Final Groundwater Sampling of AP-6573B Report



Prepared for: U.S. Army Garrison Alaska

Contract No. W911KB-16-D-0005

October 2020



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

October 29, 2020

Directorate of Public Works

Subject: Submission of the Final Groundwater Sampling of AP-6573B Report, to the Environmental Protection Agency

Ms. Sandra Halstead Environmental Protection Agency Remedial Project Manager Alaska Operations Office 222 W. 7th Ave, #19 Anchorage, AK 99513

Dear Ms. Halstead:

This letter documents transmission of the Final Groundwater Sampling of AP-6573B Report, Fort Wainwright to the Environmental Protection Agency.

A digital copy of the document will be provided to you. A copy of this document is being provided to Ms. Erica Blake, Remedial Project Manager (RPM) and Ms. Sammi Castle, Alternate RPM, Alaska Department of Environmental Conservation. If you would like to receive a hard copy of this document, please notify us within the next few weeks.

If you have questions or concerns regarding this action please contact Ms. Bri Clark, RPM at (907) 361-3001 or email brianne.r.clark.civ@mail.mil, Mr. Brian Adams, Alternate RPM at (907) 361-6623 or email brian.m.adams18.civ@mail.mil, or Mr. Seth Reedy, Alternate RPM at (907) 361-6489 or email seth.a.reedy.civ@mail.mil.

Sincerely,

CLARK.BRIANNE. Digitally signed by CLARK.BRIANNE.RENEE.150 RENEE.15061474 614749 99 Date: 2020.10.29 08:00:49 -0800'

Bri R. Clark Remedial Project Manager

CF:

HQ, USAG FWA CERCLA Information Repository (w/o encls)



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

October 29, 2020

Directorate of Public Works

Subject: Submission of the Final Groundwater Sampling of AP-6573B Report, to the State of Alaska Department Environmental Conservation.

Ms. Erica Blake Remedial Project Manager Alaska Department of Environmental Conservation 610 University Avenue Fairbanks, AK 99709

Dear Ms. Blake:

This letter documents transmission of the Final Groundwater Sampling of AP-6573B Report, Fort Wainwright to the State of Alaska Department Environmental Conservation (ADEC).

A digital copy of the document will be provided to you and two CD's will be delivered to ADEC in Fairbanks. A copy of the document is also being provided to Ms. Sandra Halstead, Remedial Project Manager (RPM), Environmental Protection Agency and Ms. Sammi Castle, Alternate RPM, ADEC. If you would like to receive a hard copy of this document, please notify us within the next few weeks.

If you have questions or concerns regarding this action please contact Ms. Bri Clark, RPM at (907) 361-3001 or email brianne.r.clark.civ@mail.mil, Mr. Brian Adams, Alternate RPM at (907) 361-6623 or email brian.m.adams18.civ@mail.mil, or Mr. Seth Reedy, Alternate RPM at (907) 361-6489 or email seth.a.reedy.civ@mail.mil.

Sincerely,

CLARK.BRIANNE. Digitally signed by CLARK.BRIANNE.RENEE.1506 RENEE.15061474 147499 99 Date: 2020.10.29 08:05:39 -08'00'

Bri R. Clark Remedial Project Manager

CF:

HQ, USAG FWA CERCLA Information Repository (w/o encls)

Final Groundwater Sampling of AP-6573B Report

U.S. Army Garrison Alaska

October 2020

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

3538 International Street Fairbanks, Alaska 99701 (907) 452-1006 FES Project No. 9011-30

TABLE OF CONTENTS

Page Number

EXEC	CUTIVE SUMMARY	ES-1
1.0	INTRODUCTION	. 1-1
2.0	GROUNDWATER SAMPLING AND RESULTS	. 2-1
2.1	Monitoring Well AP-6573B	2-1
2.2	Groundwater Sampling and Analysis	2-1
2.3	Groundwater Sample Results	2-2
2.4	Data Quality Review	2-2
2.5	IDW Management	2 - 2
2.6	Summary	2-4
3.0	REFERENCES	. 3-1

TABLE

 Table 1
 Groundwater Sample Results for Monitoring Well AP-6573B

FIGURE

Figure 1 Monitoring Well AP-6573B Location

APPENDICIES

- Appendix A Photo Log
- Appendix B Groundwater Sampling Form

Appendix C – Well Logs

Appendix D – ADEC Laboratory Data Review Checklist

LIST OF ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CUL	cleanup level
DERA	Defense Environmental Restoration Account
DO	dissolved oxygen
DQO	Data Quality Objectives
EPA	Environmental Protection Agency
FES	Fairbanks Environmental Services, Inc.
GIS	Geographic Information System
IBC	intermediate bulk container
IDW	investigative-derived waste
LGPS	landfill groundwater protection standard
LOD	limit of detection
LOQ	limit of quantitation
MCL	maximum contaminant levels
µg/L	micrograms per liter
NAVD88	North American Vertical Datum of 1988
NPDWR	National Primary Drinking Water Regulations
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyls
pg/L	picogram per liter
QC	quality control
RSL	risk-based screening levels
SGS	SGS North America
SVOC	semivolatile organic compounds
THQ	target hazard quotient
TR	target cancer risk
USACE	U.S. Army Corp of Engineers
UTM	Universal Transverse Mercator
VOC	volatile organic compound
WGS84	World Geodetic System of 1984

EXECUTIVE SUMMARY

This report documents groundwater sampling of monitoring well AP-6573B located south of the landfill on Fort Wainwright, Alaska. The well location is shown in Figure 1.

A nearby former well, AP-6134 (also shown on Figure 1) was sampled in 2018 and subsequently decommissioned. The sample collected from AP-6134 was submitted for analysis of Title 40 of the Code of Federal Regulations (CFR) Part 258 Appendix II analytes. Due to some data quality concerns relating to the AP-6134 sample, Alaska Department of Environmental Conservation (ADEC) requested that another nearby well be sampled.

Monitoring AP-6573B was located approximately 600 feet west of AP-6573B. ADEC requested that the sample collected from AP-6573B be submitted for testing of 40 CFR 258 Appendix II analytes. The sample results were compared to 40 CFR 141 maximum contaminant levels (MCLs). For analytes that do not have 40 CFR 141 MCLs, state cleanup levels (CULs) presented in Table C of Title 18 of the Alaska Administrative Code (AAC) Chapter 75.345 were used. If analytes had neither MCLs nor ADEC CULs, the results were compared to Environmental Protection Agency (EPA) risk-based screening levels (RSLs).

The groundwater sample results from monitoring well AP-6573B indicate that the well has no contaminants exceeding MCLs. There were two analytes that exceeded the ADEC CUL; naturally occurring arsenic and cyanide. There were no detections of volatile organic compounds (VOC), semivolatile organic compounds (SVOC), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), herbicides, pesticides, and dioxins/furans.

1.0 INTRODUCTION

This report documents the August 2019 groundwater sampling of monitoring well AP-6573B located south of the landfill on Fort Wainwright, Alaska. The well location is shown in Figure 1.

A nearby former well, AP-6134 (also shown on Figure 1) was sampled in 2018 and subsequently decommissioned. Results of AP-6134 were documented in a memorandum (U.S. Army Corps of Engineers [USACE], 2019). Due to some data quality concerns relating to AP-6134, the Alaska Department of Environmental Conservation (ADEC) requested that another nearby well be sampled.

