

FINAL
Interim Remedial Action
Completion Report (IRACR)

Building 1168 Leach Well Site
Operable Unit 2
U.S. Army Garrison Alaska



ADEC File No.

108.38.069.02

ADEC Hazard ID

1125

Contract No. W911KB-16-D-0005

Task Order W911KB18F0053

December 2018



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, U.S. ARMY GARRISON ALASKA
1046 MARKS ROAD #6000
FORT WAINWRIGHT, ALASKA 99703-6000

December 20, 2018

Directorate of Public Works

SUBJECT: Submission of the FINAL Interim Remedial Action Completion Report, Building 1168 Leach Well Site, Operable Unit 2, U.S. Army Garrison Alaska to the United States of Environmental Protection Agency

Ms. Sandra Halstead
Environmental Protection Agency
Federal Facilities Superfund Site Manager
Alaska Operations Office
222 W. 7th Ave, #19
Anchorage, AK 99513

Dear Ms. Halstead:

This letter serves as notification of submission of the Final Interim Remedial Action Completion Report for the Building 1168 Leach Well Site at Operable Unit 2 on the U.S. Army Garrison Alaska (USAG Alaska).

You are being provided an electronic version of the report. The USAG Alaska requests that your review and concurrence of the document be completed by January 21, 2019.

A copy of this letter and report are also being provided to Sean Macduff, Program Manager, Environmental Protection Agency, Erica Blake and Kevin Fraley, Environmental Program Specialists, Alaska Department of Environmental Conservation and the USAG Alaska Comprehensive Environmental Response, Compensation and Liability Act administrative records.

If you have questions or concerns regarding this action please contact Brian Adams (907) 361-6623/brian.m.adams18.civ@mail.mil, Tamara Scholten at (907) 361-3001/tamara.a.scholten.civ@mail.mil or Seth Reedy at (907) 361-6489/seth.a.reedy.civ@mail.mil.

Sincerely,

A handwritten signature in black ink, appearing to read "Richard L. Morris".

Richard L. Morris
Chief, Environmental Division



REPLY TO
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**DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND
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December 20, 2018

Directorate of Public Works

SUBJECT: Submission of the FINAL Interim Remedial Action Completion Report, Building 1168 Leach Well Site, Operable Unit 2, U.S. Army Garrison Alaska to the United States Environmental Protection Agency

Mr. Sean Macduff
Environmental Protection Agency
RCRA Corrective Action, Permits, and PCB Unit
1200 6th Avenue, Suite 155, OAW-150
Seattle, WA 98101

Dear Mr. Macduff:

This letter serves as notification of submission of the Final Interim Remedial Action Completion Report for the Building 1168 Leach Well Site at Operable Unit 2 on the U.S. Army Garrison Alaska (USAG Alaska).

You are being provided an electronic version of the report. If you would like a hard copy or compact disc of this document, please contact the USAG Remedial Program Manager. The USAG Alaska requests that your review and concurrence of the document be completed by January 21, 2019.

A copy of this letter and report are also being provided to Sandra Halstead, Federal Facilities Superfund Site Manager, Environmental Protection Agency, Alaska Operations Office, Erica Blake and Kevin Fraley, Environmental Program Specialists, Alaska Department of Environmental Conservation and the USAG Alaska Comprehensive Environmental Response, Compensation and Liability Act administrative records.

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Sincerely,

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Richard L. Morris
Chief, Environmental Division



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**DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, U.S. ARMY GARRISON ALASKA
1046 MARKS ROAD #6000
FORT WAINWRIGHT, ALASKA 99703-6000**

December 20, 2018

Directorate of Public Works

SUBJECT: Submission of the FINAL Interim Remedial Action Completion Report, Building 1168 Leach Well Site, Operable Unit 2, U.S. Army Garrison Alaska to the State of Alaska Department Environmental Conservation

**Ms. Erica Blake
Alaska Department of Environmental Conservation
Environmental Program Specialist
610 University Avenue
Fairbanks, AK 99709**

Dear Ms. Blake:

This letter serves as notification of submission of the Final Interim Remedial Action Completion Report for the Building 1168 Leach Well Site at Operable Unit 2 on the U.S. Army Garrison Alaska (USAG Alaska).

You are being provided an electronic version of the report. The USAG Alaska requests that your review and concurrence of the document be completed by January 21, 2019.

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Sincerely,

A handwritten signature in black ink, appearing to read "R. Morris", is written over the word "Sincerely,".

**Richard L. Morris
Chief, Environmental Division**



REPLY TO
ATTENTION OF:

**DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND
HEADQUARTER, U.S. ARMY GARRISON ALASKA
1046 MARKS ROAD #6000
FORT WAINWRIGHT, ALASKA 99703-6000**

December 20, 2018

Directorate of Public Works

SUBJECT: Submission of the FINAL Interim Remedial Action Completion Report, Building 1168 Leach Well Site, Operable Unit 2, U.S. Army Garrison Alaska to the State of Alaska Department Environmental Conservation

Mr. Kevin Fraley
Alaska Department of Environmental Conservation
Environmental Program Specialist
610 University Avenue
Fairbanks, AK 99709

Dear Mr. Fraley:

This letter serves as notification of submission of the Final Interim Remedial Action Completion Report for the Building 1168 Leach Well Site at Operable Unit 2 on the U.S. Army Garrison Alaska (USAG Alaska).

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Richard L. Morris
Chief, Environmental Division

FINAL

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1125

December 2018

Prepared for

U.S. Army Garrison Alaska

Under Contract to

U.S. Army Corps of Engineers, Alaska District

Post Office Box 6898
JBER, Alaska 99506-0898

Contract W911KB-16-D-0005

Task Order W911KB18F0053

Prepared by

Fairbanks Environmental Services

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LIST OF ACRONYMS AND ABBREVIATIONS

1,1-DCE	1,1-dichloroethene
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AS	air sparge
AWQS	Alaska Water Quality Standards
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIP	Community Involvement Plan
cis-1,2-DCE	cis-1,2-dichloroethene
COC	contaminants of concern
DO	dissolved oxygen
DRO	diesel range organics
E&E	Ecology and Environment, Inc.
ENSR	ENSR Corporation
FES	Fairbanks Environmental Services Inc
FFA	Federal Facilities Agreement
FS	Feasibility Study
GIS	geographic information systems
GRO	gasoline range organics
HLA	Harding Lawson Associates
HQAES	Headquarters Army Environmental System
IC	Institutional Control
IRACR	Interim Remedial Action Completion Report
ISCO	in-situ chemical oxidation
LNAPL	light non-aqueous phase liquid
MCL	maximum contaminant level
µg/L	micrograms per liter
mg/L	milligrams per liter
mV	millivolts
NA	natural attenuation
NCP	National Contingency Plan
NPL	National Priorities List
ORC	oxygen-releasing compound
ORP	oxidation-reduction potential
OST	Oil Spill Technology, Inc.
OU2	Operable Unit 2
OWS	oil-water separator
PCE	tetrachloroethene
POL	petroleum, oil, and lubricants
PSE	Preliminary Source Evaluation
PVC	polyvinyl chloride
RA	Remedial Action
RAB	Restoration Advisory Board
RAG	Remedial Action Goal
RAO	remedial action objective
RI	Remedial Investigation

LIST OF ACRONYMS AND ABBREVIATIONS CONT'D

ROD	Record of Decision
SVE	soil vapor extraction
TCE	trichloroethene
UCL	Upper Confidence Limit
USARAK	U.S. Army Alaska
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compounds

1.0 OVERVIEW

This document presents the Interim Remedial Action Completion Report (IRACR) for the Operable Unit 2 (OU2) Building 1168 Leach Well site on Fort Wainwright, Alaska. The IRACR demonstrates that the remedy was constructed and operated successfully in accordance with the established remedial action objectives (RAO) and the Record of Decision (ROD). Long term groundwater monitoring has been conducted at the site, and sampling results show that the contaminants of concern (COCs) regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) have achieved the remedial action goals (RAGs) presented in the ROD. The only contaminants remaining in groundwater are petroleum-related and are subject to the CERCLA Petroleum Exclusion (US EPA, 1987). As a result, the Building 1168 Leach Well site will be removed from OU2, and is recommended to be managed in accordance with the Two-Party Agreement established between the Alaska Department of Environmental Conservation (ADEC) and the U.S. Army.

Recent groundwater sampling results (May 2017) identified contaminants (fuel-related compounds) that exceed the State of Alaska groundwater cleanup levels presented in Title 18 of the Alaska Administrative Code (AAC), Chapter 75.345, Table C (ADEC, 2018). Future groundwater monitoring and reporting will continue until the Alaska cleanup standards are achieved.

This IRACR details the RAOs; describes the Building 1168 Leach Well Remedial Actions (RAs); demonstrates interim completion of the groundwater RAG described in the ROD; presents ongoing activities; and demonstrates community relations efforts.

1.1 Building 1168 Leach Well Location and History

The Building 1168 Leach Well site is located on the north side of Trainor Gate Road on Fort Wainwright, as shown on Figure 1-1. Building 1168 was originally a motor pool and vehicle storage facility. In the 1960s, the building was converted into a laboratory for analyzing petroleum, oil, and lubricants (POL). Floor drains in the building connected to an oil-water separator (OWS), which connected to a dry well (leach well) situated about 100 feet southwest of the building. In principle, the POL products were supposed to be separated from the water and directed into a holding tank, while the water flowed into the leach well. In practice, some of the POL products did not separate from the water, but flowed into the leach well and surrounding soil. The types of products suspected of having entered the leach well include used oil from engines and transmissions, gasoline, diesel, jet fuel, and solvents.

In 1994, the OWS, underground storage tank (UST), and associated connecting pipelines in Building 1168 were removed (Oil Spill Technology, Inc. [OST], 1994). These components were connected to the leach well south of the building. However, neither the leach well nor the leach well pipeline were removed.

In 1997, Building 1168 was demolished (Hart Crowser, 1997); however, the leach well and connecting pipeline remained in place. At that time, an abandoned septic/leach well system was identified north of the building. This area was further investigated and became the Building 1168 Two-Party site.

1.2 Current Land Use

As described in Section 1.1, Building 1168 was demolished in 1997. The site was graded flat and covered with gravel. Starting in 2006, the site was used as a staging area for construction materials as part of the Sitku Basin military housing project. The project was completed in 2008, with the housing area north of the site as shown on Figure 1-1. Since the Sitku Basin project was completed, the site remains a gravel lot; but has grown up with vegetation including various grasses, alder, and willow trees. The area along the Post boundary fence and the monitoring wells is regularly cleared of vegetation to maintain access.

In addition to the nearby Sitku Basin housing area, nearby features include the Birchwood Estates housing area (formerly the 801 military housing area) approximately 300 feet cross gradient, and the Tanana Middle School, approximately 700 feet downgradient. Access to the site is limited by the Fort Wainwright boundary fence.

1.3 National Priorities List, Federal Facilities Agreement, and the Two-Party Agreement

Fort Wainwright was recommended for inclusion on the CERCLA National Priorities List (NPL) in 1989 as a result of releases of hazardous substances, pollutants, and contaminants, and various investigations were initiated in 1989 as part of the U.S. Army Installation Restoration Program (IRP). The installation was added to the CERCLA NPL in 1990, and the Federal Facilities Agreement (FFA) between the USEPA Region 10, ADEC, and the U.S. Army was signed in 1992 to ensure that the environmental impacts from contaminant releases are investigated and remedial actions were completed to protect human health and the environment. The FFA also established and described the CERCLA process for contaminated sites on Fort Wainwright. Sites were evaluated using preliminary source evaluations (PSE) to compile information collected under the IRP, identify any additional areas of concern, expedite interim remedial actions, and screen potential sites to determine those that should continue under a CERCLA RI/FS.

