2019 Alpine Satellite Development Plan (ASDP)
Water Quality Monitoring

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Prepared for:

ConocoPhillips Alaska

MSA Contract No. 296937

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ConocoPhillips Alaska Michael Baker INTERNATIONAL

Acronyms & Abbreviations

°C	Degrees Celsius
ADEC	Alaska Department of Environmental Conservation
Arctic Fox	Arctic Fox Environmental, Inc.
ASDP	Alpine Satellite Development Plan
CPAI	ConocoPhillips Alaska, Inc.
DO	Dissolved oxygen
DRO	Diesel range organics
FID	Flame ionization detector
GC	Gas chromatography
ICP	Inductively coupled plasma
MS	Mass spectrometry
µS/cm	Microsiemens per centimeter
mS/cm	MilliSiemens per centimeter
mg/L	Milligrams per liter
Michael Baker	Michael Baker International
NTU	Nephelometric Turbidity Units
pH	Potential of hydrogen
ppt	Parts per thousand
PSS	Practical Salinity Scale
RCRA	Resource Conservation and Recovery Act
RRO	Residual range organics
SG	Silica gel
SU	Standard units

1. INTRODUCTION

The 2019 Alpine Satellite Development Plan (ASDP) Water Quality Monitoring Report presents the results of lake monitoring conducted in August 2019 for ConocoPhillips Alaska, Inc. (CPAI). This report includes monitoring results of lakes L9323, L9324, and M9313 as well as new in-situ monitoring at lakes B8530 and L9327. Lakes L9323, L9324, and M9313 have been monitored annually since 2007. An overview of the study lakes relative to Alpine facilities is presented in Figure 1.

During the winter of 1998/1999, CPAI initiated construction of the Alpine Facility, CD1 and CD2, in the Colville River Delta. Alpine operations expanded with the implementation of the ASDP during the 2004/2005 winter season. Construction included placement of gravel facilities for two satellite drill sites, CD3 and CD4. The CD3 development included an airstrip and pad/airstrip access road, apron, and taxiway adjacent to the south side of Lake M9313. The CD4 development included a gravel pad, access road connected to the CD2 access road, and pipeline parallel to the access road connecting to the existing Alpine Pipeline. The CD4 pad is located between Lake L9323 to the north and Lake L9324 to the south. Alpine operations expanded again with the construction of CD5, which included a gravel pad, access road connected to the CD4 access road, and pipeline parallel to the access road connecting to the existing Alpine Pipeline.

The 2019 water quality monitoring program led by Michael Baker International (Michael Baker) included in-situ field sampling of the five lakes for temperature, conductivity/specific conductance, dissolved oxygen (DO), salinity, turbidity, and pH. Water samples were collected at each lake for laboratory analyses of dissolved hydrocarbons: diesel range organics (DRO), residual range organics (RRO), and Resource Conservation and Recovery Act (RCRA) metals.

ConocoPhillips Alaska

Miles
0 0.5 1 2

Date: 9/20/2019	Project: 173937
Drawn: JEG	File: Figure 1
Checked: HLR	Scale: 1 in = 2 miles

Sample Lake
Facility
Pipeline
Road

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2019 ASDP
Monitoring Locations
Overview Map

FIGURE: 1

2. METHODS

Field investigations were conducted by a two-person team at lakes L9323, L9324, M9313, B8530 and L9327. Soloy Helicopters, LLC provided helicopter access to Lake M9313, B8530, and L9327. A pickup truck was used to access lakes L9323 and L9324. The team used inflatable kayaks with an attached support raft for transporting the sampling equipment over the lake surface (Photo 1 and Photo 2).

In-situ water quality data measurements and laboratory samples were collected at lakes B8530 and L9327 on August 14 and at lakes L9323, L9324, and M9313 on August 15. In-situ water quality instruments were provided by TTT Environmental. Laboratory analyses and sample collection bottles were provided by Arctic Fox Environmental, Inc. (Arctic Fox). Prior to sampling, aerial reconnaissance was conducted to identify possible inflow and outflow sources, and to determine if lakes were hydraulically connected to other nearby surface water sources. It was also confirmed that each lake was well-mixed and lacked definable stratums prior to analytic sample collection. Field sampling methods were based on U.S. Geological Survey (USGS 2006), Ward and Harr (1990), and U.S. Army Corps of Engineers (USACE 1987) methods.

Safety precautions were followed, as outlined in the North Slope Water Resources 2019 Health, Safety, and Environmental Plan (Michael Baker 2019a) and the 2019 Summer Hydrology Monitoring – Job Safety Analysis (Michael Baker 2019b). Michael Baker employees worked in groups of two. Employees checked in with Alpine security before and after field work. Personnel were equipped with dry suits and U.S. Coast Guard-approved Type III personal floatation devices during lake access.