Monitoring AP-6573B is located approximately 600 feet west of the former location of AP-6134. ADEC requested that the sample collected from AP-6573B be submitted for testing of Title 40 of the Code of Federal Regulations (CFR) Part 258 Appendix II analytes. The sample results were compared to 40 CFR 141 maximum contaminant levels (MCLs). For analytes that do not have 40 CFR 141 MCLs, state cleanup levels (CULs) presented in Table C of Title 18 of the Alaska Administrative Code (AAC), Chapter 75.345 were used (ADEC, 2018). If analytes had neither MCLs nor ADEC CULs, the results were compared to Environmental Protection Agency (EPA) riskbased screening levels (RSLs) for resident tap water with a target hazard quotient (THQ) of 0.1.

Fairbanks Environmental Services (FES) conducted the groundwater sampling event for the U.S. Army Garrison Alaska via a contract executed by the USACE (Contract W911KB-16-D-0005, Task Order W911KB18F0053).

2.0 GROUNDWATER SAMPLING AND RESULTS

This section summarizes groundwater sampling of AP-6573B. The groundwater sample results and comparisons to groundwater protection standards are presented in Table 1. Photographs are presented in Appendix A and the groundwater sampling form is presented in Appendix B.

2.1 Monitoring Well AP-6573B

Monitoring well AP-6573B was installed in 1994 and was the shallowest of three cluster wells. AP-6573 and AP-6573A were decommissioned in 2017. AP-6573B is screened below the water table at a depth of approximately 20 feet below ground surface (bgs) to 30 feet bgs. AP-6573A was an intermediate well screened from approximately 54 to 64 feet bgs. The deepest well was AP-6573 that was screened from approximately 90 to 100 feet bgs. The wells were installed as part of a permafrost and groundwater flow study in the vicinity of the landfill. It is unknown if the wells were ever sampled. The AP-6573, AP-6573A, and AP-6573B well logs are included in Appendix C.

AP-6573B is located southwest of the Fort Wainwright landfill. The groundwater flow direction could not be determined from a groundwater elevation of a single well. Other landfill area groundwater sampling reports (FES, 2020; Brice, 2020) show a generally west-southwesterly groundwater flow direction that is influenced by the presence of permafrost. Based upon this groundwater flow direction, AP-6573B is located in a downgradient but slightly cross-gradient direction from the landfill.

2.2 Groundwater Sampling and Analysis

A groundwater sample was collected from AP-6573B on August 28, 2019. The groundwater sample was collected using a submersible pump; low-flow procedures were used to purge and sample the well at a rate between 0.03 and 0.15 gallons per minute. The samples were collected upon achieving the stabilization criteria identified in the ADEC Field Sampling Guidance (ADEC, 2019). The groundwater sample was collected by Chris Boese, an ADEC-qualified sampler.

Groundwater parameters were measured with a handheld YSI multiparameter instrument connected to a flow-through cell. Measured parameters included pH, temperature, specific conductivity, dissolved oxygen (DO) concentration, and oxidation reduction potential (ORP). Turbidity was also measured using an Oakton turbidity meter. When the parameters stabilized, the flow-through cell was disconnected and the sample was collected using the pump set at a low-flow rate. Field parameters were recorded on the groundwater sampling form included in Appendix B. The groundwater sample was submitted to SGS North America (SGS) of Orlando, Florida for the following analyses:

- Volatile organic compounds (VOC) by EPA Method 8260C
- Semivolatile organic compounds (SVOC) by EPA Method 8270D
- Herbicides by EPA Method 8151A

The groundwater sample was submitted to SGS of Anchorage, Alaska for the following analyses:

- VOC low level by EPA Method 8260C-SIM
- Polycyclic aromatic hydrocarbons (PAH) by EPA Method 8270D-SIM
- 1,4-Dioxane by EPA Method 8270D-SIM
- Polychlorinated biphenyls (PCB) by EPA Method 8082A
- Pesticides by EPA Method 8270D-SIM
- Total metals by EPA Method 6020A
- Sulfide by SM23 45000-S
- Cyanide SM21 4500-CM

The groundwater sample was submitted to SGS of Wilmington, North Carolina for the following analysis:

• Dioxins/furans by EPA Method 8290A

2.3 Groundwater Sample Results

Groundwater sample results of AP-6573B were compared to groundwater protection standards in the following hierarchy.

- EPA National Primary Drinking Water Regulations (NPDWR) MCL
- ADEC CUL (18 AAC 75.345 Table C, updated October 2018)
- EPA RSL (resident tap water [target cancer risk {TR}=1x10-6, THQ=1.0], updated May 2019)

The landfill groundwater protection standard (LGPS) was defined as the protection standard having the greatest hierarchy. Thus, if an analyte has an MCL, then the MCL is the LGPS. If an analyte does not have a MCL but has an ADEC CUL, then the ADEC CUL is the LGPS. For analytes that have neither a MCL nor an ADEC CUL but have an EPA RSL, than the EPA RSL is the LGPS. A few analytes have no groundwater protection standard so there is no LGPS.

Sample results are presented in Table 1. There were no sample results that exceeded LGPS for any analyte. The following summarizes the comparison to the groundwater protection standards:

- Arsenic, barium, cobalt, copper, lead, nickel, vanadium, and zinc were detected below the LGPS (MCL). Naturally occurring arsenic was detected above the ADEC CUL, and the remaining metals were detected below the ADEC CUL.
- Cyanide was detected an estimated concentration above below the ADEC CUL but below the LGPS (MCL).
- Sulfide was detected an estimated concentration below the limit of detection (LOD); there is no MCL, ADEC CUL, or EPA RSL for this analyte.
- There were no detections of VOC, SVOC, PAHs, PCBs, herbicides, pesticides, or dioxins/furans.
- A total of 30 analytes had LODs exceeding the LGPS. Most (23 of the 30) were SVOC analytes. Even using three laboratories and multiple versions of analytical methods, it is not technically feasible to obtain adequate analytical sensitivity to achieve the LGPS for all analytes.

2.4 Data Quality Review

Groundwater analytical data were reviewed in order to assess whether the results met Data Quality Objectives (DQOs) and were acceptable for use. Appendix B includes the groundwater sampling forms and Appendix D presents the ADEC Laboratory Data Review Checklist.

Several results were qualified as estimates due to low concentrations (less than the limit of quantitation [LOQ]) or for quality control (QC) issues associated with specific analytical batches. Overall, the QC issues noted did not have significant impact on project data, and completeness goals were met.

2.5 IDW Management

Purge water was containerized in a 15-gallon polyethylene drums at the time of well sampling. The purge water drum was labeled and taken to the Defense Environmental Restoration Account (DERA) building for temporary storage. The purge water was combined purge water from OU4 landfill wells in a 275-gallon intermediate bulk container (IBC). The Operable Unit 4 (OU4) landfill purge was managed and disposed of as Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) waste subject to the CERCLA Off Site Rule (OSR). Disposal of the purge water will be documented in a forth coming 2019 Investigative-derived waste (IDW) Report.

Non-hazardous solid waste such as nitrile sampling gloves, paper towels, and tubing was collected and disposed of at the Fairbanks North Star Borough Municipal Landfill.

