



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: 2100.38.147

March 18, 2014

Mr. Jon Schleder
Environmental Engineer
Federal Aviation Administration
222 W. 7th Ave, Suite 14
Anchorage, AK 99513

Re: Decision Document: FAA - Flight Inspection Field Office
Cleanup Complete Determination

Dear Mr. Schleder,

The Alaska Department of Environmental Conservation (ADEC) has reviewed the environmental records for the Federal Aviation Administration (FAA) Flight Inspection Field Office (FIFO) site. This decision letter memorializes the site history, cleanup actions, and standard conditions for long-term site management. No further remedial action is required.

Site Name and Location:
FAA- Flight Inspection Field Office
4620 International Airport Road
Anchorage, Alaska 99502

Name and Mailing Address of Contact Party:
Jon Schleder
Federal Aviation Administration
222 W. 7th Ave, Suite 14
Anchorage, AK 99513

DEC Site Identifiers:
File No: 2100.38.147
Hazard ID: 23908 & 1193

Regulatory Authority for Determination:
18 AAC 75

Site Description and Background

The Federal Aviation Administration (FAA) Flight Inspection Field Office (FIFO) site is located at the Ted Stevens Anchorage International Airport in Anchorage, Alaska on the south side of Old International Airport Road. The site lies at approximately 61°10'26.54" North (N) latitude and 149°58'17.53" West (W) longitude, within the northeast quarter of Public Land Survey Section 34, Township 13 N, Range 4 West, Seward Meridian. The site is located on land owned by the FAA, bordering land owned by the State of Alaska.

Two 500-gallon underground storage tanks (USTs) were associated with this site. UST 1-E-1, installed in 1952, was used to store diesel fuel for an emergency generator and UST 1-E-2, also installed in 1952, was

used to store Bunker C heating oil for a furnace on the premises. The USTs were buried adjacent to one another at the northern edge of the property, between the 2,400 square foot Boiler Building and Old International Airport Road.

Contamination was first observed at the FIFO site in June 1991 when the two USTs were excavated. Petroleum contamination was observed below each of the tanks during their removal. Approximately 100 cubic yards of petroleum-hydrocarbon impacted soil were reportedly removed along with the tanks, in an excavation area that extended 12 feet wide, 32 feet long and 10.5 feet deep. Soil samples taken from the excavation floor and sidewalls at the time of removal indicated that further contamination remained at the site. However, excavation efforts were halted due to active utility lines to the north and west, the Boiler Building to the south, and an above-ground storage tank (AST) to the east. The area was backfilled with clean soil until further work could be completed.

Cleanup Levels & Contaminants of Concern

Diesel range organics (DRO) were identified in the course of site investigations as the contaminants of concern at the site, having been measured at concentrations greater than the Alaska Department of Environmental Conservation (ADEC) Method Two 18 AAC 75.341 (d), Table B2 migration to groundwater cleanup level of 250 milligrams per kilogram (mg/kg). Contamination was only observed in the soil at this site.

This site is considered to be in the "Under 40 Inch Zone" under 18 AAC 75.341 (d), Table B2, referring to the number of inches of rainwater the area receives each year.

Characterization and Cleanup Activities

Characterization and cleanup activities conducted under the regulatory authority of the Contaminated Sites Program began in 1991. These activities are described below.

1991-1993 Spill Report and Initial Excavation

Harding Lawson Associates employees contacted the ADEC to file an "Oil and Hazardous Materials Incident Report Form" on June 28, 1991 to report their knowledge of a release from the USTs at the FIFO site. The UST removals, soil excavation, soil stockpiling and post-excavation analytical sampling were outlined in the report form.

A "Notice of Release" letter was sent from the ADEC to the FAA on July 8, 1991, requesting that a site assessment be conducted in accordance with 18 AAC 78.210 & 18 AAC 78.230, and that the FAA undertake corrective action per 18 AAC 78.240 & document said action in an interim report per 18 AAC 240 (e)(i).

The decommissioning assessments for each UST were received by ADEC in 1991. These assessments included the analytical soil sample results from the bottom and sidewalls of the excavation which indicated the presence of DRO contamination in the soil in concentrations as high as 4,600 mg/kg. These results indicated that a release investigation was necessary.

The approximately 100 cubic yards of petroleum-hydrocarbon contaminated soil that were excavated from the UST removal were removed from the area and taken to the Lake Hood storage area in 1992.