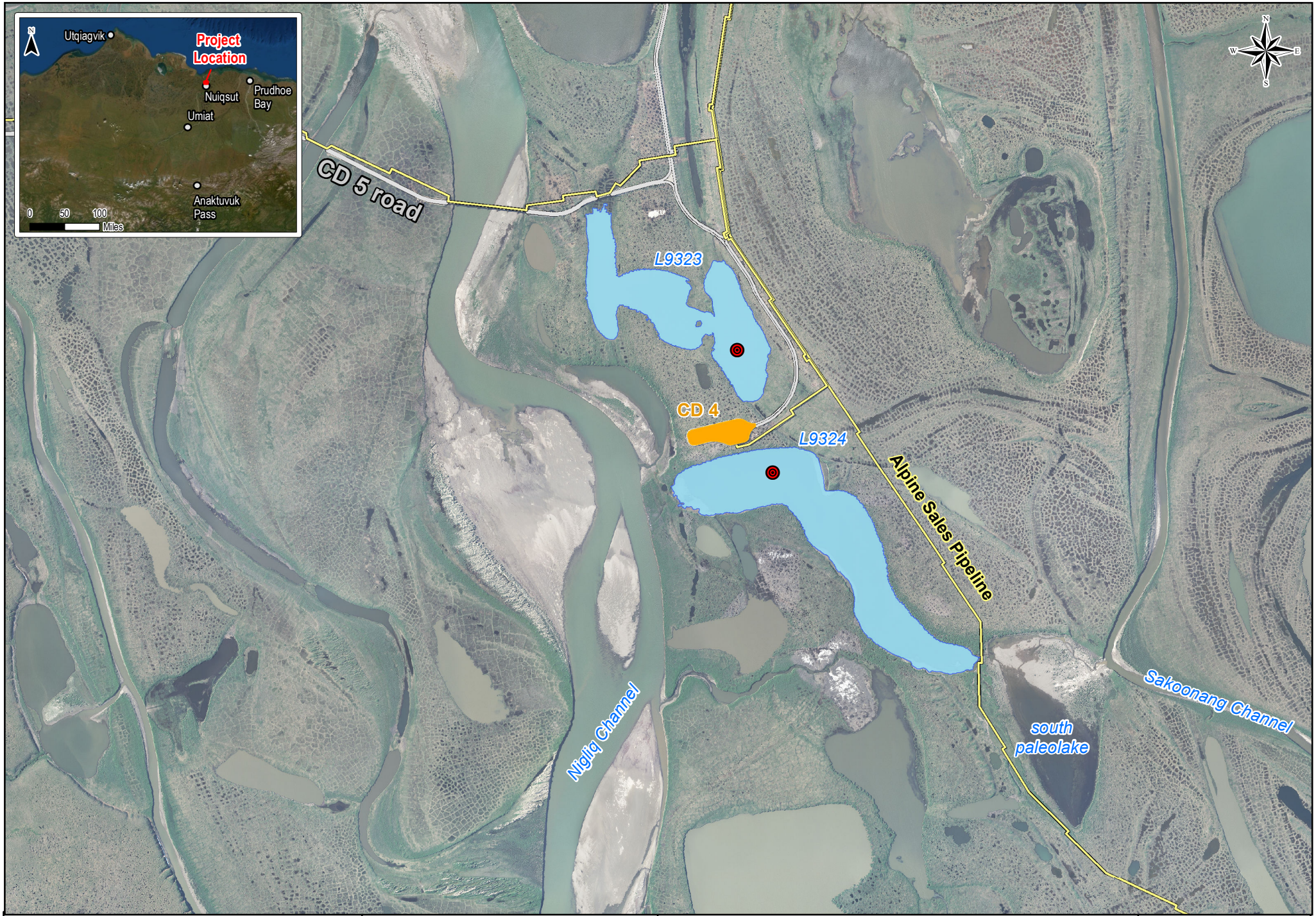
Photo 1: Equipment used to collect water quality data and samples; August 15, 2019

Photo 2: Preparing for sampling at Lake L9324; August 15, 2019

2.1. Sampling Locations

Previous in-situ water quality monitoring of North Slope lakes indicate hydraulically isolated lakes are well-mixed during open water conditions. The likelihood of homogeneous conditions, which are verified at each lake with in- situ measurements, supports the use of single point sampling. For this project, it is assumed data collected at specific locations are representative of conditions throughout the well-mixed water body and thus, water samples collected at a single location are representative of the lake. Selection of the appropriate location for samples was based on maximum lake depth and relative proximity to gravel facilities. The bathymetry of each lake was used to identify the deepest part of the water body, and a single representative sampling location was selected.

Sampling locations were identified in the field using a handheld global positioning system Garmin Oregon 650t referenced to the World Geodetic System of 1984 coordinate system. The sampling locations for lakes L9323 and L9324 are shown in Figure 2, Lake M9313 is shown in Figure 3, and lakes L9327 and B8530 are shown in Figure 4.