2.6 Summary

The groundwater sample results from monitoring well AP-6573B indicate that the well has no contaminants exceeding MCLs. There were two analytes that exceeded the ADEC CUL; naturally occurring arsenic and cyanide. There were no detections of VOC, SVOC, PAHs, PCBs, herbicides, pesticides, and dioxins/furans.

3.0 REFERENCES

Alaska Department of Environmental Conservation (ADEC), 2018. *Oil and Other Hazardous Substances Pollution Control, 18 AAC 75.* As amended through October 27, 2018.

Alaska Department of Environmental Conservation (ADEC). 2019. Field Sampling Guidance. October.

Brice, 2020. October 2019 Groundwater Monitoring Report, U.S. Army Garrison Alaska Landfill. April.

Fairbanks Environmental Services (FES), 2020. Draft 2019 OU4 Monitoring Report. June.

FES, 2019. 2019 CERCLA Sites Work Plan, Fort Wainwright, Alaska. July.

- Puls and Barcelona, 1996. *Ground Water Issue: Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures.* U.S. Environmental Protection Agency, Washington, D.C. April.
- U.S. Army Corps of Engineers (USACE), 2019. *Fort Wainwright OU4 Groundwater Monitoring Well Sampling (18-116).* January.

Table 1. Groundwater Sample Results for Monitoring Well AP-6573B Near the Fort Wainwright Landfill

						Location	AP-6573B	Trip Blank
						Sample ID	19FW6573BWG	19FW6573BTBWQ
						Laboratory	SGSA	SGSA
						Lab Sample ID	1195031001	1195031002
						Collect Date	08/28/2019	08/28/2019
						Matrix Semala Tura	WG	WQ Tria Diamia
		1	-	ADEC	504	Sample Type	Primary	The Blank
Analyte ¹	Method ¹	Units	MCL	ADEC	EPA DOI	LGPS ²	Result [LOD]	Qualifier
Antimony	60204	ug/l	6	7.9	7.9	6		Quainer
Anumony	6020A	µg/L	10	0.52	0.052	10	5.7 [2.50]	-
Barium	6020A	ug/L	2 000	3,800	3.800	2 000	151 [1 50]	
Bervllium	6020A	ua/L	4	25	25	4	ND [0.500]	-
Cadmium	6020A	ua/L	5	9.2	9.2	5	ND [1.00]	-
Chromium	6020A	µg/L	100			100	ND [2.00]	-
Cobalt	6020A	μg/L			6	6	1.92 [0.500]	-
Copper	6020A	μg/L	1,300	800	800	1,300	2.95 [3.00] J	-
Lead	6020A	µg/L	15	15	15	15	4.41 [0.500]	-
Mercury	6020A	µg/L	2	0.52	0.63	2	ND [0.100]	-
Solonium	6020A	µg/L	50	390	390	390	5.75 [1.00]	-
Silver	6020A	ug/L	50	94	94	94	ND [10.0]	
Thallium	6020A	ua/L	2	0.2	0.2	2	ND [1.00]	_
Tin	6020A	µg/L			12,000	12,000	ND [2.50]	-
Vanadium	6020A	µg/L		86	86	86	7.04 [10.0] J	-
Zinc	6020A	µg/L		6,000	6,000	6,000	14.2 [12.5] J	-
Sulfide	SM23 4500-S	ua/L				NE	70 [50.0] J	-
Cyanide	SM21 4500-CN	µg/L	200	1.5	1.5	200	2.4 [2.5] J	-
PCB-1016 (Arcelor 1016)	S\W/8082A		0.5	0.44	0.22		ND [0.0505]	_
PCB-1221 (Aroclor 1221)	SW8082A	ug/L	0.5	0.44	0.0047	-	ND [0.0000]	
PCB-1232 (Aroclor 1232)	SW8082A	ua/L		0.44	0.0047		ND [0.0505]	-
PCB-1242 (Aroclor 1242)	SW8082A	µg/L		0.44	0.0078	0.5	ND [0.0505]	-
PCB-1248 (Aroclor 1248)	SW8082A	µg/L		0.44	0.0078	(total)	ND [0.0505]	-
PCB-1254 (Aroclor 1254)	SW8082A	µg/L		0.44	0.0078		ND [0.0505]	-
PCB-1260 (Aroclor 1260)	SW8082A	µg/L		0.44	0.0078		ND [0.0505]	-
4,4'-DDD	8270D-SIM	µg/L		0.06	0.032	0.06	ND [0.0152]	-
4,4'-DDE	8270D-SIM	μg/L		0.46	0.046	0.46	ND [0.0152]	-
4,4'-DDT	8270D-SIM	µg/L		2.3	0.23	2.3	ND [0.0152]	-
Aldrin	8270D-SIM	µg/L		0.0092	0.00092	0.0092	ND [0.0152]	-
alpha-BHC	8270D-SIM	µg/L	2	0.072	0.0072	0.072	ND [0.0152]	•
beta-BHC	8270D-SIM	µg/L	2	0.2	0.02	0.25	ND [0.0152]	-
delta-BHC	8270D-SIM	ua/L		0.20	0.020	NE	ND [0.0152]	-
Dieldrin	8270D-SIM	µg/L		0.018	0.0018	0.018	ND [0.0152]	-
Endosulfan I	8270D-SIM	μg/L		100	100	100	ND [0.0152]	-
Endosulfan II	8270D-SIM	µg/L		100	100	100	ND [0.0152]	-
Endosulfan sulfate	8270D-SIM	μg/L			11	11	ND [0.0152]	-
Endrin Endrin oldobudo	8270D-SIM	µg/L	2	2.3	2.3		ND [0.0152]	-
Endrin aldenyde	8270D-SIM	µg/L				NE	ND [0.0152]	-
gamma-BHC (Lindane)	8270D-SIM	ug/L	02	0.42	0.042	0.2	ND [0.0152]	
gamma-Chlordane	8270D-SIM	µg/L	2	0.2	0.02	2	ND [0.0152]	-
Heptachlor	8270D-SIM	µg/L	0.4	0.014	0.0014	0.4	ND [0.0152]	-
Heptachlor epoxide	8270D-SIM	µg/L	0.2	0.014	0.0014	0.2	ND [0.0152]	-
Methoxychlor	8270D-SIM	µg/L	40	37	37	40	ND [0.0152]	-
Toxaphene	8270D-SIM	µg/L	3	0.71	0.071	3	ND [1.01]	-
2,4,5-T	8151A	μg/L	70	170	170	70	ND [0.061]	-
2,4,5-TP (Silvex)	8151A	μg/L	50	110	110	50	ND [0.051]	-
2,4-D	8151A	μg/L			160	160	ND [0.70]	-
Dinoseb	8151A	µg/L	(-	15	7	ND [1.0]	-
1,2,3-Trichloropropane	8260C-SIM	μg/L		0.0075	0.00075	0.0075	ND [0.0050]	ND [0.0050]
1,2-Dibromo-3-chloropropane	8260C-SIM	µg/L	0.2		0.00033	0.2	ND [0.0050]	ND [0.0050]
1,2-Dibromoethane	8260C-SIM	µg/L	0.05	0.075	0.0075	0.05	ND [0.0025]	ND [0.0025]
1,1,1,2-Tetrachloroethane	8260C	μg/L		5.7	0.57	5.7	ND [0.28]	ND [0.28]
1,1,1-Trichloroethane	8260C	μg/L	200	8000	8000	200	ND [0.25]	ND [0.25]
1,1,2,2-Tetrachloroethane	8260C	µg/L	<u> </u>	0.76	0.076	0.76	ND [0.30]	ND [0.30]
1,1,2-I richloroethane	8260C	µg/L	5	0.41	0.28	5	ND [0.47]	ND [0.47]
1.1-Dichloroethene	82600	µg/L	7	28	2.8	28	ND [0.34]	ND [0.34]
1 1-Dichloropropene	82600	µg/L	1	200	200	NF	ND [0.32]	ND [0.32] ND [0.34]
1.2-Dichloroethane	8260C	µg/L µg/l	5	1.7	0.17	5	ND [0.31]	ND [0.34]
1,2-Dichloropropane	8260C	µg/L	5	8.2	0.85	5	ND [0.43]	ND [0.43]
1,3-Dichloropropane	8260C	μg/L			370	370	ND [0.31]	ND [0.31]
2,2-Dichloropropane	8260C	µg/L				NE	ND [0.24]	ND [0.24]
2-Butanone	8260C	µg/L		5,600	5,600	5,600	ND [2.0]	ND [2.0]
2-Unioro-1,3-butadiene (Chloroprene)	8260C	µg/L		20	0.019	0.019	ND [0.50]	ND [0.50]
4-Methyl-2-pentanone	82600	µg/L µa/l	<u> </u>	6.300	6 300	6 300		
	02000	rg/ -		2,000	3,000	3,000		