The FFA also required establishment of a separate strategy for action at petroleum, oil, and lubricant (POL) source areas. The Two-Party POL Agreement was negotiated between the U.S. Army and ADEC, and ensured that these sources would be addressed under the appropriate program. The Two-Party Agreement also provided the mechanism for inclusion of newly discovered POL sources, along with the mechanism of closure of all POL sources.

1.4 Site Investigations and Interim Remedial Actions

1.4.1 OU2 Preliminary Source Evaluation

A PSE was conducted for the former Building 1168 site to assess the presence of contamination, evaluate potential risk to human health and the environment, and to make recommendations for future actions (including potential inclusion in a CERCLA RI/FS). A limited PSE 1 was completed in 1991 to evaluate the existing information and provide a qualitative evaluation of risk (Harding Lawson Associates [HLA], 1991). This was followed by a PSE 2, which was completed in 1992, and involved collection of soil and water samples to further evaluate the nature and extent of contamination at the site (HLA, 1993).

The PSE 2 included drilling eight soil borings and installation of four monitoring wells at the Building 1168 leach field site. Soil samples were collected from five-foot intervals in the soil borings, and groundwater samples were collected from each monitoring well. Soil and groundwater sampling results identified contamination from petroleum hydrocarbons and solvents associated with the leach well that should be further evaluated (HLA, 1993).

The 1992 investigation was followed up by further investigation in 1993 to evaluate the extent of contamination at the Building 1168 leach well (HLA, 1994a). Three soil borings were completed, with soil samples collected at five-foot intervals. Three additional monitoring wells were installed and groundwater samples were collected from each new and existing well. The highest levels of contaminants in groundwater were associated with monitoring wells AP-5751 and AP-5752 (well locations shown on Figure 1-1). Contaminated soil around the leach well was found to be the source of petroleum hydrocarbon and volatile organic compounds (VOC) contamination (HLA, 1994a). Contaminants were believed to be migrating from this source area in the direction of groundwater flow (to the northwest as shown on Figure 1-1). However, no floating product (light non-aqueous phase liquid [LNAPL]) was identified during any of the pre-RI/ Feasibility Study (FS) sampling events (HLA, 1993; HLA, 1994a).

Based on these results, additional investigation and evaluation of remedial alternatives was recommended as part of a CERCLA RI/FS (HLA, 1994a). The report also recommended that interim RAs and/or treatability testing should be considered (HLA, 1994a).

1.4.2 AS/SVE Pilot Study

Prior to completion of the RI/FS, a pilot-scale air sparge (AS)/soil vapor extraction (SVE) system was installed around the leach well in 1994. The system was installed to evaluate the treatability of contaminated soil within the smear zone at the site (HLA, 1994b). Regular system monitoring was conducted, including collection of air samples from the SVE system for analysis of VOCs and total hydrocarbons. The pilot study results showed that approximately half of the estimated hydrocarbon mass was removed after one year of system operation, with biodegradation rates remaining relatively constant (HLA, 1996b). As a result, continued operation of the AS/SVE system was recommended (HLA, 1996b), and the system remained in operation until 1998 as the site moved through the remedial process.

1.4.3 OU2 RI/FS

The OU2 RI was conducted in 1994 (HLA, 1996a). The goals of the RI at the Building 1168 site were to estimate hydraulic characteristics of the impacted aquifer, evaluate the physical parameters of the surface and subsurface soil, collect soil and groundwater samples for evaluation of the treatability study, and collect background soil and groundwater samples (HLA, 1996a). In order to achieve these goals, two soil borings were drilled in the Building 1168 source area, and five soil samples were collected; two groundwater monitoring wells were installed, and samples were collected from these two new wells and the eleven existing wells. The report stated that the Building 1168 source area had been adequately characterized, and that further evaluation of remedial alternatives in the FS was recommended (HLA, 1996a). Five preliminary remedial alternatives were identified for the Building 1168 source area, and the alternatives were screened in the FS (HLA, 1996c). The selected remedy was described in the OU2 ROD as detailed in Section 2.

1.5 Source Area Tracking

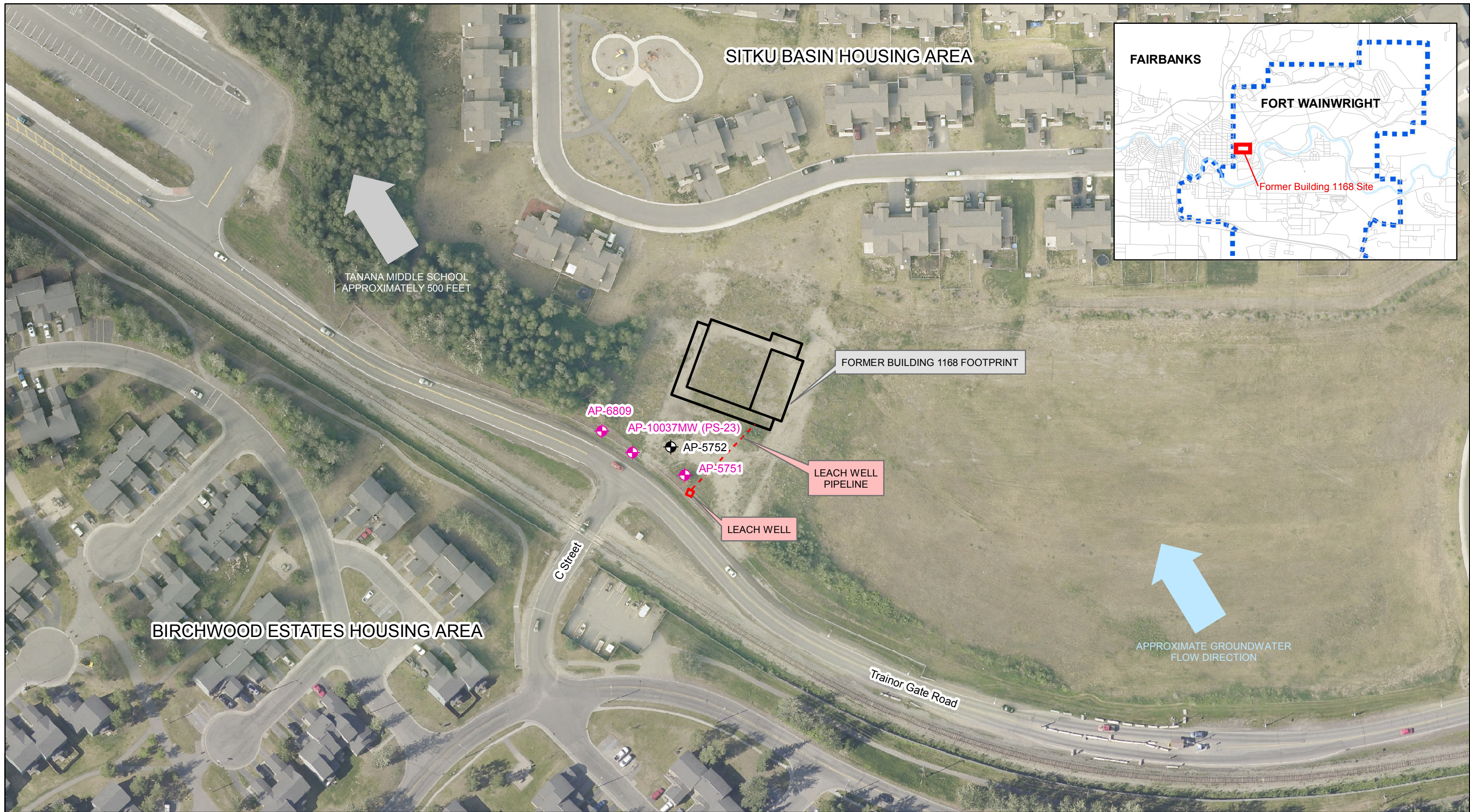
The OU2 former Building 1168 source area is tracked in the ADEC Contaminated Sites database, which is maintained by the ADEC project manager assigned to the site and by the Army in the Headquarters Army Environmental System (HOAES) for funding purposes. The source area description, HOAES, and ADEC IDs are summarized in Table 1-1.

Table 1-1. Crosswalk Table for OU2 1168 Source Area Tracking Numbers¹

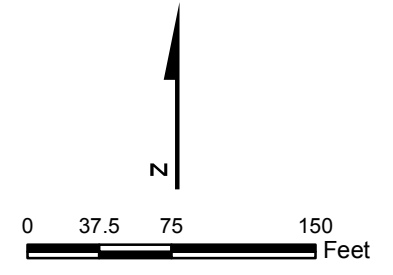
OU2 Source Area	HOAES Number	ADEC File ID	ADEC Hazard ID	Site Status ²
<i>Former Building 1168 Leach Well Site</i>	02871.1049	108.38.069.02	1125	Open

¹ Based on information from the ADEC Contaminated Sites Database available at <http://dec.alaska.gov/Applications/SPAR/PublicMVC/CSP/Search> and the Army HOAES

² Site status from the ADEC Contaminated Sites Database



NOTES:
 1. HORIZONTAL DATUM: UTM ZONE 6N, WGS 1984, METERS
 2. AERIAL IMAGERY FROM FORT WAINWRIGHT, 2012
 3. PS-23 WAS REPLACED BY AP-10037MW IN JULY 2010



LEGEND

- ⊕ DECOMMISSIONED MONITORING WELL
- ◆ ACTIVE MONITORING WELL
- FORMER BUILDING 1168
- LEACH WELL
- - - LEACH WELL PIPELINE

FAIRBANKS ENVIRONMENTAL SERVICES
 3538 INTERNATIONAL STREET
 FAIRBANKS, AK 99701

ALASKA DISTRICT
 CORPS OF ENGINEERS
 ANCHORAGE, ALASKA

Building 1168 Leach Well Site Location
 Interim Remedial Action Completion Report
 Operable Unit 2
 Fort Wainwright, Alaska

CONTRACT:
 W911KB-16-D-0005

FIGURE:
 1-1

DATE:
 11/18

2.0 RECORD OF DECISION COMPONENTS

The OU2 ROD was signed under the Federal Facilities Agreement (FFA) in March 1997 by the U.S. Army Alaska (USARAK), ADEC, and the United States Environmental Protection Agency (USEPA) (USARAK, 1997). OU2 originally consisted of eight source areas. However, six source areas were either moved to a different OU, recommended for no further action, or addressed through an Army removal action. The OU2 ROD described the decision summary for the remaining two OU2 source areas; the Defense Reutilization and Marketing Office (DRMO) Yard, and the Building 1168 Leach Well. Although the remedial action goals (RAG) have been achieved for the Building 1168 Leach Well site, the RAGs have not been achieved for the DRMO sites.

The following sections describe the selected remedy, remedial action objectives, RAGs for the Building 1168 Leach Well.

2.1 Selected Remedy

The selected remedy for the Building 1168 Leach Well included the following:

- In-situ SVE and AS of groundwater to remove VOCs and achieve MCLs;
- In-situ SVE of soils to prevent contaminated soils from acting as an ongoing source of contamination to groundwater;
- Implementation of Institutional Controls (ICs) that include restrictions on site access and groundwater well installation;
- Natural attenuation (NA) with groundwater monitoring and evaluation to attain Alaska Water Quality Standards

2.2 Remedial Action Objectives

The ROD identified the following RAOs for soil and groundwater respectively at the Building 1168 Leach Well site (USARAK, 1997):

Soil

- Prevent migration of soil contaminants to groundwater, which could result in groundwater contamination and exceedances of state and federal maximum contaminant levels (MCLs) and Alaska Water Quality Standards (AWQS).