ConocoPhillips Alaska

Feet
0 1,000 2,000

Date: 9/20/2019	Project: 173937
Drawn: JEG	File: Figure 2
Checked: HLR	Scale: 1 inch = 2,000 feet

Sample Lake
Water Quality Sampling Point
Facility
Pipeline
Road

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2019 ASDP
Monitoring Locations
Lake L9323 & L9324

FIGURE: 2

ConocoPhillips Alaska	Feet 0 1,000 2,000	Sample Lake	Facility
Date: 9/20/2019	Project: 173937	Water Quality Sampling Point	Pipeline
Drawn: JEG	File: Figure 3		Road
Checked: HLR	Scale: 1 inch = 2,000 feet		

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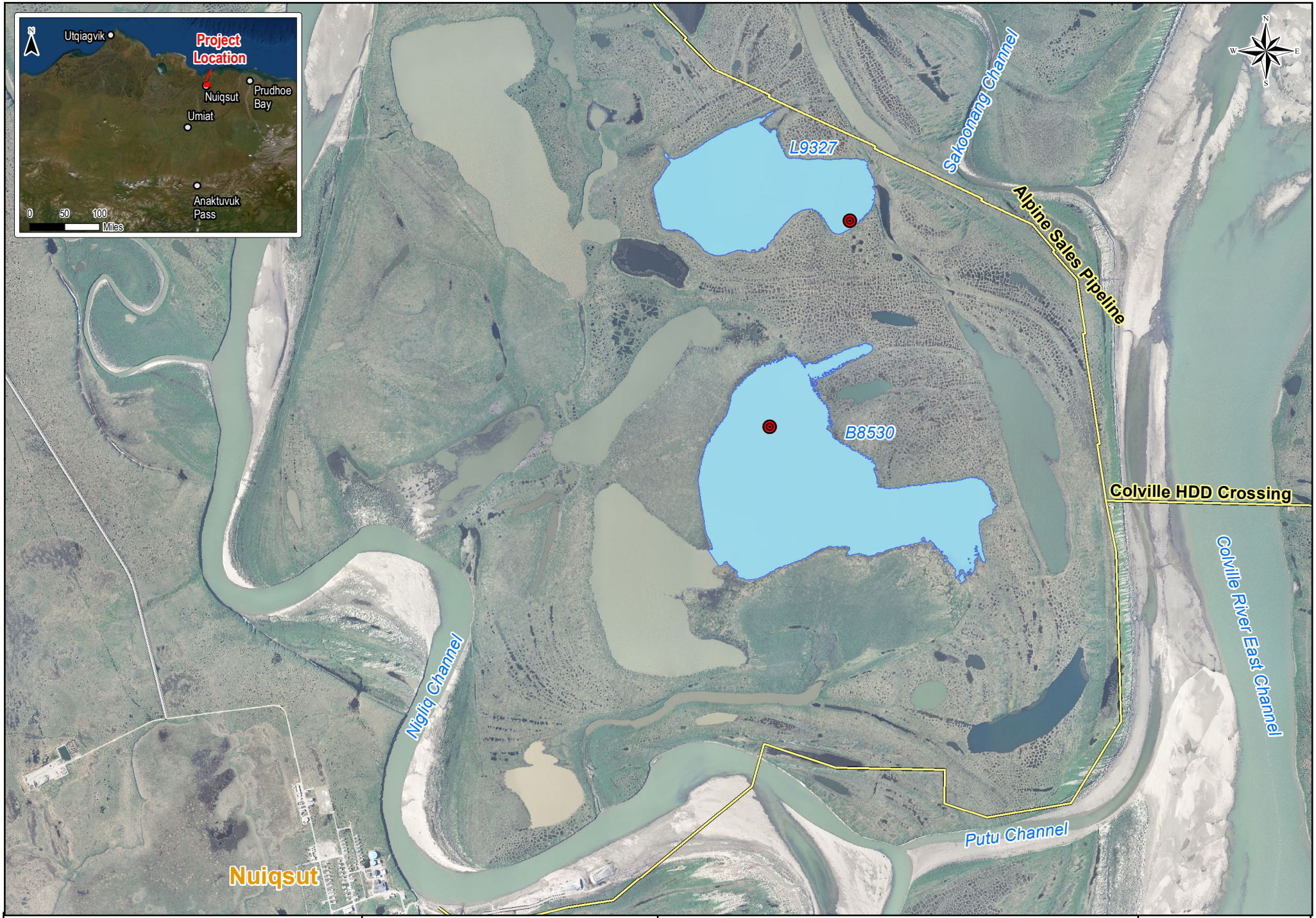
2019 ASDP
Monitoring Locations
Lake M9313

FIGURE: 3



ConocoPhillips Alaska

Feet
0 1,000 2,000

Date: 9/20/2019	Project: 173937
Drawn: JEG	File: Figure 4
Checked: HLR	Scale: 1 inch = 2,000 feet

Sample Lake
Water Quality Sampling Point
Facility
Pipeline
Road

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2019 ASDP
Monitoring Locations
Lakes L9327 & B8530

FIGURE: 4

2.2. In-Situ Measurements

In-situ water quality was measured at 1- and 2-foot intervals throughout the water column. A list of water quality parameters collected is presented in Table 1.