In 1993, Ecology & Environment, Inc. included the FIFO site as part of their Environmental Compliance Investigation Report for the Anchorage FAA station. The report's primary purpose was to conduct a preliminary assessment/site investigation for each site included in the report and to make a recommendation regarding if there is a need for further remedial action. They recommended that further action and investigation was required for the FIFO site, though they were not aware that the USTs had

been removed in 1991. The report also recommended testing for PCBs at the site, as electrical transformers had been observed in the area.

1993 Release Investigation

A release investigation was performed by Harding Lawson Associates at the site in August 1993 to characterize the extent of the remaining soil contamination and to establish if the groundwater at the site had become contaminated. A report on the release investigation was submitted to ADEC on January 26, 1994. As part of the release investigation, the site cleanup levels for the site were calculated using the ADEC Scoring Matrix for Soil Cleanup Levels (18 AAC 75.315). Using this calculation, the cleanup level for DRO at this site was determined to be 200 mg/kg.

Five soil borings were drilled at the site using a split-spoon sampler. Each of the soil borings were field screened with a photoionization detector (PID) for volatile organic compounds (VOCs) and an infrared oil content analyzer (IR) for total petroleum hydrocarbons (TPH). Six soil samples with IR readings indicating high contamination were collected from the soil borings for analysis. The analytical soil samples were tested for DRO. If DRO was detected in the analytical sample above cleanup levels then the sample would also be analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX), and polycyclic aromatic hydrocarbons (PAHs). A subset of the soil samples were also analyzed for total organic carbon (TOC). Soil sample B1 had a DRO concentration of 12,100 mg/kg, indicating DRO levels still present in the soil which exceeded the calculated cleanup level of 200 mg/kg. Benzene was not detected in this sample, though the method detection limit was above the 18 AAC 75.341 ADEC Method Two Migration to Groundwater cleanup level (0.005 mg/kg). None of the other soil samples taken during the release investigation exceeded the DRO cleanup level and were subsequently not sampled for BTEX or PAHs.

One groundwater monitoring well was installed during the field investigation. Groundwater was encountered at approximately 50 feet below ground surface (bgs), and the monitoring well was screened at a depth of 45 to 55 feet. Groundwater samples were analyzed for VOCs to determine if petroleum hydrocarbon constituents were present, and were additionally analyzed for DRO and volatile petroleum hydrocarbons (VPH) to evaluate the type of petroleum hydrocarbons present. No analytes were detected in the groundwater above the method detection limits.

Following an evaluation of remedial alternatives, the investigation report recommended that no further remedial action be conducted based on the proximity of the FIFO building's foundation to the contaminated area and the shallow depth of the remaining contamination (10-11.5 feet bgs) in comparison with the relatively deep groundwater aquifer, even though DRO still exceeded the applicable cleanup levels.

ADEC did not approve the recommendation of no further action at the site.

1996 Alternate Cleanup Level Evaluation

On December 10, 1993, the FAA submitted to ADEC an Alternate Cleanup Level Plan for FAA Fuel Storage Tank Sites. The plan, prepared by Harding Lawson Associates, described the approach and methodology they would use to develop alternate cleanup levels for the FAA FIFO site and other similar FAA-owned sites. This plan was approved by ADEC on April 26, 1994.

On January 15, 1996, Harding Lawson Associates prepared an alternate cleanup level (ACL) evaluation for several FAA owned contaminated sites in the Anchorage area, including the FAA FIFO site. As described in the alternate cleanup level plan, computer-generated contaminant leaching models were developed for the FIFO site, and new acceptable concentrations for several contaminants of concern at the site, including BTEX and several PAHs, were calculated based on the criteria of acceptable risk to

human health or groundwater resources as established in the 1991 EPA Region 10 criteria. The new contaminant concentrations that were calculated in the evaluation as acceptable to human and ecological health would then be compared with the remaining BTEX and PAH contamination at the FIFO site.

The computer-generated leaching model for the FIFO site would not simulate the contaminant reaching groundwater in the maximum 99 year model duration. This was suggested to be because of a combination of the depth to groundwater, a high adsorption coefficient on organic carbon for each contaminant, low solubility of the soil, and low precipitation in the area.

Alternate cleanup levels were calculated for benzene, toluene, ethylbenzene, total xylenes, naphthalene, and benzo(a)pyrene. These cleanup levels were all below any observed contamination from these analytes at the FIFO site. Following the ACL comparison with the observed contamination at the FIFO site it was recommended in the report that the site be closed with no further action. ADEC did not close this site as a result of this alternate cleanup level evaluation, as it did not present alternate cleanup level values for the DRO remaining in the soil.