Groundwater

- Restore groundwater to its beneficial use of drinking water quality within a reasonable time frame through source control;
- Reduce or prevent further migration of contaminated groundwater from the source areas;
- Prevent use of groundwater containing contaminants at levels above federal Safe Drinking Water Act and State of Alaska Drinking Water Standard MCLs and AWQS; and

- Use NA to attain AWQS after reaching state and federal MCLs.

2.3 Remedial Action Goals

Soil and groundwater RAGs for the Building 1168 Leach Well site were also established in the OU2 ROD. The RAGs for soil was protection of groundwater, with active remediation continuing until MCLs are met, and NA continuing until the AWQS for DRO and GRO were met (USARAK, 1997).

Groundwater RAGs for the selected remedy were based on state and federal MCLs as shown in Table 2-1 (USARAK, 1997).

Table 2-1. ROD Remedial Action Goals for Groundwater

Contaminants of Concern	Remedial Action Goal
Benzene	5 µg/L
PCE	5 µg/L
TCE	5 µg/L
Vinyl Chloride	2 µg/L
1,1-DCE	7 µg/L
cis-1,2-DCE	70 µg/L

1,1-DCE – 1,1-Dichloroethene; cis-1,2-DCE – cis-1,2-Dichloroethene; PCE – Tetrachloroethene; µg/L – micrograms per liter

In addition to the COCs having RAGs that are listed in Table 2-1, sampling was conducted to evaluate groundwater associated with petroleum-contaminated soils identified at the site, in accordance with 18 AAC 75.

3.0 REMEDIAL ACTION SUMMARY

3.1 Remedial Action Overview

This section describes the major components of the selected remedy, along with a summary of the remediation results. The results demonstrate compliance with the Building 1168 Leach Well RAOs and RAGs set forth in the ROD.

The major components of the remedy are discussed in the following sections:

- Installation and operation of an AS/SVE system (Section 3.2)
- Groundwater monitoring (Section 3.3)
- Institutional controls (Section 3.8)

3.2 AS/SVE System Operation

As described in Section 1.4, an AS/SVE system was first installed at the Building 1168 Leach Well site in 1994 as part of a treatability study. The system was centered on the leach well and the initial system consisted of eight AS wells, one SVE well, and several monitoring wells/probes. Several additional AS and SVE wells were installed over time to maximize efficiency and effectiveness of the system, including a SVE well installed into the leach well itself (Hart Crowser, 1999). The complete AS/SVE system layout is shown in Figure 3-1.

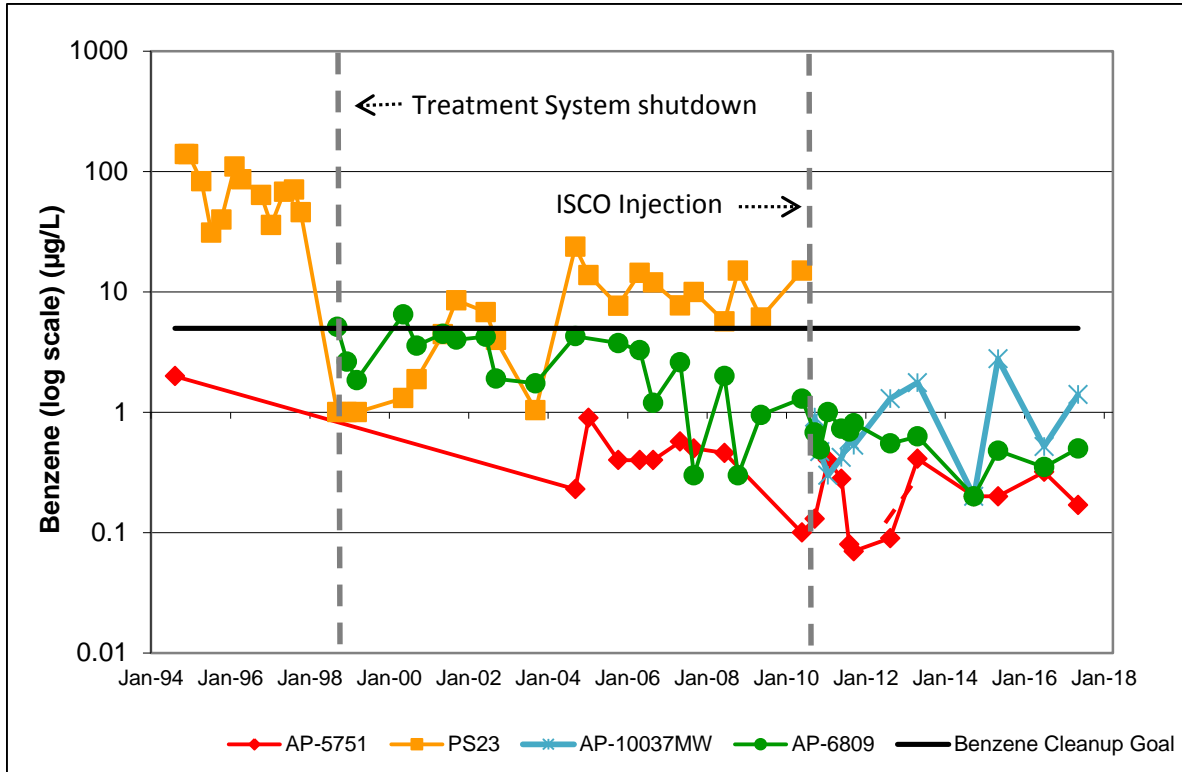
The system operated between 1994 and 1998, and air monitoring results showed the system removed approximately 2,680 pounds of hydrocarbons through volatilization, and an estimated 1,900 pounds of hydrocarbons through aerobic biodegradation (CH2M Hill, 2003). Effectiveness of the system was also evaluated through groundwater monitoring, and sampling was conducted on a quarterly basis to evaluate progress towards achieving the RAGs; results are shown on Figure 3-2. The December 1998 sampling event showed the RAGs for COCs in groundwater had been achieved. Based on these results, the treatment system was shut down, although groundwater monitoring continued on a semi-annual basis due to persistent exceedances of the ADEC cleanup levels for DRO in groundwater.

3.3 Groundwater Monitoring and Contaminant Rebound Evaluation

Groundwater sampling continued following treatment system shutdown in 1998, and the results showed benzene concentrations rebounded above the RAG in 2000; however, all other ROD COCs (including chlorinated solvents) remained below the RAGs and evaluation of NA parameters showed the potential for biodegradation to continue at the site (Hart Crowser, 2000). The groundwater monitoring results are shown on Figure 3-2, and a graph of benzene concentrations over time is shown in Graph 3-1.

Benzene concentrations were expected to decrease below its RAG, and all other VOCs would remain below the RAGs (USARAK, 2001). Groundwater sampling in fall 2000 confirmed this expectation, as benzene

concentrations in AP-6809 dropped back below the RAG (see Graph 3-1). Groundwater monitoring results in 2001 and 2002 showed a decreasing trend. Based on these results, the treatment system was decommissioned in 2003.



Graph 3-1. Benzene Concentrations in Former Building 1168 Wells

After the treatment system was decommissioned, the benzene concentration rebounded above the RAG in source area well PS-23 as shown in Graph 3-1. The detections were less than the pre-treatment concentrations, but first-order attenuation rate analysis indicated that the contamination would likely persist at the site for a significant period of time (Fairbanks Environmental Services [FES], 2010). During this time, no evidence of downgradient migration was observed and ICs remained in effect that restricted groundwater usage (USARAK, 2006). As a result, contamination appeared to be limited to a small area. Since the treatment system had already been decommissioned, and re-installation of the AS/SVE treatment system was determined to be impractical and not cost effective, a treatability study was conducted. The treatability study utilized in-situ chemical oxidation (ISCO) and stimulation of aerobic biodegradation through addition of an oxygen-releasing compound (ORC). The treatability study was completed in 2010 and 2011, with the injection completed during October 2010 (FES, 2011; FES, 2017a).

As part of the treatability study, monitoring probe PS-23 was replaced with a 2-inch polyvinyl chloride (PVC) monitoring well, AP-1003MW. The well was installed in July 2010, and was constructed with a 10-foot screen that was placed across the water table. Soil samples were collected just above and just below the water table as part of the well installation, and the sampling results showed there was not significant contaminant mass remaining in the soil in the vicinity of the well (FES, 2011; FES, 2017a).

3.4 ISCO Treatability Study Results

The primary target of the ISCO treatability study was benzene in the vicinity of PS-23/AP-10037MW, since benzene was the only VOC remaining above the RAGs following treatment system shut down, and there was no evidence of downgradient migration. Complete results of the treatability study are presented in the *Former Building 1168 Treatability Study Report* (FES, 2017a).

Groundwater geochemistry changes were used to evaluate impact from the injection, and the results showed changes within the injection area consistent with the ISCO treatment mechanisms. Benzene concentrations in groundwater samples collected from the pre-injection sampling event in AP-10037MW were below the RAG, but the concentrations decreased to trace levels following the injection indicating that the injection was effective in treating dissolved benzene. The injection process can have the effect of flushing contamination out of the soil and/or pore space and into the groundwater, resulting in a spike of contaminant concentration immediately following the injection. This was not observed at the Building 1168 Leach Well site, which suggests there was little or no benzene mass remaining in the soil within the injection area that could act as a continuing source. Graph 3-1 also shows benzene has remained below its RAG in all subsequent sampling events since the injection. The 2017 sampling event was the 11th consecutive sampling event where benzene was below its RAG (FES, 2018a).

Benzene concentrations in upgradient well AP-5751 and downgradient well AP-6809 are also shown on Graph 3-1. The results show that there was no significant change in benzene concentrations in these wells as a result of the treatability study.

3.5 Statistical Evaluation of Benzene Concentration and RAGs

Groundwater sampling results collected from the Building 1168 Leach Well site were evaluated using the Groundwater Statistics Tool developed by the USEPA (USEPA, 2014a), since the ROD objectives were achieved for VOCs following the ISCO treatability study. The Microsoft Excel-based statistics tool was developed in conjunction with the *Recommended Approach for Evaluating Completion of Groundwater Restoration Remedial Actions at a Groundwater Monitoring Well*, which outlined the process to use to determine if the groundwater has met and will continue to meet the RAGs for a particular COC, and if the remedial action may be considered complete (USEPA, 2014b). The decision to utilize this tool was made at the February 2015 FFA meeting.

The statistical analyses described in the tool included the upper confidence limit (UCL) on the mean, and trend analysis. The UCL on the mean is determined at a confidence level of 95% to determine whether a cleanup level has been met for a particular compound, and the trend analysis is utilized to determine if the groundwater will continue to meet the cleanup level in the future (USEPA, 2014b).

The analysis was completed for benzene in the three wells that are currently sampled at the site; AP-6809, AP-10037MW, and AP-5751. The time period selected for the analysis was between November 2010 and May 2017 (11 sampling events), which represents the period following the treatability study injection.

The results of the statistical analysis are presented in Appendix B, and a summary of the results is presented in Table 3-1. The results were compared to the ROD-established RAG for benzene of 5 micrograms per liter (µg/L).