Table 1: In-Situ Water Quality Parameters

Parameter	Units	
Total Depth	ft	feet
Temperature	°C	degrees Celsius
Turbidity	NTU	Nephelometric Turbidity Units
Conductivity	µS/cm	microsiemens per centimeter
Specific Conductance	µS/cm	microsiemens per centimeter
Dissolved Oxygen	mg/L	milligrams per liter
	% saturation	percent saturation
Salinity	ppt	parts per thousand
pH	SU	standard units

Turbidity refers to the cloudiness of a fluid caused by suspended solids that tend to be invisible to the naked eye. As particles in a fluid will scatter light focused on them, turbidity can be measured by the quantity of reflected light for a given amount of particulates. A Nephelometer is equipped with a detector next to the light beam and is used to measure turbidity. When using a calibrated Nephelometer, the units of turbidity are Nephelometric Turbidity Units (NTU).

Conductivity is a measurement of the water's ability to carry an electrical current. Dissolved salts (ions) are conductors of electrical current, and conductivity is proportional to the ion concentration (salinity) in an aqueous solution. The salinity is calculated using the in-situ conductivity and temperature, and the conversions defined by the Practical Salinity Scale (PSS) of 1978 (YSI 2012). The PSS is derived for standard seawater with a known ion composition; therefore, using the PSS for freshwater with unknown ion composition provides an estimate of the salinity.

Specific conductance is a metric commonly used to report the concentration of salts in freshwater. Conductivity measurements are temperature dependent. Specific conductance is calculated from in-situ conductivity and temperature using a site-specific temperature correction coefficient. The correction coefficient is determined for a site by relating the conductivity of a sample at the in-situ temperature and the conductivity of the same sample at 25 degrees Celsius (°C). Michael Baker completed this analysis for the Colville River in 2005 resulting in a correction coefficient of 0.0196 (Michael Baker 2006). The recharge of lakes from the Colville River flood waters during spring break-up justifies using the same correction coefficient for the lake measurements.

INSTRUMENT CALIBRATION

A YSI 650 MDS handheld unit with YSI 6920 V2 Sonde sensor was calibrated by TTT Environmental according to the manufacturer's specifications. The morning of sampling, the YSI 6920 V2 meter was calibrated for conductivity and pH and checked for DO by Michael Baker field team members as directed by the manufacturer. An optical DO sensor was used for the DO sampling. Prior to each field sampling event, the meter was thoroughly rinsed with lake water.

INSTRUMENT ACCURACY

The accuracies of the YSI 6920 V2 Sonde sensors are presented in Table 2 (YSI 2012).

Table 2: Instrument Accuracy

Parameter	Accuracy
Temperature	+/- 0.15°C
Turbidity	+/- 2% of the reading or 0.3 NTU (whichever is greater)
Conductivity	+/- 0.5% of reading + 0.001 mS/cm
Dissolved Oxygen	+/-1% of the reading or 0.1 mg/L (whichever is greater)
	+/-1% of the reading or 1% air saturation (whichever is greater)
Salinity	+/- 1.0% of reading or 0.1 ppt (whichever is greater)
pH	+/- 0.2 units

2.3. Laboratory Sample Collection & Analysis

SAMPLE COLLECTION

Frequent wind and shallow depths typically prevent oxyclines (notable change in oxygen concentration with depth), haloclines (notable change in salinity with depth), and thermoclines (notable change in temperature with depth) from developing at any of lakes during the summer. The in-situ water quality measurements confirmed water quality constituents were relatively well-mixed within the water column at each lake; therefore, a representative single point laboratory sample at mid-depth was collected at each lake. For laboratory analysis quality control, a duplicate single point sample was collected at mid-depth from Lake L9324. In the event of significant lake stratification, multiple samples would have been collected throughout the water column and combined for laboratory analysis.

Samples were collected from lakes using a 1.6" x 12" disposable polyethylene bailer (350 milliliter capacity). Nitrile gloves were worn during sample collection and changed between samples. A new bailer was used for each lake and discarded after use.

Sample bottles provided by Arctic Fox were stored in the provided cooler before, during, and after sample collection to maintain adequate storage temperature and ensure chain of custody procedures were followed. Field samples were transported to Artic Fox within 24 hours of initial sample collection.

LABORATORY ANALYSES

The laboratory analyses performed for each water sample included A. RCRA metals, B. DRO, and C. RRO.

A. SW6020 (RCRA METALS)

The RCRA metals laboratory analysis method SW6020, developed by the U.S. Environmental Protection Agency Office of Solid Waste, employs inductively coupled plasma– mass spectrometry (ICP-MS) to determine trace elements, including metals in solution (EPA 2006). Elements tested for include: arsenic, barium, cadmium, chromium, lead, selenium, and silver. This method measures ions produced by a radio frequency ICP. High temperatures are used to produce ions, which are then entrained in a plasma gas and extracted. The ions are separated on the basis of their mass-to-charge ratio with a mass spectrometer.

B. AK 102 (DIESEL RANGE ORGANICS)

The AK 102 method for DRO, developed by the Alaska Department of Environmental Conservation (ADEC), is based on a solvent extraction, gas chromatography (GC) procedure for the detection of semi-volatile petroleum products such as diesels. Other non-petroleum compounds of similar characteristics may be detected with this method. Samples spiked with a surrogate (o-Terphenyl) are extracted with methylene chloride. The GC is temperature programmed to facilitate separation of organic compounds detected by a flame ionization detector (FID). Quantification is based on FID response compared to a diesel calibration standard.