Table 1. Groundwater Sample Results for Monitoring Well AP-6573B Near the Fort Wainwright Landfill

						Location	AP-6573B	Trip Blank
						Sample ID	19FW6573BWG	19FW6573BTBWQ
						Laboratory	SGSA	SGSA
						Lab Sample ID	1195031001	1195031002
						Collect Date	08/28/2019	08/28/2019
						Matrix	WG	WQ
	-					Sample Type	Primary	Trip Blank
Analyta ¹	Method ¹	Unite	MCI	ADEC	EPA		Result [LOD]	Result [LOD]
Analyte	Wethou	Units	MOL	CUL	RSL	LOFS	Qualifier	Qualifier
Acetone	8260C	μg/L		14,000	14,000	14,000	ND [10]	ND [10]
Acetonitrile	8260C	µg/L			130	130	ND [14]	ND [14]
Acrolein	8260C	μg/L			0.042	0.042	ND [6.1]	ND [6.1]
Acrylonitrile	8260C	µg/L			0.052	0.052	ND [2.1]	ND [2.1]
Allyl chloride	8260C	µg/L			0.73	0.73	ND [0.26]	ND [0.26]
Benzene	8260C	µg/L	5	4.6	0.46	5	ND [0.31]	ND [0.31]
Bromochloromethane	8260C	µg/L		4.0	83	83	ND [0.45]	ND [0.45]
Bromodichioromethane	82600	µg/L		1.3	0.13	1.3	ND [0.24]	ND [0.24]
Bromomethane	82600	ug/L		7.5	7.5	75	ND [0.41]	ND [0.41]
Carbon disulfide	8260C	ug/L		810	810	810	ND [0.53]	ND [0.53]
Carbon tetrachloride	8260C	ua/L	5	4.6	0.46	5	ND [0.36]	ND [0.36]
Chlorobenzene	8260C	µg/L	100	78	78	100	ND [0.20]	ND [0.20]
Chloroethane	8260C	µg/L		21,000	21,000	21,000	ND [0.67]	ND [0.67]
Chloroform	8260C	μg/L		2.2	0.22	2.2	ND [0.30]	ND [0.30]
Chloromethane	8260C	μg/L		190	190	190	ND [0.50]	ND [0.50]
cis-1,2-Dichloroethene	8260C	µg/L	70	36	36	70	ND [0.28]	ND [0.28]
cis-1,3-Dichloropropene	8260C	µg/L		4.7	0.47	4.7	ND [0.29]	ND [0.29]
Dibromochloromethane	8260C	µg/L		8.7	0.87	8.7	ND [0.28]	ND [0.28]
Dibromomethane	8260C	µg/L		000	8.3	8.3	ND [0.37]	ND [0.37]
Dichlorodifluoromethane	8260C	µg/L		200	200	200	ND [0.50]	ND [0.50]
Ethyl methacrylate	82600	µg/L	700	15	630	530	ND [0.50]	ND [0.50]
	82600	µg/L	700	15	1.0 5.000	700		ND [0.36]
Methacrylonitrile	82600	µg/L			1.9	19		
Methyliodide	8260C	ug/L			1.0	NE	ND [0.27]	ND [0.27]
Methylene chloride	8260C	ua/L		110	11	110	ND [2.0]	ND [2.0]
Methylmethacrylate	8260C	µg/L			1,400	1,400	ND [0.71]	ND [0.71]
Propionitrile	8260C	µg/L				NE	ND [5.0]	ND [5.0]
Styrene	8260C	µg/L	100	1,200	1,200	100	ND [0.22]	ND [0.22]
Tetrachloroethene (PCE)	8260C	μg/L	5	41	11	5	ND [0.22]	ND [0.22]
Toluene	8260C	µg/L	1,000	1,100	1,100	1,000	ND [0.30]	ND [0.30]
trans-1,2-Dichloroethene	8260C	µg/L	100	360	360	100	ND [0.22]	ND [0.22]
trans-1,3-Dichloropropene	8260C	µg/L		4.7	0.47	4.7	ND [0.21]	ND [0.21]
Trichleroothono (TCE)	82600	µg/L	5	2.9	0.0013	0.0013		ND [1.0]
	82600	µg/L	5	2.0 5.200	5 200	5 200	ND [0.35]	ND [0.35]
Vinvl acetate	82600	ug/L		410	410	410	ND [2.0]	ND [2.0]
Vinvl chloride	8260C	ua/L	2	0.19	0.019	2	ND [0.41]	ND [0.41]
Xylenes	8260C	µg/L	10,000	190	190	10,000	ND [0.72]	ND [0.72]
4. Mathuda an http://www.	0070D CIM	10		4.4	4.4	44		
2-Methylnaphthalene	8270D-SIM	µg/L		36	36	36		-
Acenaphthene	8270D-SIM	ug/L		530	530	530	ND [0.0227]	
Acenaphthylene	8270D-SIM	ua/L		260	000	260	ND [0.0227]	-
Anthracene	8270D-SIM	ua/L		43	1.800	43	ND [0.0227]	-
Benzo(a)anthracene	8270D-SIM	µg/L		0.3	0.03	0.3	ND [0.0227]	-
Benzo(a)pyrene	8270D-SIM	μg/L	0.2	0.25	0.025	0.2	ND [0.0091]	-
Benzo(b)fluoranthene	8270D-SIM	μg/L		2.5	0.25	2.5	ND [0.0227]	-
Benzo(g,h,i)perylene	8270D-SIM	µg/L		0.26		0.26	ND [0.0227]	-
Benzo(k)fluoranthene	8270D-SIM	μg/L		0.8	2.5	0.8	ND [0.0227]	-
Chrysene	8270D-SIM	µg/L		2	25	2	ND [0.0227]	-
Dibenzo(a,h)anthracene	8270D-SIM	µg/L		0.25	0.025	0.25	ND [0.0091]	-
Fluorantinene	8270D-SIM	µg/L		200	200	200	ND [0.0227]	-
Indeno(1 2 3-cd)pyrene	8270D-SIM	ug/L		0.19	0.25	0.19	ND [0.0227]	-
Naphthalene	8270D-SIM	ug/L		17	0.20	17	ND [0.0227]	
Phenanthrene	8270D-SIM	ua/L		170	0.11	170	ND [0.0227]	-
Pyrene	8270D-SIM	µg/L		120	120	120	ND [0.0227]	-
1 2 4 5-Tetrachlorobenzene	82700				17	17	ND [0 50]	
1 2 4-Trichlorobenzene	8270D	ug/L	70	4	1.7	70	ND [0.30]	
1.2-Dichlorobenzene	8270D	µg/l	600	300	300	600	ND [0.50]	-
1,3,5-Trinitrobenzene	8270D	µa/L			590	590	ND [0.99]	-
1,3-Dichlorobenzene	8270D	µg/L		300		300	ND [0.50]	-
1,3-Dinitrobenzene	<u>8270</u> D	μg/L			2	2	ND [0.91]	-
1,4-Dichlorobenzene	8270D	µg/L	75	4.8	0.48	75	ND [0.50]	-
1,4-Naphthoquinone	8270D	μg/L				NE	ND [0.72]	-
1,4-Phenylenediamine	8270D	µg/L			20	20	ND [10]	-
1-Naphthylamine	8270D	μg/L				NE	ND [1.2]	-
2,3,4,6-1 etrachlorophenol	8270D	µg/L		4.000	240	240	ND [0.97]	-
	82/UD	µg/L		1,200	1,200	1,200	ND [0.74]	-
z,4,0-inchiorophenoi	02/UD	µg/L	1	12	12	12	ני./5] שא	-

