



THE STATE
of **ALASKA**
GOVERNOR BILL WALKER

**Department of Environmental
Conservation**

DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites Program

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File No: 630.38.004

July 2, 2015

Aemon Wetmore
FAA Alaska Region
222 West 7th Ave., #14
Anchorage, AK 99513-7587

Re: Summary of Determinations: FAA Unalakleet – Direction Finder (DF) West Spill,
DF East Spill, Range (SBRAZ) Transformer, and VORTAC Transformer

Dear Mr. Wetmore:

The Alaska Department of Environmental Conservation (DEC) has reviewed the environmental records for the referenced sites in response to a Federal Aviation Administration (FAA) closure request letter, dated May 1, 2013. This decision letter memorializes the site history, cleanup actions, and standard conditions for long-term site management. No further remedial action is required at these areas of concern.

Name and Mailing Address of Contact Party:

Aemon Wetmore
FAA Alaska Region
222 West 7th Ave., #14
Anchorage, AK 99513-7587

Site Names, Locations, and Identifiers:

FAA Unalakleet – AWOS_DF; File No.: 630.38.004; Hazard ID (HID): 4232;
Source Area: 79775 – “East and West Spill Areas”
0.25 miles north of Unalakleet

FAA Unalakleet – SBRAZ; File No.: 630.38.004; HID: 4234;
Source Area: 78338 – “SBRAZ Former Transformer”
2.5 miles east of Unalakleet

FAA Unalakleet – VORTAC; File No.: 630.38.004; HID: 4235;
Source Area: 78152 – “VORTAC Building and Transformer Pad”
3 miles east of Unalakleet
Unalakleet, AK 99684

Regulatory Authority for Determination:
18 AAC 75

Site Descriptions and Background

Unalakleet is located in eastern Norton Sound, approximately 148 miles southeast of Nome and 395 miles northwest of Anchorage. The FAA Station facilities are widely spread out to the northeast of the community of Unalakleet, and to the north of the Unalakleet River. The FAA (formerly Civil Aeronautics Administration) has maintained and operated a station in Unalakleet since 1942. The station was used during World War II to ferry aircraft to Siberia. The original station included 3,000 contiguous acres and over time various amounts of property have been added or removed from the total station area. The station contains, as of 2015, approximately 447 noncontiguous acres. No permanent personnel are stationed in Unalakleet; FAA personnel based in Nome maintain the Unalakleet FAA facilities.

As a result of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, an environmental compliance investigation was performed at the Unalakleet FAA Facility in 1991 by the FAA under their Facilities Environmental Compliance Program. The results of this investigation were presented in the Environmental Compliance Investigation Report (ECIR) prepared in 1992, which identified, among others, the four areas of concern (AOCs) addressed in this document:

1. Direction Finder (DF) West Spill
2. DF East Spill
3. Range (SBRAZ) Transformer
4. VORTAC Building and Transformer Pad

Site descriptions and background information for each of these AOCs are below.

DF West Spill

The Direction Finder facility consists of an Automatic Weather Observing Station and a Directional Finder, and is located between the runway and Kouwegok Slough. A 1991 Site Investigation identified a spill area measuring approximately 14 feet by 18 feet, located east of the DF facility and approximately 450 feet west of Kouwegok Slough. This spill was deemed the "west spill" in relation to the east spill, described below. The stain is reportedly associated with antifreeze and other compounds that were stored on a flatbed truck at this location. Sampling for POL during the 1991 SI detected concentrations of toluene, ethylbenzene, and xylenes above DEC cleanup levels.

DF East Spill

A 1991 Site Investigation identified a stain area measuring approximately 7 feet by 8 feet, located east of the DF Facility and approximately 435 feet west of Kouwegok Slough. This stain was reportedly associated with a leak from prior antifreeze storage on a flatbed truck at the location. Other unidentified compounds were also stored on the truck.

Range (SBRAZ) Transformer

The 1992 Environmental Compliance Investigation Report (ECIR) states that a 1986 hazardous waste survey was conducted at the Range area, which is also known as the SBRAZ (Low/Medium

Frequency Adcock Radio Range). It was noted that in 1986 the Range facility contained a transmitter building, and there was a transformer located on the northeast side of the building. Transformer oil samples were said to be taken in 1986, and PCBs were apparently not detected, though the method detection limits were not specified. The transformer was apparently removed before the 1991 site visit, as it could not be located.