C. AK 103 (RESIDUAL RANGE ORGANICS)

The AK 103 method for RRO, developed by ADEC, was originally designed to measure lubricating or motor oils and other heavy petroleum products in soils. The *Underground Storage Tanks Procedures* (ADEC 2009) identifies the method as adequate for determining such compounds in solution. The method is an extension of ADEC AK 102, employing solvent extractions and GC to identify heavier RRO. Quantification is based on FID response compared to a residuals calibration standard.

D. SILICA GEL CLEANUP FOR DRO & RRO

Laboratory samples containing organic plant material are especially susceptible to background biogenic interference and may result in false positive results for DRO or RRO defined petroleum hydrocarbon ranges (ADEC 2006). The silica gel (SG) procedure is recommended by the ADEC in *Technical Memorandum 06-001, Biogenic Interference and Silica Gel Cleanup* (ADEC 2006) to evaluate the presence and degree of biogenic interference. This procedure is used to preferentially remove biogenic compounds from a sample leaving the non-biodegraded petroleum hydrocarbon compounds. The remaining sample, presumably free of biogenic interference, is then tested for DRO and RRO according to AK 102 and AK 103, respectively.

3. RESULTS

3.1. Sampling Locations (August 14-15, 2019)

LAKE L9323

Lake L9323 is located east of the Nigliq Channel. The CD5 road is adjacent to the north and the CD4 road is adjacent to the east. This lake can become hydraulically connected to the Nigliq and/or Sakoonang Channels during flooding. A bridge in the CD5 road allows for the passage of overbank flow out of the lake. At the time of sampling it was not, based on aerial visual inspection, hydraulically connected to any streams or distinct water bodies. No odor or film was observed while sampling the lake (Photo 3).

Photo 3: Sampling at Lake L9323; August 15, 2019

LAKE L9324

Lake L9324 is located east of the Nigilq Channel. The CD4 pad is adjacent to the north. This lake can become hydraulically connected to the Nigliq and Sakoonang channels during flooding. At the time of sampling, Lake L9324 was hydraulically connected to the Sakoonang Channel to the east via a paleolake. The Alpine Sales pipeline crosses the connection between lakes. No odor or film was observed while sampling the lake (Photo 4).

Photo 4: Prepping to sample at Lake L9324; August 15, 2019

Lake M9313

Lake M9313 is located adjacent north of the CCD3 pad and runway, east of the Ulamnigiaq Channel. This lake can become hydraulically connected to the Ulamnigiaq Channel during flooding. At the time of sampling it was not, based on aerial visual inspection, hydraulically connected to any streams or distinct water bodies (Photo 5). No odor or film was observed while sampling the lake.

Photo 5: Lake M9313, looking northwest; August 15, 2019

Lake L9327

Lake L9327 is located between the Nigliq and Colville East Channels adjacent south to the Alpine Sales pipeline. It can become hydraulically connected to adjacent lakes during flooding. At the time of sampling it was not, based on aerial visual inspection, hydraulically connected to any major streams or distinct water bodies (Photo 6 and Photo 7). No odor or film was observed while sampling the lake.

Photo 6: Lake L9327, looking south past the Alpine Sales pipeline; August 14, 2019

Photo 7: Lake L9327, looking southwest past the Alpine Sales pipeline; August 14, 2019

Lake B8530

Lake B8530 is located between the Nigliq and Colville East Channels overland to the west of the Colville HDD crossing. It can become hydraulically connected to adjacent lakes during flooding. At the time of sampling it was not, based on aerial visual inspection, hydraulically connected to any major streams or distinct water bodies (Photo 8 and Photo 9). No odor or film was observed while sampling the lake.

Photo 8: Lake B8530, looking southeast toward the Colville East Channel; August 14, 2019

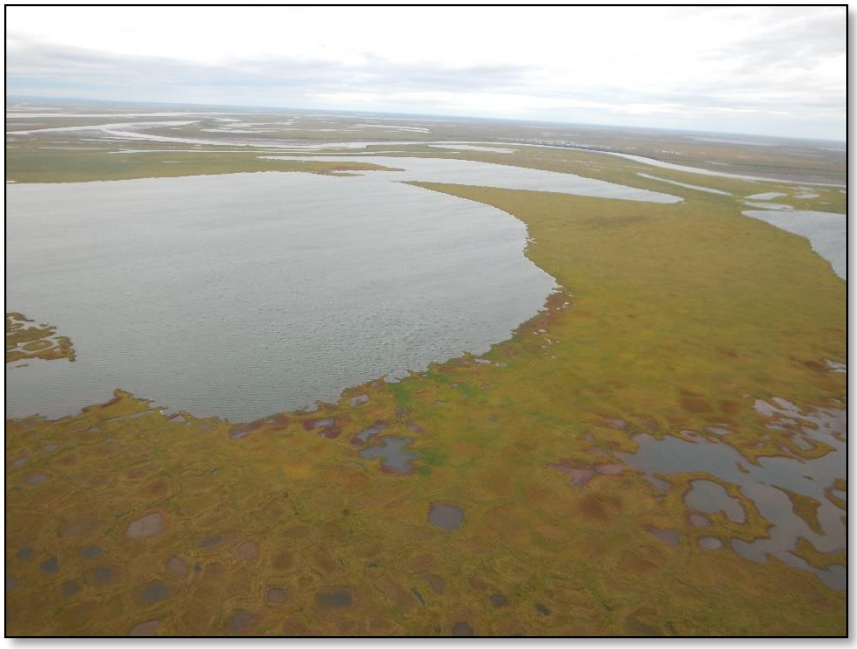

Photo 9: Lake B8530, looking southwest toward the Nigliq Channel/Nuiqsut; August 14, 2019