Table 1. Groundwater Sample Results for Monitoring Well AP-6573B Near the Fort Wainwright Landfill

						Location	AP-6573B	Trip Blank
						Sample ID	19FW6573BWG	19FW6573BTBWQ
						Laboratory	SGSA	SGSA
						Lab Sample ID	1195031001	1195031002
						Collect Date	08/28/2019	08/28/2019
						Matrix Somple Type	WG	WQ Trin Blank
				ADEC	ED A	Sample Type	Primary	
Analyte ¹	Method ¹	Units	MCL	ADEC	EPA BSI	LGPS ²	Result [LOD]	Qualifier
2.4 Diphlorophonol	92700	.ug/l		46	46	46		Quaimer
2.4-Dimethylphenol	8270D	ug/L		360	360	360	ND [0.04]	
2.4-Dinitrophenol	8270D	ua/L		39	39	39	ND [5.0]	-
2,4-Dinitrotoluene	8270D	µg/L		2.4	0.24	2.4	ND [0.81]	-
2,6-Dichlorophenol	8270D	µg/L				NE	ND [0.83]	-
2,6-Dinitrotoluene	8270D	μg/L		0.49	0.049	0.49	ND [0.71]	-
2-Acetylaminofluorene	8270D	µg/L		750	0.016	0.016	ND [0.75]	•
2-Chloronaphthalene	8270D	µg/L		750	750	/50	ND [0.50]	-
2-Methyl-4 6-dinitrophenol	8270D	ug/L		91	1.5	15	ND [2.03]	
2-Methylphenol (o-Cresol)	8270D	ua/L		930	1.0	930	ND [0.56]	-
2-Naphthylamine	8270D	µg/L			0.039	0.039	ND [1.2]	
2-Nitroaniline	8270D	µg/L			190	190	ND [1.8]	-
2-Nitrophenol	8270D	µg/L				NE	ND [0.85]	-
3,3'-Dichlorobenzidine	8270D	µg/L		1.3	0.0005	1.3	ND [0.64]	· ·
3,3-Dimethylbenzidine	8270D	µg/L			0.0065	0.0065	ND [2.8]	· ·
3-Methylphenol/4-Methylphenol Coelution	8270D	µg/L			0.0011	NE		
3-Nitroaniline	8270D	ua/L				NE	ND [0.88]	-
4-Aminobiphenyl	8270D	µg/L			0.003	0.003	ND [0.80]	
4-Bromophenyl phenyl ether	8270D	μg/L				NE	ND [0.85]	-
4-Chloro-3-methylphenol	8270D	µg/L				NE	ND [0.59]	-
4-Chloroaniline	8270D	μg/L		3.7	0.37	3.7	ND [0.63]	-
4-Chlorophenyl phenyl ether	8270D	µg/L			2.0	NE	ND [0.54]	-
4-Nitrophenol	8270D	µg/L			3.8	3.0 NE	ND [1.2]	-
5-Nitro-o-toluidine	8270D	ug/L				NE	ND [1.3]	-
7,12-Dimethylbenz(a)anthracene	8270D	µg/L				NE	ND [1.0]	-
a,a-Dimethylphenethylamine	8270D	µg/L				NE	ND [5.0]	-
Acetophenone	8270D	µg/L			1,900	1,900	ND [0.81]	-
Benzyl alcohol	8270D	µg/L		2,000	2,000	2,000	ND [0.61]	-
Benzyl butyl phthalate	8270D	µg/L		160	16	160	ND [1.0]	-
bis-(2-Chloroethyl)ether	8270D 8270D	µg/L		0.14	0.014	0 14	ND [0.81]	-
bis(2-Chloroisopropyl)ether	8270D	ua/L		0.14	0.014	NE	ND [0.76]	-
bis-(2-Ethylhexyl)phthalate	8270D	µg/L	6	56	5.6	6	ND [1.0]	-
Chlorobenzilate	8270D	μg/L			0.31	0.31	ND [1.1]	-
Diallate (cis- or trans-)	8270D	µg/L			0.54	0.54	ND [1.0]	-
Dibenzofuran	8270D	µg/L		7.9	7.9	7.9	ND [0.60]	-
Diethyl phthalate	8270D	µg/L		15,000	15,000	15,000	ND [1.0]	-
Dimethyl obthalate	8270D	ug/L		16 000	44	16 000	ND [1.0]	
Di-n-butyl phthalate	8270D	ua/L		900	900	900	ND [1.0]	-
Di-n-octyl phthalate	8270D	µg/L		22	200	22	ND [1.0]	-
Diphenylamine	8270D	µg/L			1,300	1,300	ND [0.81]	-
Disulfoton	8270D	µg/L			0.5	0.5	ND [1.0]	-
Ethyl methanesulfonate	8270D	µg/L				NE	ND [1.1]	-
Fampnur	8270D	µg/L	1	0.008	0.0008	NE 1	ND [1.0]	-
Hexachlorobutadiene	8270D	ug/L		1.4	0.0098	14	ND [0.09]	
Hexachlorocyclopentadiene	8270D	µg/L	50	0.41	0.41	50	ND [1.8]	-
Hexachloroethane	8270D	µg/L		3.3	0.33	3.3	ND [1.6]	-
Hexachloropropene	8270D	μg/L				NE	ND [2.0]	-
Isodrin	8270D	µg/L				NE	ND [1.0]	-
Isophorone	8270D	µg/L		780	78	780	ND [0.78]	-
Isosatrole	8270D	µg/L			0.0035	NE 0.0035	ND [2.4]	-
Methanyrilene	8270D	ug/L			0.0033	NF	ND [4.0]	
Methyl methanesulfonate	8270D	µg/L			0.79	0.79	ND [0.77]	-
Nitrobenzene	8270D	µg/L		1.4	0.14	1.4	ND [0.93]	-
n-Nitrosodiethylamine	8270D	μg/L			0.00017	0.00017	ND [0.87]	-
n-Nitrosodimethylamine	8270D	µg/L			0.00011	0.00011	ND [0.50]	· ·
n-Nitroso-di-n-butylamine	8270D	µg/L		0.11	0.0027	0.0027	ND [1.1]	-
	8270D	µg/L		0.11	0.011	0.11		-
n-Nitrosomethylethylamine	82700	µg/L µa/l		120	0.00071	0.00071	ND [0.98]	
n-Nitrosopiperidine	8270D	µa/L		1	0.0082	0.0082	ND [1.2]	-
n-Nitrosopyrrolidine	8270D	µg/L	1	1	0.037	0.037	ND [1.1]	-
o,o,o-Triethyl phosphorothioate	8270D	μg/L				NE	ND [1.0]	-
o-Toluidine	8270D	μg/L			4.7	4.7	ND [1.2]	-
Parathion ethyl	8270D	μg/L		-	86	86	ND [1.0]	-
Parathion methyl	8270D	μg/L		I	4.5	4.5	ND [1.0]	-