VORTAC Building and Transformer Pad

During the 1992 ECIR, several oil transformers, capacitors, and rectifiers were identified at the VORTAC (Very High Frequency Omnidirectional Range Collocated Tactical Air Navigation). The eight transformers were subsequently removed for proper disposal. The locations of the equipment were not identified in the report.

Site Geology and Hydrology

Bedrock is present in the Unalakleet area; however, no outcroppings are present. Rocks northeast of the Unalakleet FAA Station consist of Cretaceous-aged greywacke, shale, and conglomerate that tend to be highly deformed. The Unalakleet River valley and mouth consist of silt, sand, and gravel sediments. A majority of the area between the Unalakleet coast and the Kanayout Hills consists of loamy, gravelly, unconsolidated sediment mantled with peat. Permafrost is expected to be largely present in the Unalakleet area, except near streams and along the Unalakleet River

Major surface water sources near Unalakleet include the Norton Sound and the Unalakleet River. Norton Sound is saltwater and the Unalakleet River is freshwater. Other less significant sources include numerous ponds and marshes throughout the Unalakleet River valley and mouth. The main portion of the Unalakleet FAA Station is bordered by Norton Sound to the west and sloughs, ponds, and marshlands to the east.

Groundwater migration and permeability in sediments and soils is expected to be strongly influenced by the presence of permafrost. Groundwater is generally found between 4 and 15 feet below ground surface. However, this may be shallow suprapermafrost water. In areas where permafrost is not present (near flowing waterbodies), groundwater is predicted to be near 15 feet bgs.

Contaminants of Concern

The following contaminants of concern (COCs) were identified during the course of the site investigations summarized in the Characterization and Cleanup Activities section of this decision letter. This list covers all of the COCs that have been detected above Method 2 cleanup levels, or are associated with those contaminants detected above cleanup levels. Please note that not all of these compounds are present in every AOC.

- Gasoline Range Organics (GRO)
- Diesel Range Organics (DRO)
- Residual Range Organics (RRO)
- Benzene
- Toluene
- Ethylbenzene
- Xylenes

- Arsenic
- Chromium
- Mercury
- Polychlorinated biphenyls (PCBs)

Cleanup Levels

For AOCs that have been evaluated under 18 AAC 75.340 Method Two, the applicable soil cleanup levels are those in the “Under 40 Inch Zone” under the “Direct Contact”, “Outdoor Inhalation”, “Ingestion”, “Inhalation”, and “Migration to Groundwater” columns of Tables B1 and B2 in 18 AAC 75.341. The “Under 40 Inch Zone” refers to the number of inches of rainwater the area receives each year.

In addition to the COCs listed below, per 18 AAC 75.340(k), for a cleanup conducted under methods two and three, any chemical that is detected at one-tenth or more of the Table B1 direct contact and inhalation cleanup levels must be included when calculating cumulative risk.

Table 1 – Cleanup Levels for Four FAA Unalakleet AOCs

Contaminants	Method 2 Under 40 Inch Zone Cleanup Levels (mg/kg)						Groundwater Cleanup Levels (mg/L)
	Migration to Groundwater	Ingestion	Inhalation	Direct Contact	Outdoor Inhalation	Maximum Allowable Concentrations	
Gasoline Range Organics (GRO)	300	1,400	1,400	-	-	1,400	2.2
Diesel Range Organics (DRO)	250	10,250	12,500	-	-	12,500	1.5
Residual Range Organics (RRO)	11,000	10,000	22,000	-	-	22,000	1.1
Benzene	0.025	-	-	150	11	-	0.005
Toluene	6.5	-	-	8,100	220	-	1
Ethylbenzene	6.9	-	-	10,100	110	-	0.7
Xylenes	63	-	-	20,300	63	-	10
Arsenic	3.9	-	-	4.5	-	-	0.010
Chromium (Total)	25	-	-	300	-	-	0.10
Mercury	0.012	-	-	7.7	-	-	0.0037
PCBs	-	-	-	1	-	-	0.0005

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

Characterization and Cleanup Activities

Characterization and cleanup activities at the Unalakleet FAA facilities conducted under the regulatory authority of the Contaminated Sites Program began following the 1992 ECIR. These activities included an Environmental Restoration Work Plan in 1994, a UST Decommissioning Assessment in 1997, a 2000 Release Investigation (RI), a 2008 RI, and a 2015 work plan.