Table 3-1. Cleanup Complete Evaluation for Benzene

Well	95% UCL (µg/L)	Trend Result	Achieve RAG?
AP-6809	0.87	Decreasing	Achieved
AP-10037MW	1.99	Stable ¹	Achieved
AP-5751	0.40	Stable ¹	Achieved

The analysis is based on the USEPA Groundwater Statistics Tool, available from <https://www.epa.gov/superfund/superfund-groundwater-groundwater-response-completion>

Gray highlight indicates the RAG has been achieved and will continue to achieve at a 95% confidence level

¹ Slope was not statistically increasing

The following is a summary of the results presented in Table 3-1:

- The 95% UCL for benzene has been achieved for each of the three wells at the Building 1168 Leach Well site.
- Analysis of the benzene trends showed the concentrations were not statistically increasing. In addition, benzene has not exceeded the RAG in any monitoring well since the ISCO treatability study, and the RAG has been achieved with a statistically significant confidence level.

3.6 Comparison of 2017 Sampling Results to Current ADEC Cleanup Levels

The 2017 groundwater contaminant concentrations were compared to the current ADEC cleanup levels in 18 AAC 75.345 Table C to allow for an evaluation of current compliance with Two-Party program closure. Complete ADEC cleanup level comparisons for 2017 groundwater results from the Building 1168 Leach Well site were presented in the 2017 Annual Monitoring Report (FES, 2018a), and a summary of the comparison is presented in Table 3-2.

Table 3-2. Comparison of Groundwater Results to Current ADEC Cleanup Levels¹

ROD COCs			
Contaminant	ROD RAG (µg/L)	Current ADEC Cleanup Level ¹ (µg/L)	Exceedance Location
Benzene	5	4.6	None
PCE	5	41	None
TCE	5	2.8	None
Vinyl Chloride	2	0.19	None
1,1-DCE	7	280	None
1,2-DCE	70	36	None

¹ Table C, 18 AAC 75.345 (ADEC, 2018)

Table 3-2 Continued. Comparison of Groundwater Results to Current ADEC Cleanup Levels¹

NON-ROD COCs		
Contaminant	Current ADEC Cleanup Level ¹ (µg/L)	Exceedance Location/Concentration (µg/L) ²
Naphthalene	1.7	AP-5751 (3.3)
DRO	1,500	AP-5751 (1,510)

¹ Table C, 18 AAC 75.345 (ADEC, 2018)

² 2017 sampling results shown in parentheses

The comparison of the groundwater results to the current ADEC cleanup levels showed all ROD COCs have achieved the RAGs as well as the ADEC cleanup level. Two COCs that did not have RAGs listed in the ROD (petroleum constituents naphthalene and DRO) exceed the ADEC cleanup level in one well (AP-5751). Groundwater monitoring continues at the site to evaluate progress towards achieving the cleanup level for these compounds. Sampling results will be reported in a separate Fort Wainwright Two-Party Groundwater Monitoring Report after the site is removed from OU2.

3.7 Groundwater Geochemistry and Biodegradation Potential

Geochemical parameters in groundwater are measured at the Building 1168 Leach Well site during each monitoring event to evaluate the potential mechanisms of biodegradation of the contaminants remaining above the ADEC cleanup level. This section describes the current status of the groundwater geochemistry based on the 2017 sampling event (FES, 2018a).

The groundwater geochemistry parameters in source area well AP-10037MW measured in 2017 showed dissolved oxygen (DO) concentrations at 1 milligram per liter (mg/L), and dissolved iron concentrations greater than 5 mg/L, indicating iron reducing conditions. The sulfate concentration was below background levels, which suggests that sulfate reduction continues in this area.

The groundwater geochemistry in downgradient well AP-6809 was similar to the geochemistry in AP-10037MW with the exception of the sulfate concentrations, which were significantly elevated above background levels. The groundwater geochemistry in upgradient well AP-5751 was characterized by oxidizing conditions, with DO greater than 3 mg/L, oxidation-reduction potential (ORP) greater than 0 millivolts (mV), low dissolved iron, and sulfate at background concentrations.

These results suggest biodegradation will continue at the Building 1168 Leach Well site, and contaminant concentrations will achieve ADEC groundwater cleanup levels over time.

3.8 Institutional Controls

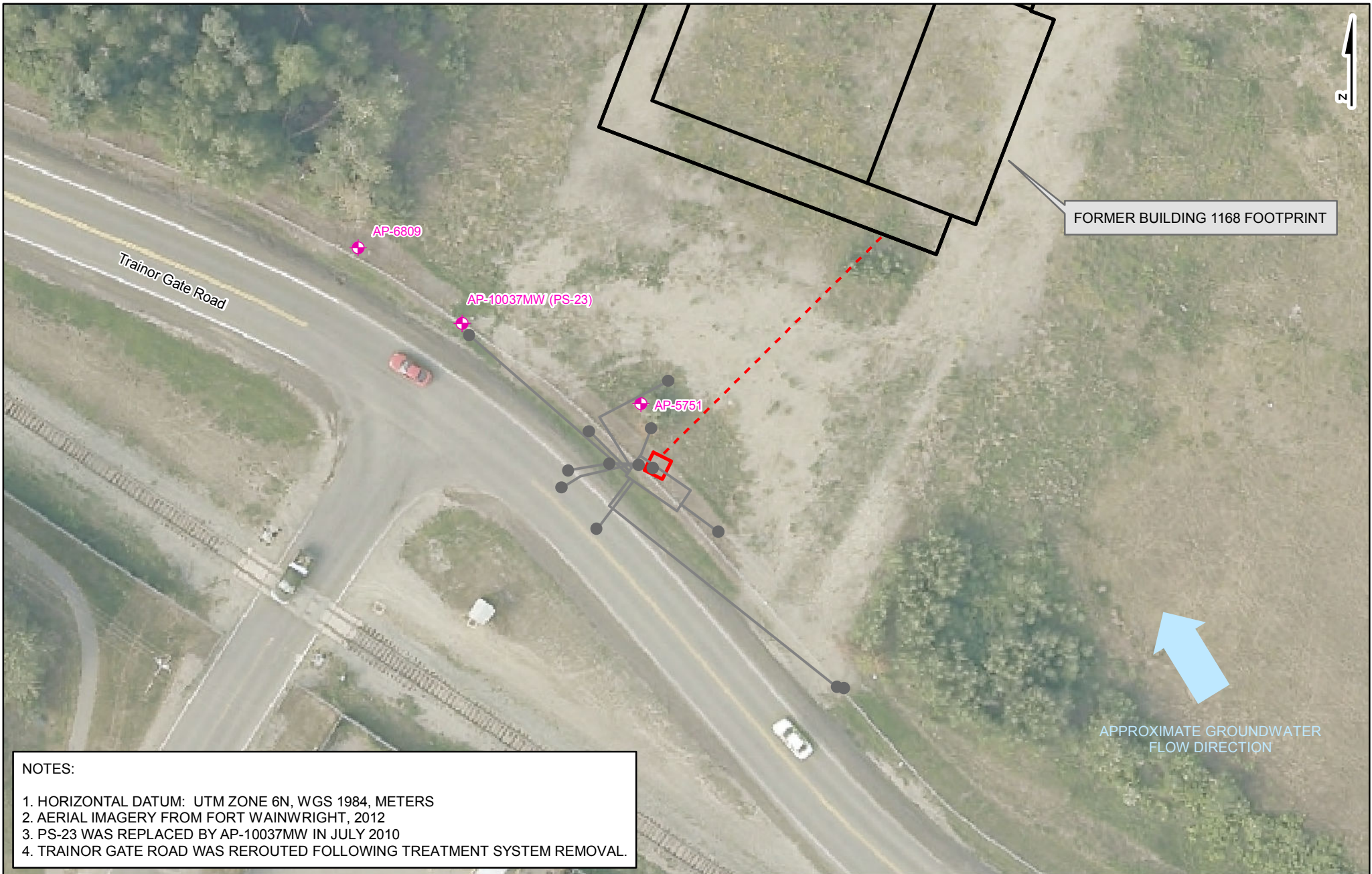
ICs are legal or administrative actions designed to minimize the risk of human exposure to a hazardous substance. The ICs for the Building 1168 Leach Well were described in the OU2 ROD (USARAK, 1997):

- “Restricted access and well development restrictions, as long as hazardous substances remain on site at levels that preclude unrestricted use” (USARAK, 1997).

The approximate IC boundary for the Building 1168 Leach Well site is presented in Figure 3-3.

The ICs for the Building 1168 Leach Well were incorporated into a Post Wide IC policy, and were reviewed at a minimum during each Five-Year Review starting in 2001 (USARAK, 2001). Annual IC inspections were conducted beginning in 2012 in order to evaluate implementation and effectiveness of the ICs, as well as identify potential corrective actions as necessary (FES, 2013). The results of each review were consistent, and found the ICs were in place and would be effective to prevent exposure to contamination remaining at the site (USARAK, 2001; USARAK, 2006; USARAK, 2011; USARAK, 2016; FES, 2013; FES, 2015; FES, 2016; FES, 2017b; FES, 2017c).

The ICs restricting groundwater use will continue until all groundwater contaminant concentrations have achieved the ADEC cleanup requirements, and restrictions on soil disturbing activities will continue as described in the Post Wide IC policy.

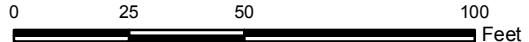


NOTES:

1. HORIZONTAL DATUM: UTM ZONE 6N, WGS 1984, METERS
2. AERIAL IMAGERY FROM FORT WAINWRIGHT, 2012
3. PS-23 WAS REPLACED BY AP-10037MW IN JULY 2010
4. TRAINOR GATE ROAD WAS REROUTED FOLLOWING TREATMENT SYSTEM REMOVAL.

LEGEND

- AS/SVE SYSTEM PROBES
- ◆ MONITORING WELL
- AS/SVE PIPING
- FORMER BUILDING 1168
- LEACH WELL
- - - LEACH WELL PIPELINE



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ANCHORAGE, ALASKA

Building 1168 AS/SVE System Layout
Interim Remedial Action Completion Report
Operable Unit 2
Fort Wainwright, Alaska

CONTRACT:	FIGURE:	DATE:
W911KB-16-D-0005	3-1	11/18

TANANA JR. HIGH
APPROX. 300 FT.
LADD ELEMENTARY

NORTH

AP-6809 (27, 9-22)	DRO	TCE	BENZENE	NAPHTHALENE	WATER ELEVATIONS
JUN 98	1,920	3.36	9.96		426.28
SEP 98	1,160	1.8	5.11		428.23
DEC 98	818	1.6	2.64		425.66
MAR 99	658	1.53	1.85		426.27
MAY 00	2,290	1.2	6.5		426.70
SEP 00	1,680	ND (1)	3.58		429.74
MAY 01	1,250	1.37	4.48		426.59
SEP 01	869	1.2	4.01		427.87
JUL 02	1,150	1.2	4.25		—
SEP 02	850	ND (2)	1.9		—
SEP 03	1,240	ND (1)	1.74		430.39
SEP 04	1,480	0.850	4.28		426.58
OCT 05	2,450	0.75	3.76		428.03
MAY 06	2,160	0.78	3.28		426.26
SEP 06	1,500	0.68	1.2		427.32
MAY 07	2,100	0.81	2.6		426.67
SEPT 07	730	0.37	0.30		427.54
JUNE 08	1,600	0.54	2.0		427.18
OCT 08	310	0.22	0.30		427.24
MAY 09	700	0.10	0.95		428.07
JUNE 10	1,000	0.54	1.3		426.51
SEPT 10	1,300	0.28	0.68		426.88
NOV 10	870	0.25	0.49		NM
JAN 11	1,400	0.32	1.0		425.76
JUNE 11	2,100	0.29	0.73		427.61
AUG 11	1,300	0.24	0.69		427.82
SEPT 11	1,600	0.22	0.81		428.56
AUG 12	1,200	0.12	0.55		427.00
MAY 13	1,630	ND (0.62)	0.63		425.92
OCT 14	ND(318)	ND (0.5)	ND(0.2)		428.98
MAY 15	567	ND (0.5)	0.48		427.53
JULY 16	922	ND (0.5)	0.35		428.62
MAY 17	737	ND (0.5)	0.5	ND(0.5)	429.09