Table 1. Groundwater Sample Results for Monitoring Well AP-6573B Near the Fort Wainwright Landfill

						Location	AP-6573B	Trip Blank
						Sample ID	19FW6573BWG	19FW6573BTBWQ
						Laboratory	SGSA	SGSA
						Lab Sample ID	1195031001	1195031002
						Collect Date	08/28/2019	08/28/2019
						Matrix	WG	WQ
						Sample Type	Primary	Trip Blank
1	1			ADEC	EPA		Result [LOD]	Result [LOD]
Analyte	Method	Units	MCL	CUL	RSL	LGPS	Qualifier	Qualifier
p-Dimethylaminoazobenzene	8270D	μg/L			0.005	0.005	ND [1.0]	-
Pentachlorobenzene	8270D	μg/L			3.2	3.2	ND [3.1]	-
Pentachloronitrobenzene	8270D	µg/L			0.12	0.12	ND [1.6]	-
Pentachlorophenol	8270D	μg/L	1	0.41	0.041	1	ND [5.0]	-
Phenacetin	8270D	μg/L			34	34	ND [1.3]	-
Phenol	8270D	μg/L		5,800	5,800	5,800	ND [0.50]	-
Phorate	8270D	μg/L			3	3	ND [1.0]	-
Pronamide	8270D	μg/L			1,200	1,200	ND [1.3]	-
Safrole	8270D	μg/L			0.096	0.096	ND [1.6]	-
Thionazine	8270D	µg/L				NE	ND [1.0]	-
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	8290A	pg/L				NE	ND [5.12]	-
1,2,3,4,6,7,8-Heptachlorodibenzofuran	8290A	pg/L				NE	ND [5.12]	-
1,2,3,4,7,8,9-Heptachlorodibenzofuran	8290A	pg/L				NE	ND [5.12]	-
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	8290A	pg/L				NE	ND [5.12]	-
1,2,3,4,7,8-Hexachlorodibenzofuran	8290A	pg/L				NE	ND [5.12]	-
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	8290A	pg/L				NE	ND [5.12]	-
1,2,3,6,7,8-Hexachlorodibenzofuran	8290A	pg/L				NE	ND [5.12]	-
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	8290A	pg/L				NE	ND [5.12]	-
1,2,3,7,8,9-Hexachlorodibenzofuran	8290A	pg/L				NE	ND [5.12]	-
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	8290A	pg/L				NE	ND [5.12]	-
1,2,3,7,8-Pentachlorodibenzofuran	8290A	pg/L				NE	ND [5.12]	-
2,3,4,6,7,8-Hexachlorodibenzofuran	8290A	pg/L				NE	ND [5.12]	-
2,3,4,7,8-Pentachlorodibenzofuran	8290A	pg/L				NE	ND [5.12]	-
2,3,7,8-Tetrachlorodibenzo-p-dioxin	8290A	pg/L		1.2	0.12	1.2	ND [1.28]	-
2,3,7,8-Tetrachlorodibenzofuran	8290A	pg/L				NE	ND [2.56]	-
Octachlorodibenzo-p-dioxin	8290A	pg/L				NE	ND [10.2]	-
Octachlorodibenzofuran	8290A	pg/L				NE	ND [17.9]	-
Total Heptachlorodibenzo-p-dioxins (HpCDD)	8290A	pg/L				NE	ND [5.12]	-
Total Heptachlorodibenzofurans (HpCDF)	8290A	pg/L				NE	ND [5.12]	-
Total Hexachlorodibenzo-p-dioxins (HxCDD)	8290A	pg/L				NE	ND [5.12]	-
Total Hexachlorodibenzofurans (HxCDF)	8290A	pg/L				NE	ND [5.12]	-
Total Pentachlorodibenzo-p-dioxin (PeCDD)	8290A	pg/L				NE	ND [5.12]	-
Total Pentachlorodibenzofurans (PeCDF)	8290A	pg/L				NE	ND [5.12]	-
Total Tetrachlorodibenzo-p-dioxins (TCDD)	8290A	pg/L				NE	ND [1.28]	-
Total Tetrachlorodibenzofurans (TCDF)	8290A	pg/L				NE	ND [2.56]	-

No detected analytical result exceeded the LGPS

Grey shaded results are non-detect with LODs above the LGPS

¹ The Appendix II VOC, SVOC, and herbicides analyses were performed by SGS of Orlando, Florida. Dioxins/Furans analysis was performed by SGS of Wilmington, North Carolina. All other analyses were performed by SGS of Anchorage, Alaska.

² Landfill Groundwater Protection Standard (LGPS) - Results are compared against protection standard values in the following order of hierarchy: EPA MCL, ADEC CUL (18 AAC 75.345, Table C, updated October 2018), and EPA RSL (resident tap water [TR=1x10-6, THQ=1.0], updated May 2019).