DF West Spill

In September 2007 three surface soil samples and three subsurface soil samples were taken at this spill site. Sample locations were based on the highest PID and IR field screening results, and were analyzed for DRO, RRO, VOCs, semivolatile organic compounds (SVOCs), RCRA metals, PCBs, and pesticides. Arsenic (15.4 mg/kg), chromium (36.6 mg/kg), and mercury (0.0299 J mg/kg) were the only COCs detected above method two cleanup levels.

Mercury exceeds the migration to groundwater cleanup level, and is present at less than 1/10 of the direct contact cleanup level. Chromium exceeds the migration to groundwater cleanup level, and is present at concentrations slightly greater than 1/10 of the direct contact cleanup level.

Groundwater was not encountered at the depths of contamination, and is not expected to be encountered to at least 15 feet bgs, so it is unlikely that either mercury or chromium, in this mass and concentration, would ever impact groundwater. Therefore, DEC has determined that the mercury and chromium concentrations at this site will be considered "De Minimis".

Arsenic was detected above the method two direct contact cleanup level in all six surface and subsurface soil samples, at concentrations ranging from 6.97 to 15.4 mg/kg. To determine if these sample results were within background concentrations at the site, a 2008 background metals study, conducted by the U.S. Army Corps of Engineers (USACE) as part of a Unalakleet area Formerly Used Defense Site (FUDS) characterization effort, was consulted. This background study determined that background arsenic concentrations in the Unalakleet area have a large range and often exceed 15 mg/kg, depending on soil types and locations. DEC has therefore determined that the concentrations of arsenic detected at the west spill site may be considered "background", will not be included in cumulative risk calculations for the site, and will not require cleanup.

DF East Spill

In September 2007 two surface soil samples and two subsurface soil samples were taken at this spill site. Sample locations were based on the highest PID and IR field screening results, and were analyzed for DRO, RRO, VOCs, semivolatile organic compounds (SVOCs), RCRA metals, PCBs, and pesticides. Arsenic (13.4 mg/kg) and mercury (0.0410 J mg/kg) were the only COCs detected above method two cleanup levels.

Mercury exceeds the migration to groundwater cleanup level, and is present at less than 1/10 of the direct contact cleanup level. Groundwater was not encountered at the depths of contamination, and is not expected to be encountered to at least 15 feet bgs, so it is unlikely that mercury in this mass and concentration would ever impact groundwater. Therefore, DEC has determined that the mercury concentrations at this site will be considered "De Minimis".

Arsenic was detected above direct contact cleanup levels in all six surface and subsurface soil samples, at concentrations ranging from 3.28 to 13.4 mg/kg. To determine if these sample results were within background concentrations at the site, a 2008 background metals study, conducted by the U.S. Army Corps of Engineers (USACE) as part of a Unalakleet area Formerly Used Defense Site (FUDS) characterization effort, was consulted. This background study determined that background arsenic concentrations in the Unalakleet area have a large range and often exceed 15 mg/kg, depending on soil types and locations. DEC has therefore determined that the

concentrations of arsenic detected at the east spill site may be considered “background”, will not be included in cumulative risk calculations for the site, and will not require cleanup.

Range (SBRAZ) Transformer

At the Range (SBRAZ) area, during the 2007 RI, 8 soil samples were collected from surface soil in the area where the former transformer was located and were analyzed for PCBs. No PCBs were detected.

VORTAC Building and Transformer Pad

During the 2007 RI, eight soil samples were collect from the VORTAC area and analyzed for PCBs. Four samples were collected from around the transformer pad and four were collected from within a 10-square-foot area directly outside of the VOR doorway. Because the locations of the former equipment were unknown it was believed these locations would be the most likely to have been impacted by PCBs. Only one sample had a detection of PCBs, with a concentration of 0.119 mg/kg, below the 1 mg/kg cleanup level. None of the samples had concentrations of PCBs above cleanup levels.

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. DRO, GRO, and RRO are evaluated separately. For this site all petroleum concentrations were below the method 2 risk based levels and do not require further evaluation.

At the DF West Spill, only arsenic (15.4 mg/kg), and chromium (36.6 mg/kg) were detected concentrations great enough to be included in the cumulative risk calculator. DEC has determined that the arsenic detected at this site may be considered within the range of naturally occurring background concentrations and will not be included in cumulative risk analysis required for a cleanup complete determination at this site. The remaining chromium at the site results in a cumulative cancer risk of 0, and a cumulative hazard risk of 0.1.