3.2. In-Situ Measurements

In-situ measurements were collected throughout the water column at the deepest part of each lake. Based on the relative homogeneity of results in all locations, the lakes were determined to be well-mixed at the time of sampling. The in-situ measurements for the water quality results are tabulated in Table 3.

Average turbidity for lakes L9323, L9324, M9313, B8530, and L9327 was 0.4 NTU, 2.9 NTU, 0.7 NTU, -0.1 NTU and 0.9 NTU respectively. Negative turbidity is typically traced to minute contamination of the zero calibration standard. According to the meter manufacturer, a used instrument can contaminate a zero standard to almost 1.0 NTU. The higher NTU value for Lake L9324 has been observed in previous years of sampling and is likely the result of the hydraulic connection to the South Paleo Lake and Sakoonang Channel during sampling.

Temperatures in all lakes ranged from a maximum of 10.5°C in Lake L9327 to a minimum of 9.4°C in Lake M9313. The temperature in all five lakes remained consistent with depth. Specific conductance was homogenous throughout the water column at all sample locations but was notably different between lakes. Specific conductance was 142 µS/cm in Lake L9323, 108 µS/cm in Lake L9324, 84 µS/cm in Lake 9327, and 81 µS/cm in Lake B8530. The highest specific conductance value was measured in Lake M9313, located nearest to the coast, at 613 µS/cm. Measured specific conductance values exceeding 500 µS/cm are indicative of saline environments which are regularly observed in lakes near the coast (ADF&G 2008).

Concentrations of DO were relatively homogenous throughout the water column at all sample locations. The average DO in Lake L9323 was 11.51 mg/L, in Lake L9324 was 11.81 mg/L, in Lake M9313 was 11.39mg/L, in Lake L9327 was 11.72 mg/L, and in Lake B8530 was 11.72 mg/L. A 100% saturation level is based on standard temperature and pressure conditions. The average percent-saturation in Lake L9323 was 101.9%, in Lake L9324 was 104.3%, in Lake M9313 was 99.7.0%, in Lake L9327 was 105.0%, and in Lake B8530 was 101.6%.

Salinity remained consistent with water column depth at all sampling locations. The greatest concentration was measured in Lake M9313 at 0.30 ppt, likely due to its coastal proximity. Lakes L9323, L9324, L9327, and B8530 had concentrations of 0.07 ppt, 0.05 ppt, 0.04 ppt, and 0.04 ppt, respectively.

Average pH was 8.0 in Lake L9323, 8.4 in Lake L9324, 8.0 in Lake M9313, 7.8 in Lake L9327 and 7.8 in Lake B8530. PH was relatively consistent with depth at all sampling locations.

Table 3: In-Situ Water Quality Results Summary

Lake, Location & Date/Time	Total Depth (ft)	Turbidity (NTU)	Depth (ft)	Temp (°C)	Conductivity (µS/cm)	Specific Conductance (µS/cm)	DO (mg/L)	DO (% Saturation)	Salinity (ppt)	pH SU
L9323 N70.2960° W150.9887° 8/15/19 3:40pm	15.0	0.4	2	10.0	100	142	11.50	102.0	0.07	8.0
			4	10.0	100	142	11.51	102.0	0.07	8.0
			6	10.0	100	142	11.50	101.9	0.07	8.0
			8	10.0	100	142	11.50	101.9	0.07	8.0
			10	10.0	100	142	11.51	101.8	0.07	8.0
			12	9.9	100	142	11.53	102.0	0.07	8.0
			14	9.9	99	140	11.53	102.0	0.07	7.9
L9324 N70.2902° W150.9827° 8/15/19 2:05pm	6.5	2.9	2	9.9	76	108	11.75	103.9	0.05	8.4
			3	9.9	76	108	11.80	104.4	0.05	8.3
			4	9.9	76	108	11.76	103.9	0.05	8.3
			5	9.9	76	108	11.82	104.4	0.05	8.4
			6	9.9	76	108	11.91	105.0	0.05	8.4
M9313 N70.4217° W150.8999° 8/15/19 9:55am	16.0	0.7	2	9.4	426	613	11.41	99.8	0.30	8.0
			4	9.4	426	613	11.41	99.9	0.30	8.0
			6	9.4	426	613	11.40	99.8	0.30	8.0
			8	9.4	425	612	11.40	99.7	0.30	8.0
			10	9.4	425	612	11.39	99.7	0.30	8.0
			12	9.4	425	612	11.39	99.7	0.30	8.0
			14	9.4	425	613	11.36	99.4	0.30	8.0
			15	9.4	425	613	11.40	99.6	0.30	8.0
L9327 N70.2618° W150.9090° 8/14/19 1:40pm	10.0	-0.1	2	10.5	60	84	11.49	102.9	0.04	7.8
			4	10.4	60	84	11.48	102.8	0.04	7.8
			6	10.4	60	84	11.46	102.6	0.04	7.8
			8	10.5	60	84	11.41	102.3	0.04	7.8
			9	10.5	61	85	12.75	114.2	0.04	7.7
B8530 N70.24882° W150.92331° 8/14/19 11:15am	16.0	0.9	2	10.3	58	81	11.41	101.8	0.04	7.9
			4	10.3	58	81	11.41	101.8	0.04	7.9
			6	10.3	58	81	11.90	101.7	0.04	7.9
			8	10.3	58	81	11.39	101.6	0.04	7.9
			10	10.3	58	81	11.39	101.6	0.04	7.9
			12	10.3	58	81	11.38	101.6	0.04	7.8
			14	10.3	58	81	11.37	101.4	0.04	7.7
			15	10.3	58	81	11.37	101.5	0.04	7.4

