik River from the mid-1950's until he passed away in about 1991. The Ungalik River is the nearest surface water body, 0.9 miles away.

The site is rarely visited by the residents of the area. There are no roads to the site, and the airstrip is overgrown and unusable. There are several private mining operations in the area, and the land is to be conveyed to the Shaktoolik Native Corporation once the environmental remediation has been completed.

Contaminants of Concern

The following petroleum contaminants of concern were identified on this site above the ADEC-approved alternate cleanup levels:

- Diesel Range Organics (DRO)

Arsenic was detected at this site above the default cleanup levels. However, it was determined to be associated with the bedrock at the site and is within regional background levels. It was not a contaminant of concern at this site.

Cleanup Levels

Alaska Department of Environmental Conservation (ADEC) Method Two cleanup levels established in 18 AAC 75.341 (d) apply to this site. Method Two Table B2 was referenced to determine the appropriate petroleum hydrocarbon soil cleanup levels, as diesel range organics (DRO) were the contaminants of concern. This site is located in an area with less than 40 inches of rainfall a year, placing it in the Under 40 Inch Zone under Table B2.

In 2008, it was determined that contaminant migration to groundwater was not likely due to the uniformly dry bedrock underneath the site and the absence of supra-bedrock groundwater. The most stringent of either ingestion or inhalation cleanup levels were thus applied. The ingestion pathway cleanup levels were the most stringent applicable for DRO at this site, 10,250 mg/kg.

Table 1 – Approved Cleanup Levels

Contaminant	Soil (mg/kg)
DRO	10,250

mg/kg = milligrams per kilogram

Characterization and Cleanup Activities

Characterization and cleanup activities conducted under the regulatory authority of the Contaminated Sites Program began in 2007. These activities are described below.

As part of a limited site characterization in 2007, Ecology and Environment, Inc. collected 23 surface and subsurface soil samples from the site. Each sample was field screened and sent for laboratory analysis of Diesel Range Organics (DRO), Residual Range Organics (RRO), Gasoline Range Organics (GRO) and Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX). Laboratory analysis of the samples showed results as high as 62,000 mg/kg for DRO, which is more than five times the applicable ADEC Method Two cleanup level. There were no other contaminants above cleanup levels. They identified four areas of contaminated soil associated with locations where leaking drums had been stored at the Ungalik Airstrip, including one area where the vegetation had been distressed from contamination

(see site figure, enclosed). Table 2 summarizes the maximum DRO concentrations from analytical soil samples taken during the 2007 site characterization.

Table 2 – 2007 Limited Site Characterization Analytical Soil Sample Results

Contaminant	ADEC Approved Cleanup Levels (18 AAC 75.341 (d), Table B2)	Drum Area 1 max. concentration	Drum Area 2 max. concentration	Drum Area 3 max. concentration	Dead Vegetation Area max. concentration
DRO (mg/kg)	10,250	62,000	35,000	13,000	9,100

mg/kg = milligrams per kilogram

Shaded cells indicate an exceedance of ADEC-approved cleanup levels

In 2008, MACTEC used Geoprobe 66d direct push equipment in an attempt to delineate the diesel contaminated areas at the site, to determine if groundwater was present in the shallow soil, and to develop a target cleanup level based on the State of Alaska Department of Environmental Conservation (ADEC) regulations.

In their groundwater investigation, MACTEC encountered dry, weathered bedrock at 14 to 18 feet below ground surface at each of the areas of contamination. Secondly, no groundwater was encountered in any of the soil borings taken above the bedrock. The lack of groundwater presence above the bedrock and the bedrock's presence as a "barrier" to migration to deeper groundwater indicated that contamination migration to groundwater was unlikely. Following the Geoprobe results, MACTEC proposed a cleanup level of 10,250 mg/kg DRO, based on the Method Two Cleanup levels for the Ingestion pathway in the Under 40 inch Zone, referring to an environment which receives less than 40 inches of rainfall in a year. ADEC approved this cleanup level in a letter dated March 13, 2009.