At the DF East Spill, only arsenic (13.4 mg/kg) was detected at high enough concentrations to be included in the cumulative risk calculator, however, DEC has determined that the arsenic detected at this site may be considered within the range of naturally occurring background concentrations and will not be included in cumulative risk analysis required for a cleanup complete determination for this site.

There were no compounds exceeding 1/10 of the DEC direct contact and inhalation cleanup levels at the Range (SBRAZ) Transformer site following characterization and remediation efforts.

The remaining PCB concentration of 0.119 mg/kg at the VORTAC Building and Transformer Pad site results in a cumulative risk of 4×10^{-7} , and a hazard index of 0.

Therefore, based on a review of the environmental record, DEC has determined that residual contaminant concentrations do not pose a cumulative human health risk at any of the four areas of concern.

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 Tables 2-4.

Table 2 – Exposure Pathway Evaluation – DF West and East Spills

Pathway	Result	Explanation
Surface Soil Contact	De Minimis Exposure	DEC has determined that the concentrations of arsenic detected at the east and west spill sites may be considered "background", will not be included in cumulative risk calculations for the site, and will not require cleanup.
Sub-Surface Soil Contact	De-Minimis Exposure	DEC has determined that the concentrations of arsenic detected at the east and west spill sites may be considered "background", will not be included in the cumulative risk analysis for a cleanup complete determination at the site, and will not require cleanup.
Inhalation – Outdoor Air	Pathway Incomplete	No volatile contaminants are present at this site.
Inhalation – Indoor Air (vapor intrusion)	Pathway Incomplete	Contamination is not present in the groundwater and the remaining contaminants are not volatile.
Groundwater Ingestion	Pathway Incomplete	Groundwater contamination is not present.
Surface Water Ingestion	Pathway Incomplete	Surface water is not present at the site, and the contamination is not at risk of migration into surface water.
Wild and Farmed Foods Ingestion	Pathway Incomplete	The area around the site is unlikely to be used for hunting, fishing, or the harvesting of food as it is located in the airport area.
Exposure to Ecological Receptors	Pathway Incomplete	Ecological receptors are unlikely to contact the remaining contaminant concentration in the airport area, and the reported area of stressed vegetation appears unrelated to the remaining contamination.

Table 3 – Exposure Pathway Evaluation – Range (SBRAZ) Transformer

Pathway	Result	Explanation
Surface Soil Contact	Pathway Incomplete	The 2007 RI collected 8 surface and subsurface soil samples from the former transformer area. PCBs were not detected in any of the eight samples.

Sub-Surface Soil Contact	Pathway Incomplete	The 2007 RI collected 8 surface and subsurface soil samples from the former transformer area. PCBs were not detected in any of the eight samples.
Inhalation – Outdoor Air	Pathway Incomplete	No volatile contaminants are present at this site.
Inhalation – Indoor Air (vapor intrusion)	Pathway Incomplete	No volatile contaminants are present at this site.
Groundwater Ingestion	Pathway Incomplete	Groundwater contamination is not present.
Surface Water Ingestion	Pathway Incomplete	Surface water is not present at the site, and there is no remaining contamination that would be at risk of migration into surface water.
Wild and Farmed Foods Ingestion	Pathway Incomplete	PCBs are not present at the site.
Exposure to Ecological Receptors	Pathway Incomplete	There are no remaining contaminants at the site.

Table 4 – Exposure Pathway Evaluation – VORTAC Building and Transformer Pad

Pathway	Result	Explanation
Surface Soil Contact	De Minimis Exposure	The 2007 RI indicates that PCBs were detected in only one of 8 samples. That detection (0.119 ppm) was below the cleanup level of 1.
Sub-Surface Soil Contact	Pathway Incomplete	PCBs are not present in the subsurface.
Inhalation – Outdoor Air	Pathway Incomplete	No volatile contaminants are present at this site.
Inhalation – Indoor Air (vapor intrusion)	Pathway Incomplete	No volatile contaminants are present at this site.
Groundwater Ingestion	Pathway Incomplete	Groundwater contamination is not present.
Surface Water Ingestion	Pathway Incomplete	Surface water is not present at the site, and the contamination is not at risk of migration into surface water.
Wild and Farmed Foods Ingestion	De Minimis Exposure	Ecological receptors are unlikely to contact the remaining de-minimis concentrations.
Exposure to Ecological Receptors	Pathway Incomplete	Ecological receptors are unlikely to contact the remaining de-minimis concentrations.