ADEC - Alaska Department of Environmental Conservation

- CUL cleanup level
- DoD Department of Defense
- EPA Environmental Protection Agency
- LCS laboratory control sample
- LGPS Landfill Groundwater Protection Standard
- LOD limit of detection
- LOQ limit of quantitation
- MCL maximum contaminant level
- μg/L microgram per liter
- ND non-detect result
- NE not established
- pg/L picogram per liter
- RSL regional screening level
- TR target cancer risk
- THQ target hazard quotient
- WG groundwater matrix
- WQ water quality control



APPENDIX A PHOTO LOG



Photo 1 – AP-6573B Shown Frost Jack out of Casing



Photo 2 – Closeup of AP-6573B Name Plate



Photo 3 – Submersible pump used to sample AP-6573B



Photo 4 – Groundwater sampling AP-6573B

APPENDIX B GROUNDWATER SAMPLING FORM

GROUNDWA	TER SAMPLE	FORM	Lan	dfill			Ft. Wainwr	ight, Alaska
Project #:	901	1-19		Site Location:	Landfill			
Date:	8/25	3/19		Probe/Well #:	AP-	657	3 B	
Time:	10	55		Sample ID:	19FW6573B	WG		
Sampler:	C	B		-				
Weather:	CLOU	1DY		Outside Temperature:	530	-10		
QA/QC Sample ID	/Time/LOCID:						MS/MSD Performed	? Yes/NO
Purge Method:	Peristaltic Pump / S	Submersible / Bladde	er	Sample Method:	Peristaltic Pun	np / Submersible	/ Hvdrasleeve / Blade	der / Other
Equipment Used	for Sampling:	YSI# 9	Turbidity Meter #: /	4	Water Level:	13		
Free Product Obs	served in Probe/We	II? Yes/No	If Yes, Depth to Produ	ct:				
Column of Water	in Probe/Well	U		Sampling Depth	1D1	SCRE	EN	
Total Depth in Prot	be/Well (feet btoc):	27.7	20	Well Screened Across	Below wate	r table		
Depth to Water from	m TOC (feet):	. iD. S	87	Depth tubing / nump int	ake set* approx	22.2	feet below top of casi	na
Column of Water in	n Probe/Well (feet):	= 1 la:	3.2	*Tubing/pump intake must	he set approxima	tely 2 feet below th	ne water table for wells so	reened across
Circle: Gallons per	r foot of 1 25" (X 0 0	64) or 2" (X 0 163)	r 4" (X 0 65)	the water table, or in the m	iddle of the scree	ned interval for well	is screened below the wa	
Volume of Water in	n 1 Probe/Well Casi	ng (gal):	2.7					
Micropurge well/r	probe at a rate of 0.	.03 to 0.15 GPM un	til parameters stabilize	or 3 casing volumes h	ave been remo	oved. If well dra	aws down below tubi	ing or pump
intake, stop purgi	ing and sample as	a low-yield well us	ing a no-purge techniq	ue.				ng or pump
			Atle	east 3 of the 5 parai	meters below	/ must stabiliz	ze	
		+3%		±10%			±10%	<0.33 feet after initial
Field Parameters:		(or ±0.2°C max)	±3%	(<1mg/L, ±0.2 mg/L)	±0.1 units	±10 mV	(<10NTU, ±1NTU)	drawdown
Water Removed	Time Purged	Temperature	Conductivity	Dissolved O ₂	pН	Potential	Turbidity	Water Level
(gal)	(min)	(°C)	(mS/cm)	(mg/L)		(mV)	(NTU)	(ft)
1.5	10	4.52	01334	1.48	6.05	169.1	35.16	10.91
2.25	15	4.55	0.333	0.98	6.16	110.0	29:01	10.91
3	20	4.59	0:331	0.89	6.21	94.3	17.89	10.92
3.75	25	4.45	0.329	0.80	6.41	75.8	14.03	10.92
4.5	30	4.43	0.327	0.72	6.47	(A.D	10,69	10.92
5,25	35	4.43	1.327	10.70	1.49	72.1	8.88	12.91
6	40	4.40	0.326	01.5	1.572	708	8.16	ID GI
7	EINA	6	/	V	12			10 1
/	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,							
	0		/	e.				
			610					
			- 60					
Did groundwater	naramatara atabili	a 2 Mar / No. If n	why not?					
Did drawdown et	abilize? Vec/ No	If no why not?	b, why hour					
Was flowrate bet	ween 0.03 and 0.15	GPM2 Yes/No	f no why not?					
Water Color:	Clear	Vellow	Orange	Brown/B	Black (Sand/Silt)	Other		
Wall Condition:		Labolad wit	HIDCID DIN PL	ACARN		Other.		
Shoon Yos (NO	LOCK.			Notos/Comments:		· · · · · · · · · · · · · · · · · · ·		
Tatal Matala inch	de As Oh De De	od on on on oth		Notes/Comments:			c	
	Ide As, Sb, Ba, Be,	Ca, Cr, Co, Cu, Pb,	NI, Se, Ag, II, V, Zh					
Laboratory Analyse	es (Circle):	VOC, SVOC, Total						
Appendix II require	ements: sulfide (SM2	23 4500-S), cyanide	(SM21 4500-CN), PCB (8082A), pesticides (827	0D-SIM), herbi	cides (8151A), V	/OC-LL (8260C-SIM),	<u>}</u>
Dioxin ((8290), and	d PAH (8270D-SIM)				DX			
pH checked of sa	mples: Y//N	Approxim	nate volume added (mL		NU ₃ =			
Purge Water	7		\land					
Gallons generated	:	Containerized and	disposed as IDW? Yes/	No	If No, why not	?		
Disposal method*:	POL Water / CERC	LA Waste	* Purge water stored in	the DERA Building for cl	haracterization	prior to disposal		
Sampler's Initials:	02							

APPENDIX C WELLS LOG







APPENDIX D ADEC LABORATORY DATA REVIEW CHECKLIST

Laboratory Data Review Checklist

Completed By:

Craig Martin

Title:

Project Manager

Date:

10/21/20

CS Report Name:

AP-6573B Landfill, Ft. Wainwright

Report Date:

10/29/19

Consultant Firm:

Fairbanks Environmental Services Inc.

Laboratory Name:

SGS - Anchorage, SGS-Orlando & SGS - Wilmington

Laboratory Report Number:

1195031

ADEC File Number:

N/A

Hazard Identification Number:

N/A

1195031

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

		🖸 Yes	🖸 No	Comments:
		b. If the s alterna	amples were te laboratory	e transferred to another "network" laboratory or sub-contracted to an v, was the laboratory performing the analyses ADEC CS approved?
		🖸 Yes	🖸 No	Comments:
	820 Die	60 VOC, 82 oxins were	270 SVOC a analyzed by	nd 8151 Herbicides were analyzed by SGS of Orlando, FL. SGS of Wilmington, NC.
2. <u>C</u>	hair	n of Custody	<u>y (CoC)</u>	
	a.	CoC inform	nation comp	eleted, signed, and dated (including released/received by)?
		🖸 Yes	🖸 No	Comments:
	b.	Correct Ar	alyses reque	ested?
		🖸 Yes	🖸 No	Comments:
3. <u>L</u>	aboi	ratory Samp	ole Receipt I	Documentation
	a.	Sample/co	oler tempera	ture documented and within range at receipt (0° to 6° C)?
		🖸 Yes	🖸 No	Comments:
	b.	Sample pro Volatile Cl	eservation ac hlorinated So	cceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, olvents, etc.)?
		🖸 Yes	🖸 No	Comments:
	c.	Sample co	ndition docu	mented – broken, leaking (Methanol), zero headspace (VOC vials)?
		🖸 Yes	🖸 No	Comments:

1195031

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

		C Yes	C No	Comments:
	N/A			
_	e. I	Data quality	or usability affected?	
				Comments:
	N/A			
4.	Cas	e Narrative		
	a.	Present and	understandable?	
		🖸 Yes	🖸 No	Comments:
	b.	Discrepanc	ies, errors, or QC failures	identified by the lab?
		🖸 Yes	🖸 No	Comments:
	c.	Were all co	rrective actions document	ted?
		🖸 Yes	C No	Comments:
	d.	What is the	effect on data quality/usa	bility according to the case narrative?
				Comments:
	Cas data	e narrative a quality iss	does not discuss effect on ues mentioned in the case	data quality, it only discusses discrepancies. Any notable narrative are discussed above in this ADEC checklist.
5. <u>Sa</u>	mple	es Results		
	a.	Correct ana	lyses performed/reported	as requested on COC?
		🖸 Yes	C No	Comments:
	b.	All applical	ble holding times met?	
		C Yes		Comments:

c. All soils reported on a dry weight basis?