2013 Final Cleanup Action

The Boiler Building was removed in July 2013 and allowed for further cleanup at the FAA FIFO site. The building's foundation remained on-site until its removal during the August 2013 cleanup action.

A new workplan for the cleanup of this site was approved by ADEC on August 22, 2013 following a meeting between ADEC and the FAA. It was agreed that there has been no groundwater contamination at this site; though in order to close this site, the remaining soil contamination would have to be below 18 AAC 75 ADEC Method Two Migration to Groundwater cleanup levels.

The final cleanup action at the site occurred between August 29 and September 11, 2013.

The cleanup action included the demolition of the boiler building foundation, the decommissioning of the single groundwater monitoring well at the site, and the excavation and treatment of the remaining contaminated soil at the site. Both soil and concrete samples were collected and analyzed as part of the cleanup action.

The boiler building foundation was composed of a concrete slab and two concrete generator pads. The concrete was tested for lead and PCBs prior to removal. A bulk concrete sample indicated lead contamination at a concentration of 17.8 mg/kg and a TCLP lead non-detection at 0.0776 mg/L; both of these concentration were below ADEC Method Two cleanup levels (CLUs). The PCB analytical results were non-detect for all seven aroclors. The slab and generator pads were disposed of at Alaska Sand and Gravel in Anchorage, Alaska.

The single groundwater monitoring well at the site was decommissioned on September 3, 2013 during the cleanup action. Fifty pounds of bentonite were poured into the well annulus and the well casing was removed to 15 feet bgs. The top two feet of the well was removed with an excavator. A well abandonment form was provided to ADEC with the removal action cleanup report.

Soil excavation work was initiated on September 2, 2013, and completed on September 6, 2013. Field screening was used to guide the excavation. Field screening methods used at the site included visual and olfactory senses, and a photoionization detector (PID). The PID was used to screen soils both *in-situ* and using heated-headspace methods. A PID response of 10 ppm was used to distinguish clean from impacted soil. Discrete sample locations for heated headspace evaluation and off-site analysis were selected once *in-situ* PID responses indicated excavated soils were not impacted above the 10 ppm

threshold. In two locations (the north side and base of the excavation), the 10 ppm threshold was exceeded and soil samples were taken at those locations.

The vertical extent of the excavation was not to exceed 15 to 16 feet bgs. Excavating to depths greater than 15 feet bgs was determined to be unnecessary due to the reduced risk of a complete direct contact exposure pathway from impacted soil deeper than 15 feet bgs. A total of 419.48 cubic yards (CY) of contaminated soil were excavated during this removal action. The soil was transported to Alaska Soil Recycling for disposal.

During the excavation, a significant rain event occurred over several days that resulted in uncontrollable rain water runoff from the adjacent parking lot into the excavation area. Grading conducted by a different contractor prior to the removal effort had directed all runoff water towards the excavation areas. Attempts to berm the area were unsuccessful. As a result of water entering the excavation, an excavation dewatering plan was developed in compliance with ADEC's *Excavation Dewatering General Permit Number 2209DB0003* (EDGP). Dewatering included the pumping of nearly 9,000 gallons of potentially diesel-impacted water into a holding tank. A water treatment system was then constructed consisting of a series of two 55-gallon drums containing granulated activated charcoal, followed by a swale with waddles. Treatment activities were monitored and recorded per the requirements for the EDGP. All water was surface discharged into a storm water ditch located at the northwest of the site, along Old International Airport Road.

Nine excavation floor soil samples and seven sidewall soil samples (with two duplicates) were collected for off-site analysis once the excavation had been completed. The soil samples collected at the site were analyzed for GRO, DRO/RRO, and BTEX. Additionally, one soil sample was analyzed for PAHs. Analytical soil sampling results for all excavation floor and sidewall samples were reported at concentrations below ADEC Method Two SCLs.

Table 1 – Maximum Contaminant Concentrations Remaining at the FIFO Site

Contaminant	ADEC Method Two 18 AAC 75 Migration to Groundwater Cleanup Levels (mg/kg)	Maximum Concentration Remaining in Excavation Sidewall (mg/kg)	Maximum Concentration Remaining at Excavation Bottom (mg/kg)
DRO	250	78.2	105
GRO	300	11.6	ND
Benzene	0.025	ND	ND
Toluene	6.5	0.0666	ND
Ethylbenzene	6.9	ND	ND
Xylenes (total)	63	0.575	ND
PAHs	Various	<1/10 CLUs	<1/10 CLUs

ND = non-detect

mg/kg = milligrams per kilogram

< 1/10 CLUs = the contamination is at concentrations below one-tenth of the applicable cleanup levels

Of the seven sidewall sample locations, only one contained detectable concentrations of GRO, DRO, RRO, or BTEX. The PAHs benzo(a)anthracene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene were also detected at this sample location; all at concentrations less than one-tenth of their respective ADEC Method Two CLUs. One sidewall sample's method detection limits (MDL) for benzene exceeded the ADEC Method Two Migration to Groundwater CLUs, though this

sample location had a duplicate sample with a non-detection of benzene with a MDL below the ADEC Method Two CLUs.