Notes to Tables 2-4: “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

DF West Spill

In September 2007, arsenic (15.4 mg/kg), chromium (36.6 mg/kg) and mercury (0.0299 J mg/kg) were the only COCs detected above method two cleanup levels at the DF West Spill site. DEC has determined that the mercury and chromium concentrations will be considered de minimis, and the arsenic may be attributed to naturally occurring background concentrations. Petroleum related contamination is below Method 2 Table B levels. Therefore, this site will receive a “Cleanup Complete” designation on the Contaminated Sites Database, subject to the following standard conditions for a “Cleanup Complete” determination listed below.

DF East Spill

At the DF East Spill site, samples were taken in 2007 and arsenic (14.4 mg/kg) and mercury (0.0410 J mg/kg) were the only COCs detected above method two cleanup levels. DEC has determined that the mercury concentrations will be considered de minimis, and the arsenic may be attributed to naturally occurring background concentrations. Therefore, this site will receive a “Cleanup Complete” designation on the Contaminated Sites Database, subject to the following standard conditions for a “Cleanup Complete” determination listed below.

Range (SBRAZ) Transformer

At the Range (SBRAZ) area, during the 2007 RI, eight soil samples were collected from surface soil in the area where the former transformer was located and were analyzed for PCBs. No PCBs were detected. There are no other COCs at the site, therefore, this site will receive a “Cleanup Complete” designation on the Contaminated Sites Database, subject to the following standard conditions for a “Cleanup Complete” determination listed below.

VORTAC Building and Transformer Pad

During the 2007 RI, eight soil samples were collect from the VORTAC area and analyzed for PCBs. One sample had a detection of PCBs, with a concentration of 0.119 mg/kg, below the 1 mg/kg cleanup level. There are no other COCs at the site, therefore, this site will receive a “Cleanup Complete” designation on the Contaminated Sites Database, subject to the following standard conditions for a “Cleanup Complete” determination listed below.

Standard Conditions for a “Cleanup Complete” determination

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

The DEC Contaminated Sites Database will be updated to reflect the change in site status as detailed above, and will include a description of the contamination remaining at the site. The sites identified by the site number 630.38.004, with Hazard IDs 4232: FAA Unalakleet - AWOS_DF; 4234: FAA Unalakleet – SBRAZ; and 4235: FAA Unalakleet – VORTAC, will remain active in the

DEC contaminated sites program database, as there are separate source areas at each of these sites which have not been given a “cleanup complete” determination. However, the relevant source areas’ EIM rankings have been updated, and the sites’ actions and problem comments will be updated to reflect the changes in site status.

These determinations are in accordance with 18 AAC 75.380 and do not preclude DEC from requiring additional assessment and/or cleanup action if future information indicates that these sites may pose an unacceptable risk to human health or the environment.

Appeal

Any person who disagrees with these decisions 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 any questions, please do not hesitate to contact me at (907) 451-2131, or by email at monte.garroutte@alaska.gov.