Yes No Comments:

NA – all samples were water samples

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No Comments:

Analytes having LOQs exceeding cleanup levels are identified by grey shading in Table 1 of the report.

e. Data quality or usability affected?

🖸 Yes 💽 No

Comments:

6. QC Samples

- a. Method Blank
 - i. One method blank reported per matrix, analysis and 20 samples?

 🖸 Yes	C No	Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

Yes No Comments:

Chromium exceeded the LOQ.

iii. If above LOQ, what samples are affected?

Comments:

Chromium was not detected in the project sample.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No Comments:

v. Data quality or usability affected?

Comments:

Data quality/usability not affected.

- b. Laboratory Control Sample/Duplicate (LCS/LCSD)
 - i. Organics One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No Comments:

No LCSDs for dioxins/furans reported.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

CYes No Comments:

No LCSDs for metals or sulfide reported.

 iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

🖸 Yes 🛛 🖸 No

Comments:

PCBs - Aroclor-1016 and Aroclor-1260 %R were above the laboratory limit.

 iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

The Aroclor-1016 and Aroclor-1260 concentrations in the project sample were less than the LOQ.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No Comments:

Comments.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality/usability not affected.

- c. Surrogates Organics Only
 - i. Are surrogate recoveries reported for organic analyses field, QC and laboratory samples?

YesNoComments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

🖸 Yes 🛛 🖸 No	Comments:
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8270D SIM - Pesticide surrogate recovery for 2-fluorobiphenyl does not meet QC criteria.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

🖸 Yes 🛛 🖸 No

Comments:

iv. Data quality or usability affected?

Comments:

No data quality or usability was affected since the other pesticide surrogate met the QC criteria, and no pesticides were detected in the project sample.

- d. Trip blank Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and</u> <u>Soil</u>
 - i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?

(If not, enter explanation below.)

🖸 Yes 🛛 No

Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

🖸 Yes 🚺 No	Comments:	
iii. All results less than L	DQ?	
🖸 Yes 🔲 No	Comments:	

1195031

iv. If	iv. If above LOQ, what samples are affected?							
	Comments:							
N/A								
v. Data quality or usability affected?								
	Comments:							
N/A								
e. Field Dup	licate							
i. Or	i. One field duplicate submitted per matrix, analysis and 10 project samples?							
C Ye	s 🖸 No	Comments:						
Field duplicates not submitted.								
ii. Su	ii. Submitted blind to lab?							
C Yes	s 🖸 No	Comments:						
N/A								
iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil) RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$ Where R_1 = Sample Concentration R_2 = Field Duplicate Concentration								
🖸 Yes	s 🖸 No	Comments:						
N/A								
iv. Data quality or usability affected? (Use the comment box to explain why or why not.)								
Comments:								
N/A								
f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below).								
🖸 Yes 🔲 No 💽 Not Applicable								
Only one well was sampled.								

Yes No Comments:

COMMENTS

Department of Environmental Conservation





SPILL PREVENTION & RESPONSE Contaminated Sites Program

> 610 University Avenue Fairbanks, Alaska 99709 Main: 907.451.2143 Fax: 907.451.2155 www.dec.alaska.gov

> File: 108.38.070.03

October 6, 2020

<u>Electronic Delivery Only</u> Department of the Army Directorate of Public Works ATTN: IMFW-PWE (B.Clark) 1046 Marks Road Fort Wainwright, AK 99703

RE: ADEC comments for the *Draft Groundwater Sampling of AP-6573B Report, U.S. Army Garrison Alaska* (dated September 2020)

Dear Ms. Clark:

The Alaska Department of Environmental Conservation (ADEC) has reviewed the above-referenced document which describes 2019 groundwater results collected from a monitoring well (AP-6573B) at the Operable Unit 4 (OU4) Landfill site on Fort Wainwright, Alaska (FWA). A nearby former well (AP-6134) was sampled in 2018 and decommissioned. The well was sampled for Title 40 of the Code of Federal Regulations (CFR) Part 258 Appendix II analytes. Results from the 2018 sampling at AP-6134 contained significant quality control failures. At ADEC's request, the nearest well to the former location of AP-6134 was sampled in 2019 for the same analyses to confirm results from the 2018 sampling.

ADEC has provided review comments (See Enclosure). If there are any questions, please contact me by phone at (907) 451-2182, or by email at erica.blake@alaska.gov.

Sincerely,

Erica Blake

Digitally signed by Erica Blake Date: 2020.10.06 15:46:07 -08'00'

Erica Blake Environmental Program Specialist

Enclosure: ADEC Review Comments

cc (via email): Sandra Halstead, EPA Seth Reedy, FWA ENVR Brian Adams, FWA ENVR Matthew Sprau, FWA ENVR Branch Chief Bob Hazlett, USACE Andrea Beausang, USACE Julie Allan, USACE David Mays, USAEC Amanda Sherman, USAEC Sammi Castle, ADEC Neil Lehner, ADEC

REVIEW		PROJECT: Appendix II Landfill Sampling				
COMMENTS		DOCUMENT: Draft GW Sampling of AP-6573B Report		Location: Fort Wainwright, Alaska		
ALASKA DEPT. OF		DATE: 10/06/20 REVIEWER: Erica Blake	ction taken on comment by: Fairbanks Environmental Services (10/20/20)			
CONSERVATION		PHONE: 907-451-2182				
Item No.	Drawing Sheet No., Spec. Para.	COMMENTS	REVIEW CONFERENCE A - comment accepted W - comment withdrawn (if neither, explain)	CONTRACTOR RESPONSE	USAED/ADEC RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE)	
1.	General	Was there a Laboratory Data Quality Checklist (LDQC) completed for the results? Would it be possible to include the laboratory report and the LDQC with this report?	А	A checklist will be provided with the Draft - Final report. Laboratory data files will be provided in the supplemental folder accompanying the report.		
2.	Executive Summary, 2nd Paragraph, Page V and Section 1.3, 3rd Paragraph, Page 1-2	Statement: "Based upon the results of the samplin AP-6573B and other landfill area wells that are n being used for sampling for Operable Unit 4 (OU or the Solid Waste program should be decommissioned." Until both the CERCLA and ADEC Solid Waste programs have established and put in place separ- groundwater monitoring programs, wells should left in place. Once these two separate programs a established, and monitoring wells selected, then monitoring well decommissioning can be consider	ng, ot 4) A ate be re re	The recommendation will be removed.		
3.		End of Comments				