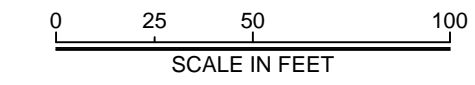
AP-10037MW (25, 12-22)	DRO	TCE	BENZENE	NAPHTHALENE	WATER ELEVATIONS
JULY 10	1,200	ND (0.5)	1.4		427.05
SEPT 10	1,600	ND (0.5)	0.91		427.05
NOV 10	810	0.13	0.47		NM
JAN 11	640	0.15	0.3		426.23
JUNE 11	1,500	0.33	0.42		427.80
AUG 11	1,100	0.30	0.59		428.08
SEPT 11	1,300	0.21	0.53		428.75
AUG 12	1,100	ND (0.1)	1.30		427.15
MAY 13	1,760	ND (0.62)	1.76		426.08
OCT 14	990	ND (0.5)	ND(0.2)		429.13
MAY 15	677	ND (0.5)	2.78		427.82
JULY 16	1,010	ND (0.5)	0.52		428.79
MAY 17	932	ND (0.5)	1.1	ND (0.5)	429.51

Replacement well AP-10037 was surveyed in 2010.

PS-23 (27, UNKNOWN)	DRO	TCE	BENZENE
NOV 94	11,000	310	140
DEC 94	15,000	ND (10)	140
APR 95	18,000	39	83
JUL 95	4,400	19	31
OCT 95	4,300	34	40
FEB 96	8,100	76	110
APR 96	15,000	ND (1)	86
JUL 96	5,660	NA	NA
OCT 96	3,600	NA	64
JAN 97	4,500	33	36
MAY 97	2,200	3.0	68
AUG 97	3,200	9.0	71
OCT 97	2,000	8.0	46
SEP 98	317	ND (1)	ND (1)
DEC 98	335	ND (1)	ND (1)
MAR 99	409	ND (1)	ND (1)
MAY 00	882	ND (1)	1.31
SEP 00	476	ND (1)	1.88
MAY 01	670	ND (1)	4.44
SEP 01	1,020	ND (1)	8.53
JUN 02	460	ND (1)	6.8
SEP 02	480	ND (1)	4.0
SEP 03	919	ND (1)	1.08
SEP 04	1,590	0.81 J	23.7
JAN 05	2,390	NA	13.8
OCT 05	2,340	ND (1)	7.67
MAY 06	2,430	1.69	14.4
SEP 06	2,500	1.30	12
MAY 07	1,600	0.84	7.7
SEPT 07	1,400	0.53	10
JUNE 08	1,600	0.39	5.7
OCT 08	2,500	0.77	15
MAY 09	910	0.12	6.1
JUNE 10	1,300	0.86	15

Water elevation data for PS-23 is not available because well was not surveyed.

AP-5751 (20, 7-17)	DRO	TCE	BENZENE	NAPHTHALENE	WATER ELEVATIONS
AUG 94	34,000	23	ND (2)		427.77
SEP 04	15,100	ND (1)	0.23		426.68
JAN 05	18,000	ND (1)	0.90		426.55
OCT 05	5,140 Q	ND (1)	ND (0.4)		428.22
MAY 06	13,000	ND (1)	ND (0.4)		426.38
SEP 06	3,500	ND (1)	ND (1)		427.46
MAY 07	15,000	0.43	0.57		426.82
SEPT 07	3,100	ND (1)	ND (1)		427.76
JUNE 08	12,000	0.49	0.46		427.37
OCT 08	1,600	0.10	0.19		427.38
MAY 09	3,800	ND (1)	ND (1)		428.23
JAN 11	7,400	0.49	0.4		426.19
JUNE 11	3,300	0.49	0.28		427.78
AUG 11	2,900	0.11	0.08		428.03
SEPT 11	2,600	ND (0.50)	0.07		428.71
AUG 12	1,300	ND (0.10)	0.09		427.13
MAY 13	4,520	ND (0.10)	0.41		426.06
OCT 14	1,210	ND (0.5)	ND(0.2)		429.12
MAY 15	968	ND (0.5)	ND(0.2)		427.55
JULY 16	1,940	ND (0.5)	0.32		428.75
MAY 17	1,510	ND (0.5)	0.17	3.3	429.20



- NOTES:
- ADEC CLEANUP LEVEL FOR GRO IN 18AAC75 CHANGED FROM 1,300 mg/L TO 2,200 mg/L IN OCTOBER 2008.
 - PS-23 WAS REPLACED BY AP-10037MW IN JULY 2010.
 - REGENESIS REGENOX AND ORC-A INJECTION COMPLETED NEAR AP-10037MW IN OCTOBER 2010.
 - DATA FLAGS (QUALIFIERS) ARE NOT SHOWN DUE TO SPACE LIMITATIONS.
 - ADEC CLEANUP LEVELS BASED ON TABLE C IN 18AAC75.345 (ADEC, 2018).

LEGEND

- AP-5751 MONITORING WELL LOCATION AND NUMBER
- PS-23 DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- APPROXIMATE 2018 DRO PLUME
- bgs BELOW GROUND SURFACE
- DRO DIESEL RANGE ORGANICS
- GRO GASOLINE RANGE ORGANICS
- LOD LIMITS OF DETECTION
- LOQ LIMIT OF QUANTITATION
- NA ANALYSIS NOT PERFORMED
- ND(4) NOT DETECTED (LOD) LOQ IS SHOWN FOR DATA PRIOR TO 2012
- NGVD29 NATIONAL GEODETIC VERTICAL DATUM OF 1929
- NM NOT MEASURED
- RRO RESIDUAL RANGE ORGANICS
- TCE TRICHLOROETHENE
- TOC TOP OF CASING
- DATA NOT FOUND

SAMPLING POINT TOTAL DEPTH, (TOC) SCREENED INTERVAL (bgs)	KEY:					WATER ELEVATIONS
	DRO	GRO	TCE	BENZENE	CONCENTRANTS OF CONCERN	
AP-5751 (20, 7-17)						
AUG 94	34,000	18,000	23	ND (2)		427.77
SEP 04	15,100	NA	ND (1)	0.23		426.68
JAN 05	19,300	1,080	NA	0.9		426.55
OCT 05	5,140	NA	ND (1)	ND (0.4)		428.22

CONCENTRATIONS EXCEEDING ADEC CLEANUP LEVEL OR ROD RG SHOWN IN BLUE.

CONCENTRATIONS IN MICROGRAMS PER LITER (µg/L)

ELEVATIONS IN FEET (NGVD29)

SEE LEGEND FOR ABBREVIATIONS.

ADEC CLEANUP LEVELS µg/L		ROD REMEDIAL GOALS (µg/L)	
DRO	1,500	5.0	BENZENE
NAPHTHALENE	1.7	5.0	TCE

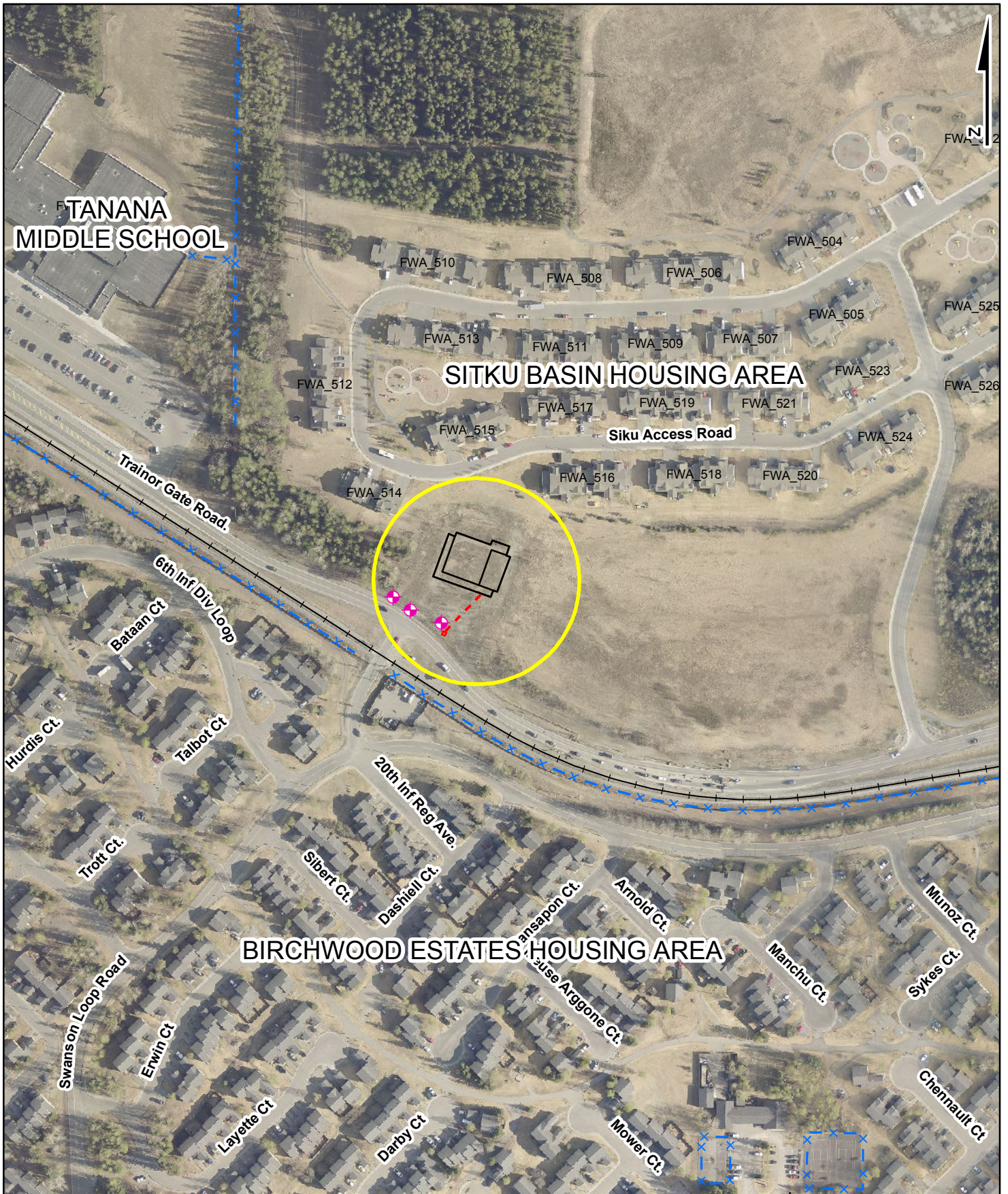
ONLY ROD COCS THAT HAVE HISTORICALLY EXCEEDED REMEDIAL GOALS OR NON-ROD ANALYTES WHICH EXCEEDED ADEC CLEANUP LEVELS IN 2018 ARE SHOWN.