Sincerely,

Recommended By



Monte Garroutte
Environmental Program Specialist

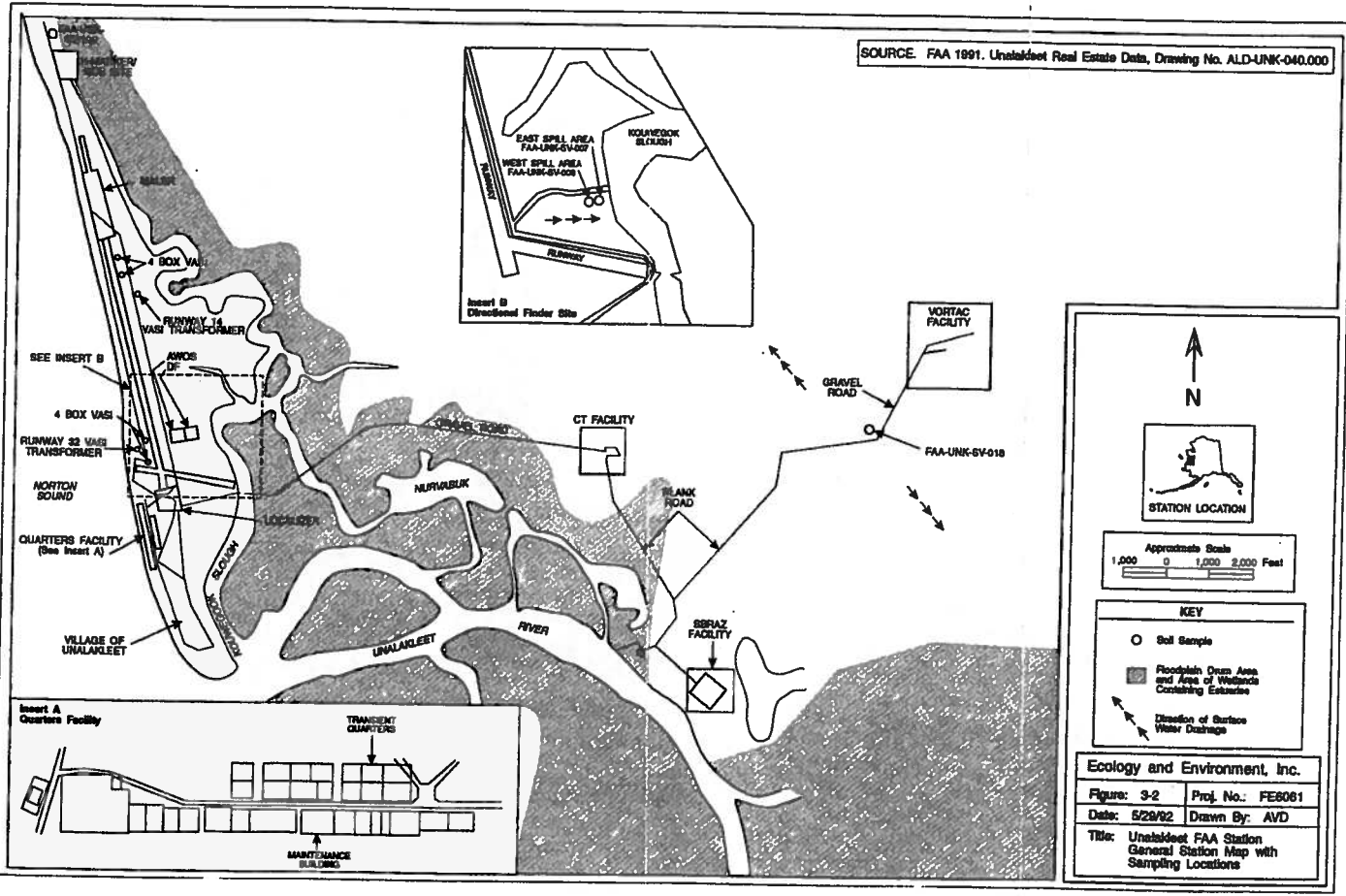
Approved By



Fred Vreeman
Program Manager

Enclosure: Site Figures

SOURCE: FAA 1991. Unalaska Real Estate Data, Drawing No. ALD-UNK-040.000



N

STATION LOCATION

Approximate Scale
1,000 0 1,000 2,000 Feet

KEY

- Soil Sample
- Floodplain Drain Area and Area of Wetlands Containing Estuaries
- ↘ Direction of Surface Water Drainage

Ecology and Environment, Inc.