Notes:
(1) Sample depth is measured from the water surface.
(2) Turbidity, temperature, conductivity, dissolved oxygen, and salinity were measured using a YSI 650-6920V2 meter.
(3) Turbidity is presented as an average of the sampled values in the water column.
(4) Negative turbidity is typically traced to minute contamination of the zero calibration standard. According to the meter manufacturer, a used instrument can contaminate a zero standard to almost 1.0 NTU.
(5) Specific conductance (referenced to 25°C) was obtained using a conversion coefficient of 0.0196 based on empirical data.

3.3. Laboratory Analysis

Lakes L9327 and B8530 were sampled on August 14, 2019 and lakes L9323, L9324, and M9313 were sampled on August 15, 2019. All samples were analyzed using standard methods.

With the exception of barium and chromium, analytical results from both sampling events show that RCRA targeted metals were not detected above the laboratory detection limit. Barium was detected in all lakes at concentrations below the ADEC cleanup level of 2.0 mg/L. The highest measured concentration of barium was 0.205 mg/L in Lake M9313. Barium is not uncommon in arctic waters at concentrations similar to those measured at the three lakes (Guay and Falkner 1998). Chromium was detected in three lakes: L9323, L9324, and M9313, at concentrations below the ADEC cleanup level of 0.1 mg/L. The highest concentration of chromium was 0.013 mg/L and 0.014 mg/L detected in both samples from Lake L9324.

The DRO and RRO detected in lakes L9324, B8530, and L9327 were all at levels below ADEC cleanup limits. The DRO and RRO were not detected above the laboratory detection limit in lakes L9323 and M9313. The RRO were detected in only one of the two samples collected from Lake L9324. The DRO and RRO were detected in Lake B8530, and RRO were detected in Lake L9327.

Laboratory analytical results are presented in Table 4 and are provided in Appendix A.

Table 4: Laboratory Analytical Results Summary

Parameter	ADEC Cleanup Level[1]	Lake L9323	Lake L9324	Lake L9324 Duplicate	Lake M9313	Lake L9327	Lake B8530
	(mg/L)						
Arsenic	**0.01**	ND2	ND	ND	ND	ND	ND
Barium	**2**	0.058	0.063	0.065	0.205	0.069	0.055
Cadmium	**0.005**	ND	ND	ND	ND	ND	ND
Chromium	**0.1**	0.012	0.013	0.014	0.012	ND	ND
Lead	**0.015**	ND	ND	ND	ND	ND	ND
Mercury	**0.002**	ND	ND	ND	ND	ND	ND
Selenium	**0.05**	ND	ND	ND	ND	ND	ND
Silver	**0.1**	ND	ND	ND	ND	ND	ND
DRO (water)	**1.5**	ND	ND	ND	ND	ND	ND
RRO (water)	**1.1**	ND	ND	ND	ND	ND	0.34
DRO (silica gel)	**1.5**	ND	ND	ND	ND	ND	0.031
RRO (silica gel)	**1.1**	ND	0.48	ND	ND	0.12	0.24

Notes:
1. ADEC Water Quality Standards 18 AAC 75.345 Table C Groundwater Cleanup Waters (ADEC 2009)
2. ND indicates analyte was not detected above the laboratory detection limit

4. REFERENCES

Alaska Department of Environmental Conservation (ADEC). 2006. Biogenic Interference and Silica Gel Cleanup. Technical Memorandum – 06-001. Division of Spill Prevention and Response, Contaminated Sites Remediation Program.

——— 2009. Water Quality Standards. 18 AAC 70. Underground Storage Tanks Procedures. Division of Spill Prevention and Response, Contaminated Sites Remediation Program.

Alaska Department of Fish and Game (ADF&G). 2008. Fish Habitat Permit FH04-111-0135 Amendment #1.

Guay, C.K. and K.K. Falkner (Guay and Falkner). 1998. A Survey of Dissolved Barium in the Estuaries of Major Arctic Rivers and Adjacent Seas. *Continental Shelf Research* 18:8 859-882.