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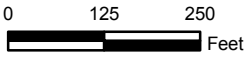
Former Building 1168 Groundwater Monitoring Results

2018 Monitoring Report
Operable Unit 2
Fort Wainwright, Alaska




LEGEND:

- Former Building 1168
- Leach Well
- - - Leach Well Transmission Line
- Approximate IC Boundary
- ◆ Monitoring Well
- +— Railroad
- × - × - × Fence



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Building 1168 Leach Well IC Boundary
Interim Remedial Action Completion Report
Operable Unit 2
Fort Wainwright, Alaska

CONTRACT: W911KB-16-D-0005

FIGURE: 3-3

DATE: 11/18

4.0 ONGOING ACTIVITIES

This section describes the ongoing activities at the Building 1168 Leach Well site, including the annual groundwater sampling event and IC inspection. This section also describes the ongoing Five-Year Review process for the Building 1168 Leach Well site. Annual groundwater sampling is ongoing at the OU2 DRMO sites, and will continue until RAGs are achieved. However, the ongoing activities for the DRMO sites are described in the annual OU2 Monitoring Reports and not further discussed in this section.

4.1 Annual Groundwater Monitoring Program

Groundwater samples have been collected annually since 2012 from the three active monitoring wells at the Building 1168 Leach Well site. Groundwater sampling is typically conducted in the spring (prior to breakup if possible, when groundwater elevations are lowest), and the samples are analyzed for DRO and VOCs. Monitoring well locations are shown on Figure 1-1, and the sampling summary is presented in Table 4-1.

Table 4-1. Summary of the Building 1168 Leach Well Groundwater Monitoring Program

Site Description	Monitoring Wells	Contaminant Analyses	NA Analyses	Monitoring Frequency
Building 1168 Leach Well (Three-Party)	AP-5751, AP-10037MW, AP-6809	DRO, VOC	Iron, sulfate	Annual

Results from the sampling event are summarized and presented in an annual monitoring report. The report includes a review of the laboratory data, along with discussion and analysis of contaminant concentrations and trends. The most recent report was completed based on the 2017 sampling results (FES, 2018a). A summary of the sampling results is presented in Table 4-2.

4.2 Annual IC Inspections and Report

An annual IC inspection is conducted at the Building 1168 Leach Well site in accordance with the ROD. The IC inspection includes a site visit to evaluate potential land use changes, site security (monitoring wells, etc., as applicable), or unauthorized excavation or groundwater use. In addition to the site visit, reviews of the Fort Wainwright IC geographic information system (GIS) layer and the site-specific information in the ADEC Contaminated Sites database are conducted. A summary of the most recent IC survey (2017) is presented below.

- There was no evidence of unauthorized installation or use of groundwater wells at the Building 1168 Leach Well site.
- No unauthorized soil disturbing activities were observed. Monitoring wells are easily accessible and secured.
- Source area land use and adjacent land use have not changed.

- IC boundaries are clearly marked on the IC map and the IC database is up to date.
- Since there is no surface contamination at the Building 1168 Leach Well site, access to the area for non-intrusive activities is unrestricted.
- No unauthorized soil disturbing activities were observed.

In general, the inspections have shown the ICs have been properly implemented, with minor maintenance items (such as replacing locks on monitoring wells) completed at the time of the inspections. IC inspections will continue to be conducted annually while groundwater contamination remains above the ADEC cleanup levels.

4.3 Five-Year Review

Five-Year Reviews are conducted for OUs at Fort Wainwright pursuant to CERCLA and the National Contingency Plan (NCP). The Five-Year Review provides an evaluation whether the remedial actions are, and will continue to be, protective of human health and the environment. The Building 1168 Leach Well site has been subject to four Five-Year Reviews since 2001, with the most recent review (Fourth Five-Year Review) completed in 2016 (USARAK, 2016). Results of the fourth Five-Year Review showed:

- The remedy was functioning as intended by the ROD;
- Exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy are still valid;
- All cleanup goals identified in the ROD have been attained, although petroleum contamination remains at the site; and
- ICs are in place to ensure groundwater containing petroleum contamination will not be used.

The only recommendation from the fourth Five-Year Review was to analyze groundwater samples from the Building 1168 Leach Well site for the emerging contaminant 1,4-dioxane, due to the historic solvent detections. This analysis was completed in 2017, and the laboratory results showed 1,4-dioxane was not detected, and no further analysis was recommended (FES, 2018a).

Upon removal from OU2 and transfer of management under the Two-Party Agreement, the Building 1168 Leach Well would not be included in future Five-Year Reviews.

**Table 4-2. 2006 - 2017 Groundwater Sample Results
Former Building 1168 Leach Well**

Well Number	Relative Location	Sample Number	Date	Water Elevation (feet NGVD29)	Geochemical Parameters						2-Party Chemicals of Concern (µg/L)			ROD Chemicals of Concern (µg/L)						
					ORP (mV)	Dissolved Oxygen (mg/L)	pH	Conductivity (mS/cm)	Dissolved Iron (mg/L)	Sulfate (mg/L)	Gasoline Range Organics	Diesel Range Organics	Naphthalene	Benzene	Trichloro-ethene (TCE)	Tetrachloro-ethene (PCE)	Vinyl Chloride	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	
ROD CLEANUP LEVELS (3-Party Site) / ADEC CLEANUP LEVEL (2-Party Site)¹											2,200	1,500	1.7	5	5	5	2	7	70	
AP-5751	Upgradient	06FWB101WA	5/1/2006	426.38	122	2.35*	6.50	1.236	10.3	67.9	NA	13,000		ND(0.4) Q	ND(1) Q	ND(1) Q	ND(1) Q	ND(1) Q	ND(1) Q	
		06FWB107WA	9/27/2006	427.46	133	0.58	6.27	1.076	0.051 B	59.1	NA	3,500		ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
		07FW116805WG	5/8/2007	426.82	10.5	0.53	6.03	1.137	11 Q	17	770	15,000		0.57 J	0.43 J	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
		07FW116812WG	9/12/2007	427.76	22.0	0.27	7.02	0.628	0.22	60	120	3,100		ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
		08FW2H01WG	6/17/2008	427.37	-41.5	0.81	6.43	0.705	NA	NA	610	12,000		0.46 J	0.49 J	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
		08FW2H09WG	10/22/2008	427.38	256.9	0.84	6.52	0.841	NA	NA	100	1,600		0.19 J,B	0.1 J,B	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
		09FW2H01WG	5/20/2009	428.23	123.1	1.65	6.37	0.556	NA	NA	220	3,800		ND(1)	ND(1)	ND(1) QL	ND(1)	ND(1)	ND(1)	ND(1)
		11FW2H05WG	1/27/2011	426.19	-42.6	0.5	6.20	0.622	NA	NA	410	7,400		0.4 J	0.49 J	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
		11FW2H09WG-A	6/1/2011	427.78	66.3	0.7	6.07	0.347	5.79	7.49	370	3,300 ML		0.28 J	0.49 J	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
		11FW2H09WG-B ³		0.03					22.4	120	3,000		0.07 J	ND(0.5)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	
		11FW2H08WG-B	8/12/2011	428.03	50.6	2.5	6.22	0.59	0.04	22.3	120	2,900		0.08 J	0.11 J	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
		11FW2H14WG	9/21/2011	428.71	6.9	2.5	6.16	0.576	0.70 J	27.1	130	2,600		0.07 J	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
		12FW2H02WG	8/22/2012	427.13	101.9	3.6	6.34	0.481	0.51	11.7	110	1,300		0.09 J	ND(0.10)	ND(0.20)	ND(0.10)	ND(0.20)	ND(0.20)	ND(0.20)
		13FW2H01WG	5/2/2013	426.06	-24.2	0.3	6.07	0.502	5.95	13.5	350 B	4,520		0.41	ND(0.62)	ND(0.62)	ND(0.62)	ND(0.62)	ND(0.62)	ND(0.62)
		14FWOU204WG	10/9/2014	429.12	169	0.6	6.25	0.913	ND(0.25)	33.8	ND(50)	1,210		ND(0.2)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
		15FWOU204WG	5/12/2015	427.55	87.2	0.4	5.78	0.588	0.27	29.7	76.4 J	968 J-		ND(0.2)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
		16FWOU209WG	7/9/2016	428.75	61.4	1.4	6.29	0.82	0.31	25.3	NA	1,940		0.32 J	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
17FWOU204WG	5/17/2017	429.20	80.2	3.5	6.67	0.929	0.55	32.7	NA	1,510	3.3	0.17 J	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.075)	ND(0.5)	ND(0.5)		
PS-23		06FWB105WA	5/3/2006	NA	-19.9	1.91*	6.73	0.704	ND(1)	27.2	NA	2,430		14.4	1.7	ND(1)	ND(1)	ND(1)	ND(1)	
		06FWB111WA	9/27/2006	NA	-64.3	0.40	6.77	0.647	10 Q,B	30 J	NA	2,500 Q		12 Q	1.3 Q	ND(1) Q	ND(5) Q	ND(5) Q	ND(5) Q	
		07FW116801WG	5/8/2007	NA	-23.1	0.57	6.66	0.281	15 Q	42	340	1,600		7.7	0.84 J	ND(1)	ND(1)	ND(1)	0.21 J	
		07FW116809WG	9/12/2007	NA	-67.4	0.39	6.87	0.435	14	34	260	1,400		10	0.53 J	ND(1)	ND(1)	ND(1)	0.24 J	
		08FW2H05WG	6/18/2008	NA	-53.6	0.74	6.74	0.552	17	31	230	1,600		5.7	0.39 J	ND(1)	ND(1)	ND(1)	0.16 J	
		08FW2H10WG	10/22/2008	NA	66.2	0.63	6.74	0.708	NA	NA	480	2,500		15 B	0.77 J,B	ND(1)	ND(1)	ND(1)	0.32 J	
		09FW2H02WG	5/20/2009	NA	-25.3	1.64	6.76	0.673	21	32	180	910		6.1	0.12 J	ND(1) QL	ND(1)	ND(1)	ND(1)	
		10FW2H02WG	6/2/2010	NA	-87.2	0.8	6.55	0.802	30.70	22.7	430	1,300 QL		15	0.86	ND(0.5)	ND(0.5)	ND(0.5)	0.27 J	
		10FW2H03WG ³		NA					NA	420	1,300 QL		15	0.85	ND(0.5)	ND(0.5)	ND(0.5)	0.26 J		
		AP-10037MW ³	Source Area	10FW2H05WG	7/28/2010	NM	NM	NM	NM	NM	12.40	24.9	260	1,200		1.4	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
10FW2H07WG	9/28/2010			427.05	24.4	0.8	6.43	0.933	NA	NA	160	1,600		0.9	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	
10FW2H09WG	11/15/2010			NM	178.6	12.9 ²	8.07	2.590	0.62	295	55 J	810 J,QL		0.5 J	0.13 J	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	
11FW2H01WG	1/24/2011			426.23	-100.0	1.0	6.88	3.275	3.90	366	61 J	640 J		0.3 J	0.15 J	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	
11FW2H06WG-A	6/1/2011			427.80	-62.3	0.7	6.97	2.178	5.63	128	73 J	1,500		0.4 J	0.33 J	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	
11FW2H07WG-A ³				128					77 J	1,500		0.4 J	0.34 J	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)			
11FW2H07WG-B	8/12/2011			428.08	5.5	1.0	7.03	1.981	6.18	122	67 J	1,100		0.6	0.30 J	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	
11FW2H12WG	9/21/2011			428.75	-93.3	2.3	7.06	2.12	7.09 J	144	75 J	1,300		0.5	0.21 J	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	
11FW2H13WG ³									6.86 J,QL	143	75 J	1,100		0.5	0.23 J	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	
12FW2H03WG	8/22/2012			427.15	-40.6	4.0	7.17	2.179	8.21 QL	63.0	110	860		1.3	ND(0.10)	ND(0.20)	ND(0.10)	ND(0.20)	ND(0.20)	
12FW2H04WG ³									8.27 QL	63.1	110	1,110		1.3	ND(0.10)	ND(0.20)	ND(0.10)	ND(0.20)	ND(0.20)	
13FW2H02WG	5/2/2013			426.08	-107.6	0.3	6.85	1.686	8 QL	38.9	126 B	1,760		1.6	ND(0.62)	ND(0.62)	ND(0.62)	ND(0.62)	ND(0.62)	
13FW2H03WG ²									7.77	48.7	129 B	1,550		1.8	ND(0.62)	ND(0.62)	ND(0.62)	ND(0.62)	ND(0.62)	
14FWOU201WG	10/9/2014			429.13	209.5	0.7	7.2	3.758	ND(0.25) J-,J	185.0	32.5 J,B	773		ND(0.2)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	
14FWOU202WG ²									0.15 J-, J	188.0	33.7 J	990		ND(0.2)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	
15FWOU202WG	5/12/2015			427.82	24.7	0.3	6.31	1.138	8.3	34.2	135	677		2.75	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	
15FWOU203WG ²									8.37	34.1	133	610 J		2.78	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	
16FWOU207WG	7/9/2016	428.79	-34.2	0.4	6.69	0.864	12.2	18.4	NA	1,010		0.52	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)			
16FWOU208WG ²							12.5	18.5	NA	1,010		0.5	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)			
17FWOU201WG	5/17/2017	429.51	41.9	1.0	6.66	0.746	14.1	15.7	NA	511 J		1.4	ND(0.5)	ND(0.5)	ND(0.075)	ND(0.5)	ND(0.5)			
17FWOU202WG ²							14.6	15.8	NA	932	ND(0.5)	1.1	ND(0.5)	ND(0.5)	ND(0.075)	ND(0.5)	ND(0.5)			