A total of 30 soil borings were conducted to vertically and horizontally delineate DRO/RRO contamination from the four previously identified areas. Analytical samples were taken from 27 of the soil borings, including one from each area identified as highly contaminated in the limited site characterization in 2007. The four samples from these highly contaminated areas were analyzed for GRO, BTEX, Resource Conservation and Recovery Act (RCRA) metals, and polycyclic aromatic hydrocarbons (PAHs) in addition to DRO/RRO.

DRO concentrations above cleanup levels were detected in three of the four areas of concern, at concentrations up to 37,900 mg/kg. No other contaminants were detected above cleanup levels outside of arsenic, which was determined to be within regional background levels and was not a contaminant of concern. The horizontal extent of contamination was determined with a combination of photoionization detector (PID) field screening and analytical sampling, and the maximum depth of contamination was determined with analytical sampling to be between 13 and 16 feet, depending on the area and depth of bedrock. Table 3 summarizes the analytical soil sample results from the 2008 site characterization.

Table 3 – 2008 Site Characterization Analytical Soil Sample Results

Contaminant	ADEC Approved Cleanup Levels (18 AAC 75.341 (d), Table B2)	Drum Area 1 max. concentration	Drum Area 2 max. concentration	Drum Area 3 max. concentration	Dead Vegetation Area max. concentration
DRO (mg/kg)	10,250	8,640	28,700	19,200	37,900

mg/kg = milligrams per kilogram

Shaded cells indicate an exceedance of ADEC-approved cleanup levels

On January 25, 2011, BLM submitted a cleanup proposal for the Ungalik Airstrip Drum Spill Site as an addendum to their 2008 site characterization. BLM proposed that monitored natural attenuation (MNA) would be an appropriate cleanup method for this site, based on the evidence that surface soil DRO concentrations had been attenuating between the 2003, 2007 and 2008 sampling events, using the average of the three highest concentrations detected in each event. The three highest concentrations from the 2003 sampling event had an average of 51,200 mg/kg DRO, while 2007 had an average of 36,700 mg/kg and 2008 had an average of 28,600 mg/kg. This calculation suggested that there has been a natural attenuation of approximately 4,500 mg/kg per year in the soils with the highest amounts of DRO contamination. BLM suggested that a conservative projection of the time needed to reach compliance in the soil levels at the site would be 10 years from the 2008 sampling event (2018). Based on this projection, and the assurance from the Shaktoolik Native Corporation and other local residents that there are few visitors at this site, ADEC accepted MNA as an appropriate cleanup method. The MNA would involve collecting surface soil samples in 2013 and every five years following that until compliance with ADEC Method Two cleanup levels was achieved. Existing exposure controls would remain on the site and monitoring reports would be submitted to ADEC following each sampling event.

In July 2012, NORTECH was contracted to further assess and remediate the contaminated soil at the Ungalik Airstrip. Rather than using monitored natural attenuation to remediate the contaminated soil, they proposed excavating the contaminated soil and placing it into a land spread treatment cell on the abandoned airstrip. The land spread area would then be monitored annually until ADEC-approved cleanup levels were attained. Signs would be posted around the land spread area warning site visitors that the area is contaminated with diesel fuel. This alternative plan for remediation was accepted by ADEC with comments in a letter dated August 21, 2012.

In September 2012, the contaminated soils at the site were removed from the four areas of concern (see site figure, enclosed) and placed onto the area of the former airstrip which was to be used as the land spread area. Analytical soil samples were taken at the depths of each excavated area (up to 8.6 ft. below ground surface), and multi-increment sampling was conducted on the land spread area both before and after the contaminated soil was applied. Each 50 cubic yards of contaminated soil applied to the land spread area were sampled. The excavated areas were then backfilled with clean soil. Approximately 250 cubic yards of contaminated soil were removed in total. Following the soil excavation and clean backfill, fertilizer was applied onto the land spread area to encourage bacterial activity and vegetation growth.