A total of nine excavation floor samples were collected. GRO, RRO, and BTEX were not detected in any floor sample. DRO was detected in three floor samples. One floor sample was submitted for PAH analysis and contained the PAHs acenaphthene, fluorene, naphthalene, and phenanthrene; all at concentrations below one-tenth of their respective ADEC Method Two CLUs. One excavation floor sample's method detection limits (MDL) for benzene exceeded the ADEC Method Two Migration to Groundwater CLUs, though it was non-detect for the other BTEX compounds, GRO, and DRO, and had a recorded PID reading of 1.2 ppm; indicating that there was no contamination at this area of the site.

Following the excavation and confirmation sampling the area was backfilled with clean material obtained from an outside source.

Accompanying the cleanup action report was a decision document from the FAA which indicated that the FIFO site warranted a "cleanup complete" determination from ADEC, as analytical sampling had confirmed that all of the analytes detected at this site were below the applicable ADEC Method Two Migration to Groundwater cleanup levels following the excavation.

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, toluene, and xylene remain at the FAA FIFO site in concentrations above one-tenth the applicable ADEC Method Two CLUs, and were subsequently included in the cumulative risk calculation. DRO did not add to the cumulative carcinogenic risk or the cumulative hazard index at this site as DRO, GRO and RRO are not included in cumulative risks. With the remaining concentrations of toluene and xylene in the soil at this site included, the Method Three Cumulative Risk Calculator determined the Cumulative Cancer Risk at this site to be 0, and the Cumulative Hazard Index to be 0.001.

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

Exposure Pathway Evaluation

Following investigation and cleanup at the site, exposure to the remaining contaminants was evaluated using 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, or Pathway Incomplete. A summary of this pathway evaluation is included in Table 2.

Table 2 – Exposure Pathway Evaluation

Pathway	Result	Explanation
Surface Soil Contact	Pathway Incomplete	The contamination at this site was released into the subsurface soil. Additionally, all of the surface soil at this site has been excavated and replaced with clean backfill several times. There is no contamination in the surface soil.

Sub-Surface Soil Contact	De-Minimis Exposure	The remaining contamination in the subsurface soil at this site is below ADEC Method Two direct contact cleanup levels. Additionally, the remaining contamination at this site has a cumulative carcinogenic risk of 0, and a hazard index of 0.001.
Inhalation – Outdoor Air	De-Minimis Exposure	The contamination remaining in the soil at this site is below the applicable outdoor inhalation action levels.
Inhalation – Indoor Air (vapor intrusion)	De-Minimis Exposure	An ADEC decision has been made that regardless of the lack of soil gas data, there is de minimis exposure of vapor intrusion at this site now and in the future. The source contains only low concentrations of volatile compounds in the soil (below ADEC Method Two Migration to Groundwater cleanup levels). There is no contamination in the groundwater.
Groundwater Ingestion	Pathway Incomplete	Contamination has not been detected in the groundwater at this site. The remaining contamination in the soil at this site is below the ADEC Method Two migration to groundwater cleanup levels.
Surface Water Ingestion	Pathway Incomplete	There has been no detection of contamination in the surface water around this site. Rainwater runoff was incidentally directed into the excavation area during the 2013 cleanup action at this site, though all of the runoff was removed from the excavation and filtered through a series of granular activated charcoal filters followed by a swale with waddles to remove any potential contamination. The excavation has since been backfilled with clean material.
Wild and Farmed Foods Ingestion	Pathway Incomplete	This area is not likely to be used for harvesting wild or farmed foods. Additionally, the remaining contaminants of concern do not have the potential to bioaccumulate in plants or animals.
Exposure to Ecological Receptors	Pathway Incomplete	There are no aquatic or terrestrial exposure routes present at this site. The remaining contamination is 15 feet below ground surface and is at concentrations below ADEC Method Two cleanup levels. There is no groundwater or surface water contamination or potential for migration.