**Table 4-2. 2006 - 2017 Groundwater Sample Results
Former Building 1168 Leach Well**

Well Number	Relative Location	Sample Number	Date	Water Elevation (feet NGVD29)	Geochemical Parameters						2-Party Chemicals of Concern (µg/L)			ROD Chemicals of Concern (µg/L)					
					ORP (mV)	Dissolved Oxygen (mg/L)	pH	Conductivity (mS/cm)	Dissolved Iron (mg/L)	Sulfate (mg/L)	Gasoline Range Organics	Diesel Range Organics	Naphthalene	Benzene	Trichloro-ethene (TCE)	Tetrachloro-ethene (PCE)	Vinyl Chloride	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene
ROD CLEANUP LEVELS (3-Party Site) / ADEC CLEANUP LEVEL (2-Party Site)¹											2,200	1,500	1.7	5	5	5	2	7	70
AP-6809	Downgradient	05FWB1WA68092	10/10/2005		78.1	1.33			NA	NA	NA	2,450		3.76	0.75 J	ND(1)	ND(1)	ND(1)	ND(1)
		06FWB103WA	5/1/2006		324	9.54*			4.01	130	NA	2,160 Q		3.28	0.78 J	ND(1)	ND(1)	ND(1)	ND(1)
		06FWB108WA	9/27/2006		110	0.37			9.1 B	57	NA	1,500		1.20	0.68 J	ND(1)	ND(1)	ND(1)	ND(1)
		07FW116803WG	5/8/2007		14.8	0.60			16 Q	97	110	2,100		2.60	0.81 J	ND(1)	ND(1)	ND(1)	ND(1)
		07FW116810WG	9/12/2007		54.5	0.84			0.41	62	21 J B	730		0.30 J	0.37 J	ND(1)	ND(1)	ND(1)	ND(1)
		08FW2H03WG	6/18/2008		36.3	0.90			NA	NA	78	1,600		2.0	0.54 J	ND(1)	ND(1)	ND(1)	0.18 J
		08FW2H12WG	10/22/2008	427.24	216.4	0.72			0.15 J	180	ND(50)	310		0.3 J,B	0.22 J,B	ND(1)	ND(1)	ND(1)	ND(1)
		09FW2H03WG	5/20/2009	428.07	55.7	1.71			NA	NA	51	700		0.95 J	0.10 J	ND(1) QL	ND(1)	ND(1)	ND(1)
		10FW2H04WG	6/2/2010	426.51	-10.3	1.3	6.34	0.970	NA	NA	66 J	1,000 QL		1.3	0.54	ND(0.5)	ND(0.5)	ND(0.5)	0.18 J
		10FW2H06WG	9/28/2010	426.88	144.8	0.8	6.08	1.017	NA	NA	34 J	1,300		0.7	0.28 J	ND(0.5)	ND(0.5)	ND(0.5)	0.08 J
		10FW2H10WG	11/15/2010	NM	170.6	0.7	6.50	1.172	NA	NA	21 J	870 ML,QL		0.5 J	0.25 J	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
		11FW2H02WG	1/24/2011	426.06	77.8	0.4	6.32	1.004	NA	NA	39 J	1,400		1.0	0.32 J	ND(0.50)	ND(0.50)	ND(0.50)	0.11 J
		11FW2H03WG ³							NA	NA	39 J	1,400		0.9	0.31 J	ND(0.50)	ND(0.50)	ND(0.50)	0.09 J
		11FW2H08WG-A	6/1/2011	427.61	143.2	0.8	6.24	0.756	5.54	35.3	72 J	2,100		0.7	0.29 J	ND(0.50)	ND(0.50)	ND(0.50)	0.11 J
		11FW2H06WG-B	8/12/2011	427.82	61.1	1.3	6.17	0.766	1.68	40.5	53 J	1,300		0.7	0.24 J	ND(0.50)	ND(0.50)	ND(0.50)	0.11 J
		11FW2H11WG	9/21/2011	428.56	8.3	2.3	6.26	0.774	1.39 J	53.6	41 J,B	1,600 ML		0.8	0.22 J	ND(0.50)	ND(0.50)	ND(0.50)	0.08 J
		12FW2H01WG	8/22/2012	427.00	80.2	1.4	6.45	1.017	3.19	61.4	36 J	1,200 ML		0.6	0.12J	ND(0.20)	ND(0.10)	ND(0.20)	ND(0.20)
13FW2H04WG	5/2/2013	425.92	41.3	0.3	6.33	1.005	0.96 J	80.3	56 J,B	1,630		0.6	ND(0.62)	ND(0.62)	ND(0.62)	ND(0.62)	ND(0.62)		
14FWOU203WG	10/9/2014	428.98	181.4	1.0	6.36	1.254	ND(0.25)	102	ND(50)	ND(318)		ND(0.2)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)		
15FWOU201WG	5/12/2015	427.53	94.9	0.4	5.98	1.099	1.3	71.7	71.7 J	567 J		0.48	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)		
16FWOU206WG	7/9/2016	428.62	101.30	0.62	6.45	1.045	0.38 J	63.2	NA	922		0.35 J	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)		
17FWOU303WG	5/17/2017	429.09	59.20	0.61	6.63	1.141	2.5	66.6	NA	737	ND (0.5)	0.5	ND(0.5)	ND(0.5)	ND(0.075)	ND(0.5)	ND(0.5)		

Notes

Analytes exceeding remedial action goals (RAG) established in the Record of Decision (ROD) or ADEC groundwater cleanup levels (from Table C of 18 AAC 75) are in bold type and yellow highlighting.

ROD chemicals of concern were analyzed by EPA Method 8260C.

¹ ADEC Cleanup level from 18 AAC 75 (ADEC, 2017)

² Sample is a Field Duplicate of the sample immediately above.

³ PS-23 was replaced by AP-10037MW in July 2010.

Acronyms/Abbreviations

btoc - below top of casing
 LOD - limit of detection
 LOQ - limit of quantitation
 µg/L - micrograms per liter
 mg/L - milligrams per liter

mV - millivolts
 NA - not analyzed or not applicable
 NGVD29 - North American Vertical Datum of 1929
 NM - not measured
 ROD - Record of Decision

Data Qualifiers

ND - Not detected at the detection limit (LOD in parentheses; LOQ in parentheses for data prior to 2012.)
 B - Result is qualified as a potential high estimate due to contamination present in a blank sample
 J - Result is estimated due to a QC issue or because it is less than the LOQ. If result is biased low or high, it is specified as "J-" and "J+", respectively (for 2014 data and later).
 Q - Result is estimated due to a QC failure (pre-2014 data only). If direction of bias is known, it is further indicated with a "L" (low) or "H" (high).
 M - Result is biased due to matrix interference (pre-2014 data only). If direction of bias is known, it is further indicated with a "L" (low) or "H" (high).

5.0 COMMUNITY RELATIONS

This section describes the community relations efforts that have been conducted for Fort Wainwright, including the Building 1168 Leach Well.

5.1 Community Involvement Plan

A Community Involvement Plan (CIP) is maintained by Fort Wainwright to describe the current process of informing interested community members of the cleanup status for known and suspected hazardous waste sites. The first CIP was developed in 1993 and was based on interviews with community members and some agency personnel (Ecology and Environment, Inc. [E&E], 1993). The first revision in 1997 incorporated responses from a questionnaire (E&E, 1997). The 2003 CIP discussed the status changes of the remediation systems installed on Fort Wainwright (ENSR Corporation [ENSR], 2003). The current 2017 revision (FES, 2018b) updated the status of the OUs with the addition of OU6.

The Building 1168 Leach Well site will continue to be included in the CIP to facilitate communication links between the Army and all stakeholders, including local government, news media, private citizens, and property owners nearby and adjacent to the site.

5.2 Restoration Advisory Board

An important element of community involvement in the cleanup process is the formation of a Restoration Advisory Board (RAB). A RAB is a group comprised of community and government representatives to provide government decision makers with advice about environmental restoration activities at Army installations. The RAB is a means of information exchange between the installation and the community. The RAB is intended to bring together members who reflect the diverse interests within the community and to allow for a two-way flow of information, concerns, priorities, and needs between the affected community and the installation.

The Army began formal RAB meetings for Fort Wainwright sites in October 1997 and continued them quarterly until 2002; however, interest in the RAB declined, with decreasing attendance for several years. The Army responded to the decline by decreasing meeting frequency from quarterly to semi-annually. Attendance continued to decline, leading the civilian co-chair to recommend to the Army that the RAB be disbanded. The last RAB meeting was held in July 2003.

An updated RAB solicitation was prepared in 2015 and was sent out on January 26, 2016, and the response period was open until March 1, 2016 to gauge the level of public interest. Details regarding the RAB solicitation are described in the *Restoration Advisory Board Survey Report* (FES, 2017d). Results of the survey showed there was minimal interest within the community regarding formation of a RAB at Fort Wainwright. Based on these results, a letter was sent to each of the three respondents indicating that a RAB will not be re-convened at this time.

5.3 Public Meetings

The Army conducts public meetings to provide an opportunity for the interested members of the public to receive information regarding proposed cleanup plans, to ask questions and listen to answers to those questions, and to submit comments. Public meetings have been conducted during the public comment period for each OU, including on May 8, 1996 in relation to the Proposed Plan for OU2 (FES, 2018b). Court reporters transcribed oral comments received by the public. Copies of the transcripts became part of the Administrative Record for the site.