All of the samples collected in 2012 were analyzed for DRO by method AK102. In the excavated areas, the highest DRO concentration left in place was 9,820 mg/kg. Before the contaminated soil was placed in the land spread treatment cell, the background concentration of DRO on the airstrip was 93.6 mg/kg. After the contaminated soil was applied, the maximum DRO concentration on the airstrip land spread area was 4,600 mg/kg. None of the soil samples taken in 2012 were above the ADEC-approved Method Two Ingestion cleanup level of 10,250 mg/kg DRO, suggesting that the natural attenuation of the diesel contamination in the soil had occurred six years faster than predicted in the 2012 monitored natural attenuation cleanup plan. A report was received from BLM in March 2013 detailing the excavation of the areas of contamination, the creation of the land spread area, and the soil sampling field activities and analytical results. A summary of the analytical soil sample results is included in Table 4.

Table 4 – 2012 Analytical Soil Sample Results

Contaminant	ADEC Approved Cleanup Levels (18 AAC 75.341 (d), Table B2)	Excavated areas (Maximum Contamination Remaining)	Former Airstrip Before Contaminated Soil Application	Former Airstrip After Contaminated Soil Application
DRO (mg/kg)	10,250	9,820	93.6	4,600

mg/kg = milligrams per kilogram

The remaining DRO contamination on this site is above the ADEC Method Two migration-to-groundwater cleanup levels, and is above levels that could contaminate surface water bodies. However, both of these pathways are considered incomplete at this site. The groundwater is considered protected because of the natural bedrock "barrier" between the contamination and any deeper groundwater aquifer, and because of the absence of any supra-bedrock shallow groundwater. No exposure control was established for surface water runoff at the site at either the land farm or excavated areas, though the distance from the nearest surface water body (0.9 miles) indicates that runoff or the erosion of contaminants is highly unlikely. Secondly, after three sampling events (2003, 2007, and 2008) there has been no indication that the contamination in the four areas of concern has spread or migrated. This suggests that the remaining contamination in the ground will not migrate to a surface water body. Thirdly, the standard conditions which apply to the "cleanup complete" determination dictate that any proposal to transport soil or groundwater off-site requires ADEC approval and the movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. Any violation of the standard conditions will create a risk of surface water or groundwater migration, the site will be reopened, and further cleanup may be required. The landowner must agree to these standard conditions for a cleanup complete determination to be issued (see Attachment A, enclosed). Therefore, ADEC considers the concentrations of DRO remaining at this site to be protective of human health and the environment.

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.

All detectable contaminants within 1/10 of the applicable cleanup level on site are to be included in the calculation of cumulative risk. At this site the contaminants DRO, GRO, naphthalene, total xylenes, total chromium, lead and arsenic were detected above 1/10 of the applicable cleanup levels. The arsenic detected in the soil was determined to be within background concentrations so it was not included in the cumulative risk calculation. Also, lead and the petroleum compounds DRO and GRO are not included in the calculated risk. With the remaining analytes, we calculated the cumulative cancer risk at the site to be 0.000002, and the cumulative hazard index to be 0.4.

Based on a review of the environmental record, ADEC has determined that residual contaminant concentrations do not pose a cumulative human health risk. The remaining petroleum contaminant concentrations are below direct contact or ingestion levels and will not migrate to groundwater or surface water sources provided that the standard conditions that accompany the ADEC cleanup complete determination are agreed to and remain in place.

Exposure Pathway Evaluation

Following investigation and cleanup at the site, exposure to the remaining contaminants was evaluated using ADEC'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 5.