Notes to Table 2: “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. 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 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.

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 by email at monte.garroutte@alaska.gov.

Sincerely,

Recommended By



Monte Garroutte
Environmental Program Specialist

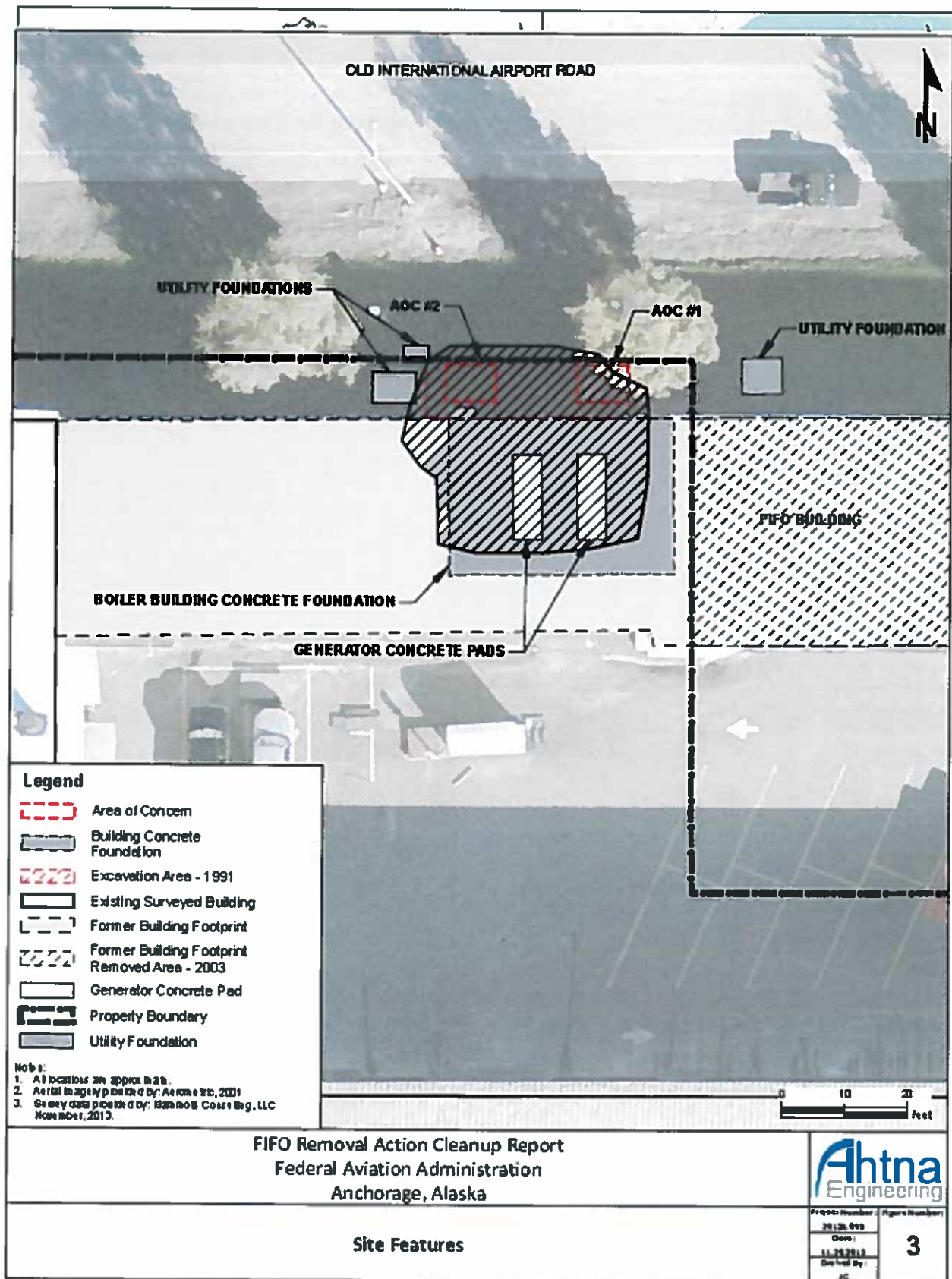
Approved By



Fred Vreeman
Environmental Program Manager

Enclosed

FAA Flight Inspection Field Office Location Map
FAA Flight Inspection Field Office Site Figure



FIFO Removal Action Cleanup Report
 Federal Aviation Administration
 Anchorage, Alaska



Site Features

Project Number: 2013-000	Figure Number: 3
Date: 11/28/13	
Drawn By: JC	