Figure: 3-2	Proj. No.: FE8061
Date: 5/29/92	Drawn By: AVD

Title: Unalaska FAA Station General Station Map with Sampling Locations

Legend

- 2007 Soil Samples

0 150 300 Feet

N

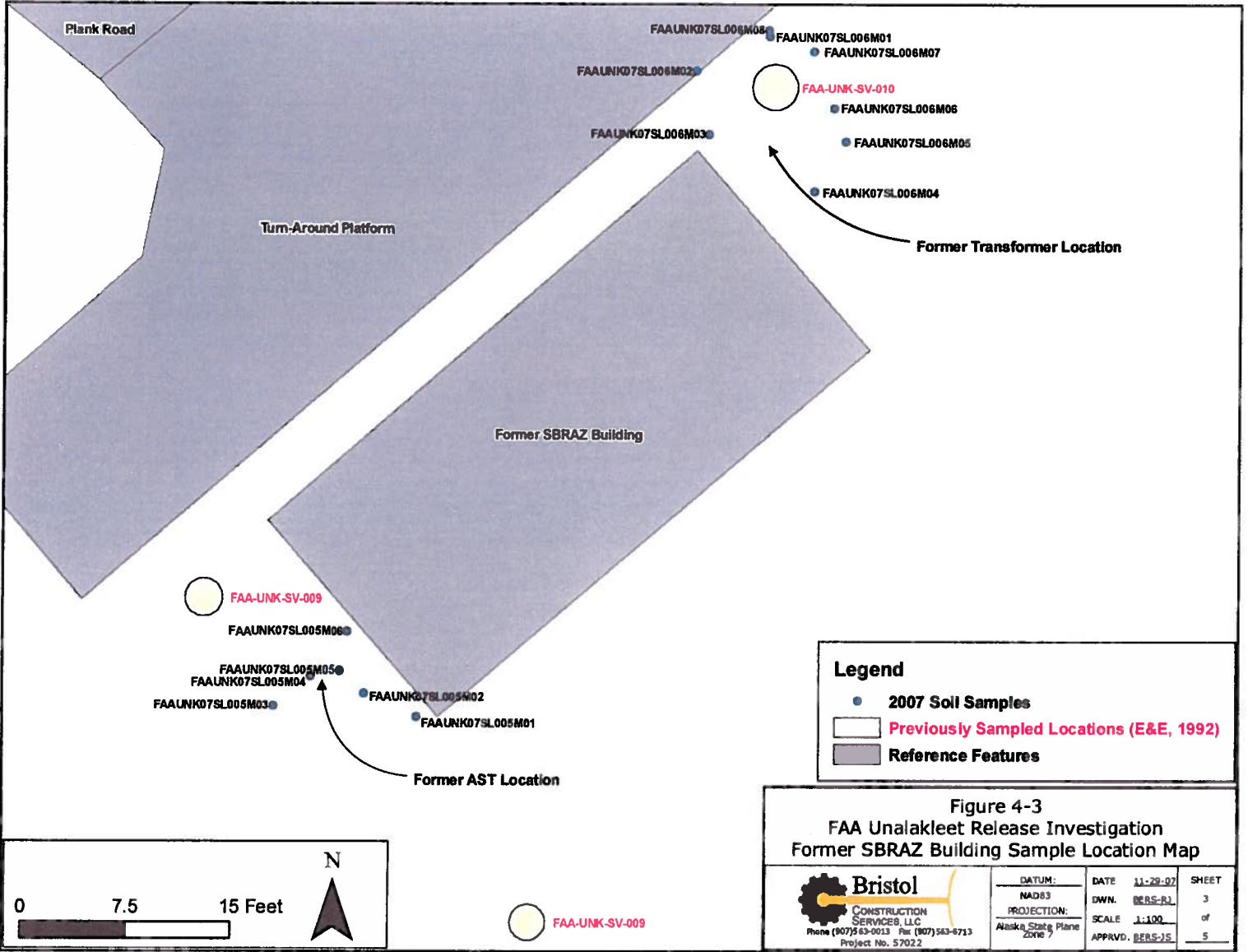
Figure 4-5
FAA Unalakeet Release Investigation
East and West Spill Areas

DATE:	11-20-07
DRAWN:	RES:RJ
SCALE:	1:1,000
APPROVED:	RES:JS
SHEET:	5
of	5

Bristol
 CONSTRUCTION SERVICES, LLC
 Phone: (907) 563-6713 Fax: (907) 563-6713
 Project No. 57022