Table 5 – Exposure Pathway Evaluation

Pathway	Result	Explanation
Surface Soil Contact	De-Minimis Exposure	Currently people are not believed to be using this site. The DRO contaminated soil which remained after the removal of leaking drums was excavated and land spread on the adjacent abandoned airstrip. The contamination remaining in place and the land spread soil were below direct contact and ingestion levels.
Sub-Surface Soil Contact	De-Minimis Exposure	The DRO contaminated subsurface soil remaining in place on site is below direct contact and ingestion levels. The maximum DRO detected on site in the last sampling event was 9,820 mg/kg.
Inhalation – Outdoor Air	De-Minimis Exposure	DRO Contamination remains in the sub-surface, but is below inhalation cleanup levels.
Inhalation – Indoor Air (vapor intrusion)	Pathway Incomplete	There are no buildings at this site and no construction is planned.
Groundwater Ingestion	Pathway Incomplete	The groundwater at this site is protected from contamination by a barrier of continuous bedrock underlying the site. Sampling has confirmed that there is no shallow supra-bedrock groundwater.
Surface Water Ingestion	Pathway Incomplete	There are no surface water bodies within 0.9 miles of this site. It is highly unlikely that surface water runoff will reach these water bodies and contaminate them. The standard conditions of this determination prevent the transport of contaminated soils.
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	No impacts to ecological receptors are expected given the concentration, area and location of the remaining contamination.

Notes to Table 5: “De-Minimis Exposure” means that in ADEC’s judgment receptors are unlikely to be affected by the minimal volume or concentration of remaining contamination. “Pathway Incomplete” means that in ADEC’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

Remaining petroleum contamination in soil is below approved cleanup levels. Provided that the future landowners concur with this decision, this site will receive a “Closed” designation on the Contaminated Sites Database, subject to the following standard conditions.

Standard Conditions

1. Any proposal to transport soil or groundwater off-site requires ADEC approval in accordance with 18 AAC 78.600(h). 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 site figure, enclosed)
2. Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited.

This determination is in accordance with 18 AAC 75.380 and does not preclude ADEC 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 99801, 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 99801, 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.

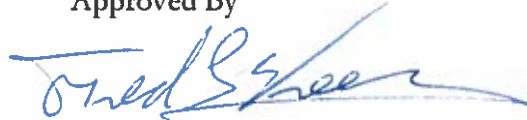
If you have questions about this closure decision, please feel free to contact me at (907) 451-2131, or Fred Vreeman at (907) 451-2181.