5.4 Administrative Record

The Administrative Record is the legal file of documents upon which the lead agency bases the selection of a response action for the site. The record was established in 1994 and has been updated as appropriate. This record, including all public comments, is available for public review at Building 4320, Environmental Library/Administrative Repository. Since Building 4320 is a secure building, access requires checking in at the Directorate of Public Works, Environmental Resources Division Office, in Building 3023, Fort Wainwright. In addition, the Army has established an off-Post information repository for Fort Wainwright at the Noel Wien Library to provide interested parties with access to the administrative record.

6.0 CERTIFICATION STATEMENT

The Remedial Action for the Operable Unit 2, Building 1168 Leach Well site, as set forth in the *Record of Decision* (USARAK, 1997) is Operational and Functional. The Remedial Action Goals for the Contaminants Of Concern identified in the ROD have been achieved, and the only contaminants remaining in site groundwater are petroleum-related and exceed the ADEC cleanup levels in 18 AAC 75.345 Table C. Future management of the site will continue under the Two-Party Agreement until the ADEC groundwater cleanup levels are achieved and will be documented in site monitoring reports. Further activities at the site will be documented in the Annual Institutional Controls Inspection reports.

APPROVED:

For the Army



SEAN N. FISHER
Colonel, US Army
Commanding

20181121

Date

7.0 REFERENCES

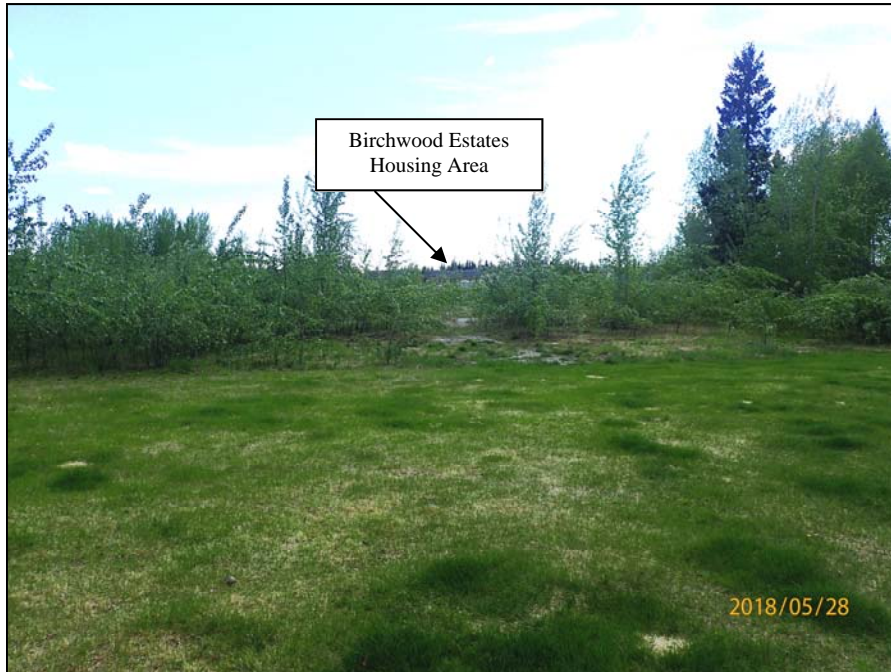
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APPENDIX A

BUILDING 1168 LEACH WELL PHOTO LOG

1168 LEACH WELL PHOTO LOG



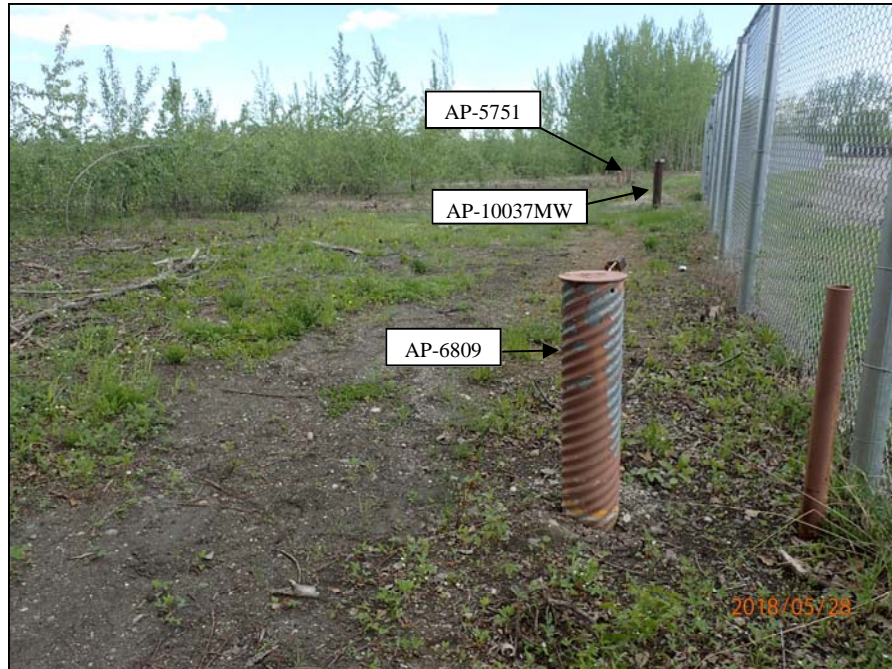
Building 1168 Leach Well Site
(view to the S)



Building 1168 Leach Well Site
(view to the N)



Building 1168 Leach Well monitoring wells (view to the W)



Building 1168 Leach Well monitoring wells (view to the E)



AP-5751 closeup (view to the N)



AP-10037MW closeup (view to the W)



AP-6809 closeup (view to the W)

APPENDIX B
STATISTICAL ANALYSIS RESULTS

COMMENTS AND RESPONSES



THE STATE
of **ALASKA**
GOVERNOR BILL WALKER

Department of Environmental Conservation

DIVISION OF SPILL PREVENTION AND RESPONSE

Contaminated Sites Program

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Fairbanks, AK, 99709
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www.dec.alaska.gov

File: 108.38.069.02

October 25, 2018

Electronic Delivery Only

Dept. of the Army
Directorate of Public Works
ATTN: IMFW-PWE (Adams)
1046 Marks Road
Fort Wainwright, Alaska 99703

Re: DEC review of the Interim Remedial Action Completion Report (IRACR), Building 1168
Leach Well Site, Operable Unit 2, Fort Wainwright, Alaska, (dated September 2018)

Dear Mr. Adams:

The Alaska Department of Environmental Conservation (DEC) has reviewed the draft version of the above-referenced document. The Interim Remedial Action Completion Report (IRACR) for the Operable Unit 2 (OU2) Building 1168 Leach Well site on Fort Wainwright, Alaska (FWA) demonstrates that the remedy was constructed and operated successfully in accordance with the established remedial action objectives (RAO) and the Record of Decision (ROD). Long-term groundwater monitoring has been conducted at the site, and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) contaminants of concern (COCs) have achieved the remedial action goals (RAGs) presented in the ROD. The Building 1168 Leach Well site will no longer be cleaned up as part of OU2, but will be cleaned up as a state regulated 2-party site.

After review of the IRACR, DEC has no comments and defers to the Environmental Protection Agency (EPA) for comments and approval of the above-referenced document. Once EPA has provided comments and approved the document, please provide DEC with a final version for our records.

If there are any questions, please contact me at (907) 451-2182 or by email at erica.blake@alaska.gov.

Sincerely,

Erica Blake
Environmental Program Specialist

cc via e-mail: Sandra Halstead, EPA
Tamara Scholten, FWA ENVR
Seth Reedy, FWA ENVR
Bob Hazlett, USACE
Robert Glascott, USACE
Guy Warren, USACE
David Mays, AEC
Eric Breitenberger, DEC

EPA Review and Comments: Draft Interim Remedial Action Completion Report (IRACR), Building 1168 Leach Well Site, Operable Unit 2, U.S. Army Garrison Fort Wainwright, Alaska, September 2018

Number	Page	Section	Comment	RESPONSE
EPA received the Draft Interim Remedial Action Completion Report (IRACR), Building 1168 Leach Well Site, Operable Unit 2, U.S. Army Garrison Fort Wainwright, Alaska for review on September 25, 2018. EPA comments were submitted on October 30, 2018.				
1.		1.0	Clarify that the exceedances are for fuel related compounds only in this sentence "Recent groundwater sampling results (May 2017) identified contaminants that exceed the State of Alaska groundwater cleanup levels presented in Title 18 of the Alaska Administrative Code (AAC), Chapter 75, Table C (ADEC, 2018). Future groundwater monitoring and reporting will continue until the Alaska cleanup standards are achieved".	Accepted. The sentence was revised as follows: "Recent groundwater sampling results (May 2017) identified contaminants (fuel-related compounds) that exceed the State of Alaska groundwater cleanup levels presented in Title 18 of the Alaska Administrative Code (AAC), Chapter 75.345, Table C (ADEC, 2018). Future groundwater monitoring and reporting will continue until the Alaska cleanup standards are achieved".
2.		2.1	The document needs to list out that OU2 includes the DRMO site, which has not achieved RAGs. I suggest section 2.1 mention other site(s) in the OU2 ROD, and then Section 4.0 have a sentence on the on-going activities for OU2 including the groundwater monitoring at the OU2 DRMO site.	Accepted. Sections 2.1 and 4.0 were revised as suggested.
3.		3.8	Clarify if the groundwater restrictions continue due to the fuel contaminants. Section 4.2 suggests there aren't specific soil disturbance restrictions at this site – perhaps bring that to this section.	Accepted. The continuance of groundwater restrictions was added to Section 3.8. Section 4.2 indicates non-intrusive activities are OK, but soil disturbing activities prohibited, consistent with the site ICs.

Number	Page	Section	Comment	RESPONSE
4.		Fig 3-2 and Graph 3-1	On Fig 3-2, the data is representing AP-10037MW as the same as probe PS-23. However on graph 3-1 they are kept separate. Be consistent. Table 4-2 shows a nice split of which data belongs to the probe vs monitoring well.	Figure 3-2 will be revised for consistency with Graph 3-1 and Table 4-2.

Number	Page	Section	Comment	RESPONSE
5.		5.4	<p>What does this mean that the Admin Record was closed after the RAB was disbanded in 2003, with the exception of RODs and 5YRs? For OU2 Building 1168, the admin record will need to contain the treatability study, as this was a deviation from the post ROD remedial action. See (a)(2) below:</p> <p>From 40 CFR 300, Subpart I § 300.825 Record requirements after the decision document is signed. (a) The lead agency may add documents to the administrative record file after the decision document selecting the response action has been signed if:</p> <p>(1) The documents concern a portion of a response action decision that the decision document does not address or reserves to be decided at a later date; or</p> <p>(2) An explanation of significant differences required by § 300.435(c), or an amended decision document is issued, in which case, the explanation of significant differences or amended decision document and all documents that form the basis for the decision to modify the response action shall be added to the administrative record file.</p>	<p>Accepted. This sentence was incorrect. The Administrative Record is and has been updated as appropriate since it was first established. This sentence was revised as follows.</p> <p>“The record was established in 1994 and has been updated as appropriate.”</p>

Number	Page	Section	Comment	RESPONSE
6.			<p>The iRACR is missing the Certification Statement by the DoD or Army and signature of the decision official.</p> <p>EPA will provide a letter of concurrence. In other iRACRs, these have been added as an appendix to the iRACR.</p>	Accepted. The certification page will be included in the final IRACR.