Alaska State Plane
 PROJECTION:
 MAPS:
 DWN. RES:RJ





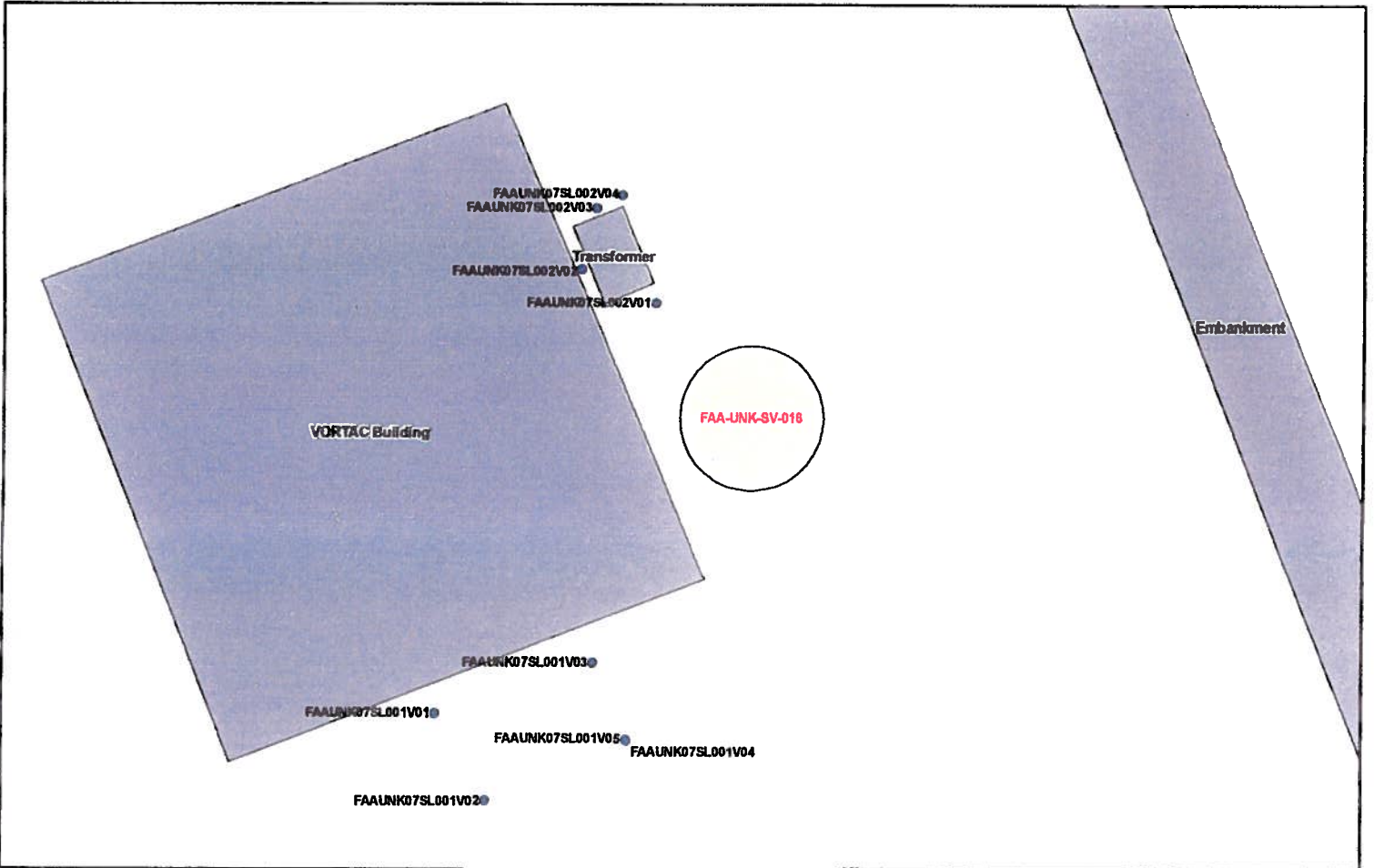
Legend

- 2007 Soil Samples
- Previously Sampled Locations (E&E, 1992)
- Reference Features

Figure 4-3
FAA Unalakleet Release Investigation
Former SBRAZ Building Sample Location Map

Bristol
 CONSTRUCTION SERVICES, LLC
 Phone (907) 563-0013 Fax (907) 563-6713
 Project No. 57022

DATUM:	DATE	11-29-07	SHEET
NAD83	DWN.	BERS-R1	3
PROJECTION:	SCALE	1:100	of
Alaska State Plane Zone 7	APPRVD.	BERS-JS	5



Legend

- 2007 Soil Samples
- Previously Sample Locations (E&E, 1992)
- Reference Features

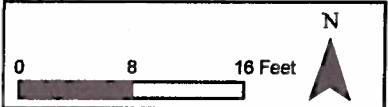


Figure 4-1
FAA Unalakleet Release Investigation
VORTAC Building Sample Location Map



DATUM:	DATE	11-28-07	SHEET
NAD83	DWN.	BERS-JS	1
PROJECTION:	SCALE	1:120	of
Alaska State Plane Zone 7	APPRVD.	BERS-JS	5