Recommended By



Monte Garrouette
Environmental Program Specialist

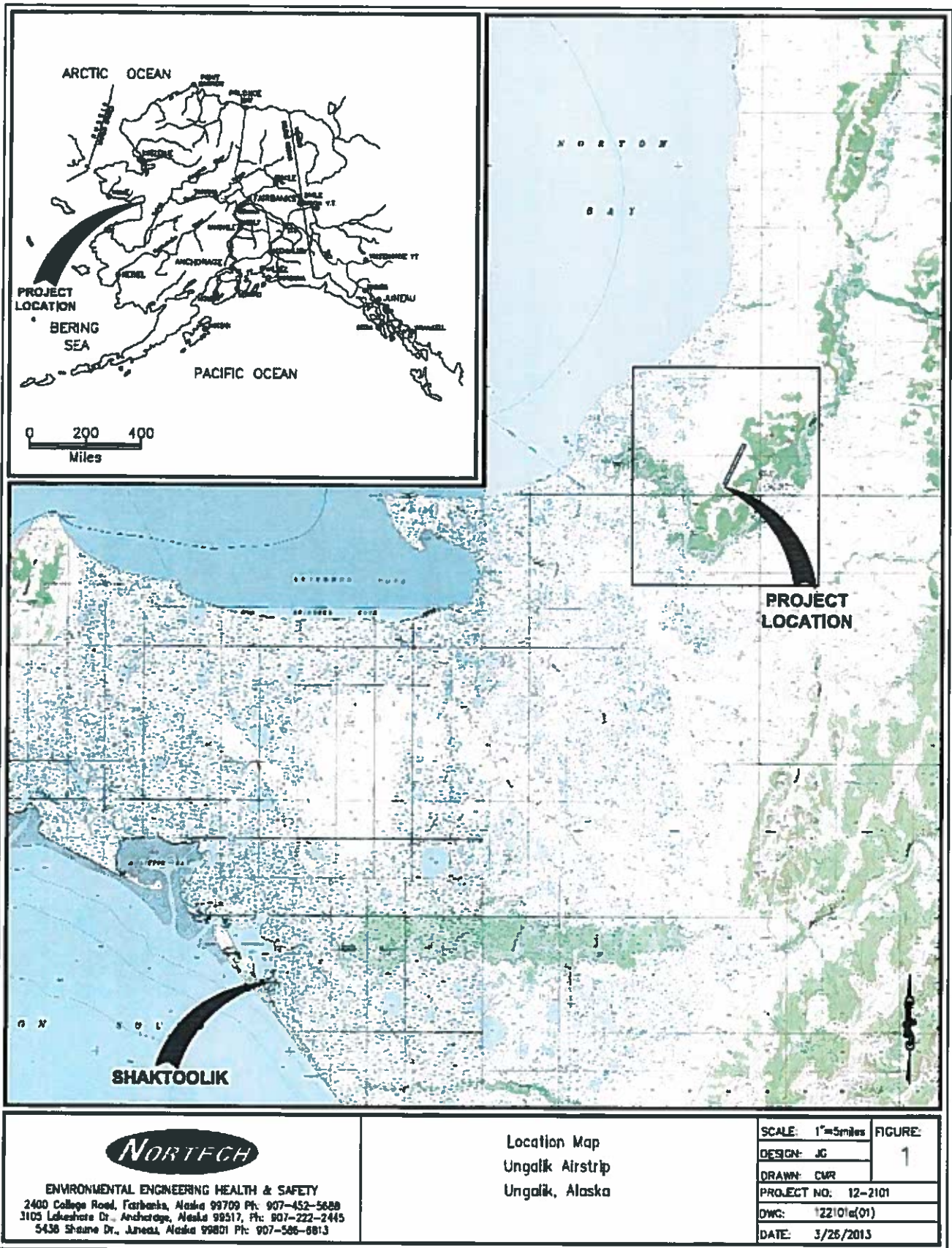
Approved By

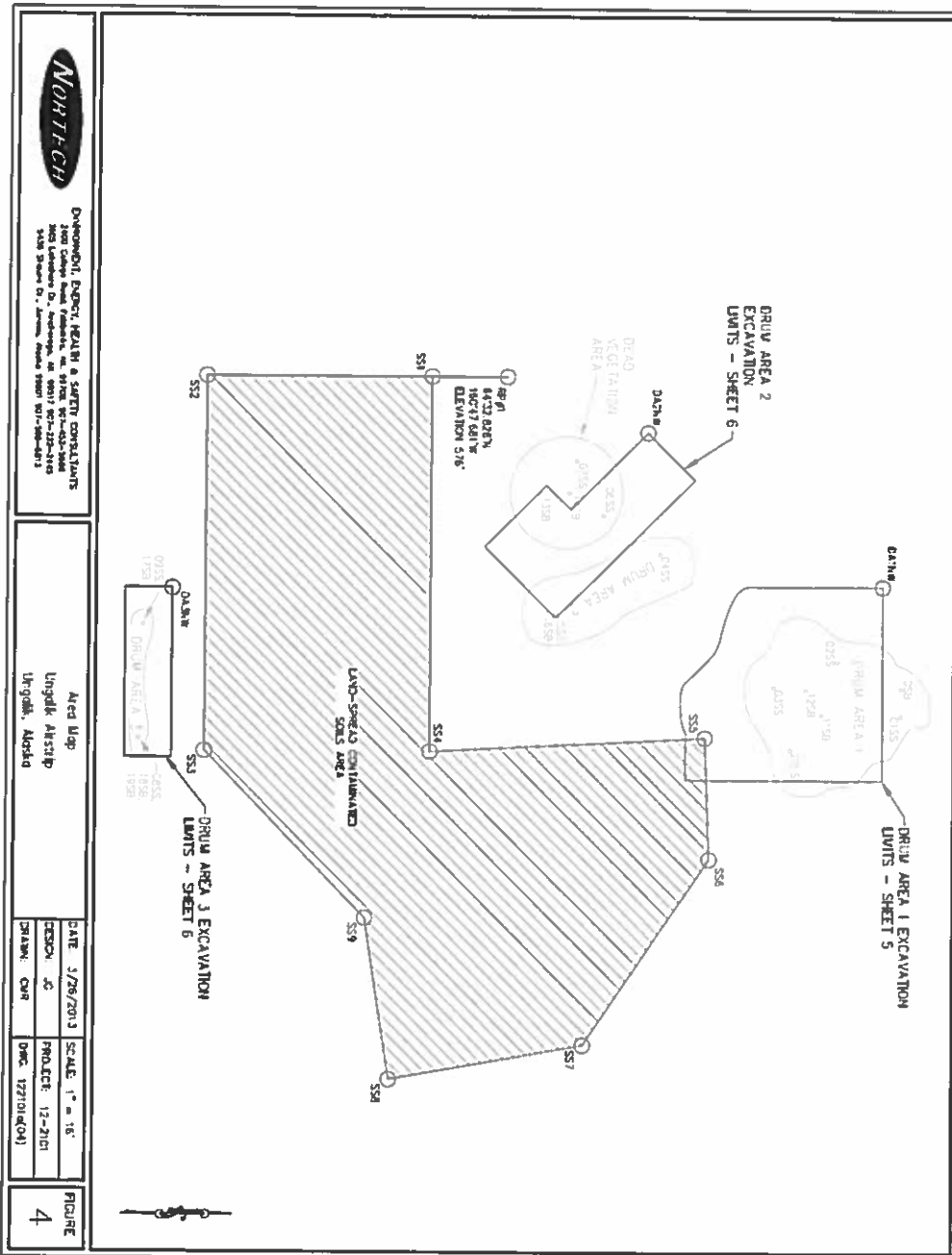


Fred Vreeman
Environmental Program Manager

Enclosed

BLM Ungalik Airstrip Location Map
BLM Ungalik Airstrip Drum Spill Site Figure
Attachment A: Cleanup Complete Landowner Agreement and Signature Page





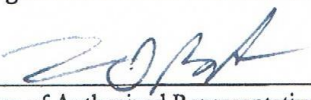
NORTTECH
 DEVELOPMENT, ENGINEERING & SURVEY CONSULTANTS
 2400 Capital Road, Fairbanks, AK 99701 907-452-3666
 2400 Laramie Dr., Anchorage, AK 99517 907-222-1416
 2400 Stevens Dr., Juneau, Alaska 99901 907-996-0873

Aled Lip
 Ungalik Airstrip
 Ungalik, Alaska

FIGURE
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Attachment A: Cleanup Complete Landowner Agreement and Signature Page*

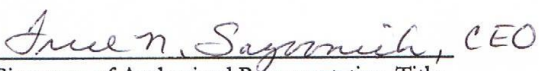
As the landholders of the BLM Ungalik Airstrip Drum Spill Site, the Bureau of Land Management (current landholder) and the Shaktoolik Native Corporation (future landholder) agree with the Cleanup Complete Determination and its terms and conditions, as stated in the decision letter dated February 11, 2014. A failure to accept this determination by either party may result in ADEC reopening this site and requiring further remedial action in accordance with 18 AAC 75.380.



Signature of Authorized Representative, Title
Bureau of Land Management

April 1, 2014
Date

Lawrence J. Beck
Environmental Protection Specialist
Printed Name of Authorized Representative, Title
Bureau of Land Management



Signature of Authorized Representative, Title
Shaktoolik Native Corporation

April 2, 2014
Date

Fred N. Sagoonick, CEO
Printed Name of Authorized Representative, Title
Shaktoolik Native Corporation

Note to Responsible Person (RP):

After making a copy for your records, please return a signed copy of this form to the ADEC project manager at the address on this correspondence within 30 days of receipt of this letter.