Michael Baker International (Michael Baker) 2019a. North Slope Water Resources 2019 Health, Safety, and Environment Plan. Prepared for ConocoPhillips Alaska, Inc.

——— 2019b. 2019 Summer Hydrology Monitoring Programs – Job Safety Analysis. Prepared for ConocoPhillips Alaska, Inc.

——— 2006. Colville River Ice Bridge Monitoring. April.

North Slope Borough (NSB). 2004 North Slope Borough Ordinance Serial No. 75-6-46

United States Army Corps of Engineers (USACE). 1987. Reservoir Water Quality Analysis. Engineering Manual EM- 1110-2-1201.

United States Environmental Protection Agency (EPA). 2006. 2006 Edition of the Drinking Water Standards and Health Advisories. EPA 822-R-06-013.

United States Geological Survey (USGS). 2006. National Field Manual for the Collection of Water-Quality Data. Book 9 Handbooks for Water-Resources Investigations. Chapter A4 Collection of Water Samples.

Ward, J.R. and C.A. Harr eds. 1990. Methods for Collection and Processing Surface-Water and Bed-Material Samples for Physical and Chemical Analyses. Open-File Report 90-147.

YSI Incorporated. 2012. YSI 6-Series Multiparameter Water Quality Sonde User Manual.

Appendix A. LABORATORY ANALYTICAL RESULTS

Arctic Fox Environmental, Inc.

PO Box 340043 | Prudhoe Bay, AK 99734 | PHONE: (907) 659-2145 | FAX: (907) 659-2146 | www.arcticfoxenv.com

Analytical Services Order and Chain of Custody Form

89613

0819-4170

Client Name and Address:
Michael Baker
3900 C St, Suite 900
Anchorage, AK 99503

Contact Person: Sara Erlund

Phone Number: 719-671-9233 Fax Number:

E-mail: serlund@ ~~michaelbaker~~ m.

Project Name:

Data Deliverables:
Level I ❑ Level II ❑ Level III ❑ EDD/Format:

Account Number:

P.O. or Contract Number:

Authorization Number:

Sampled By:

PWS Number:

Send Results to ADEC:
❑ YES ❑ No

Requested Turnaround Time and Special Instructions:

Client Sample ID	Date Sampled	Time Sampled	Matrix	AF Sample ID	Number of Containers	DRO/RRO	DRO/RRO (silica sel)	Total Metals					Preservative ← / Remarks
L9327	8.14.19	1340	L	AF68423	4	X	X	X					
B8530	8.14.19	1114	L	AF68424	4	X	X	X					

Relinquished By (1):	Date: 8.15.19	Time: 0830	Received By:
Relinquished By (2):	Date:	Time:	Received By:
Relinquished By (3):	Date:	Time:	Received for lab by:

TO BE COMPLETED BY LABORATORY

Location Received/ ANC ❑ _____ °C FBK ❑ _____ °C PB ❑ _____ °C
Temp on Arrival: 14.6°C

Chain of Custody Seal ❑ INTACT ❑ BROKEN ❑ ABSENT

Shipping Bill Number: _____

Arctic Fox Environmental, Inc.
PO Box 340043 | Prudhoe Bay, AK 99734 | PHONE: (907) 659-2145 | FAX: (907) 659-2146 | www.arcticfoxenv.com

Michael Baker International
3900 C St Ste 900
Anchorage, AK 99503

Attn: Sara Eklund
Phone: (719) 671-9233
Fax:
Email: seklund@mbakerintl.com

Report Date: 8/28/2019
Date Arrived: 8/15/2019
Date Sampled: 8/14/2019
Time Sampled: See Below
Collected By:

AF Lab #: AF68423-68424
Client Sample ID: See Below
Location/Project:
COC#: 89613
Sample Matrix: See Below

Comments: Attached are the results for analyses of your samples.
These samples were analyzed by Test America in Tacoma, Washington.
Tracking information is as follows:

Michael Baker Intl Sample ID: L9327
Analyses Requested: DRO/RRO, Total Metals
Arctic Fox ID: AF68423
Time Sampled: 1340
Matrix: Water
Test America Lab ID: 580-88437-1

Michael Baker Intl Sample ID: B8530
Analyses Requested: DRO/RRO, Total Metals
Arctic Fox ID: AF68424
Time Sampled: 1114
Matrix: Water
Test America Lab ID: 580-88437-2

Reported By: Ralph E. Allphin/Michael J. Hawley/Timothy D. Johnson
Arctic Fox Environmental, Inc.

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-88437-1
Client Project/Site: 0819-4170/Lake

For:
Arctic Fox Environmental, Inc
Pouch 340043
Prudhoe Bay, Alaska 99734

Attn: Arctic Fox

Authorized for release by:
8/22/2019 2:44:28 PM

Sheri Cruz, Project Manager I
(253)922-2310
sheri.cruz@testamericainc.com

Table of Contents

Job ID: 580-88437-1

Laboratory: Eurofins TestAmerica, Seattle

Narrative

Job Narrative
580-88437-1

Comments
No additional comments.

Receipt
The samples were received on 8/16/2019 12:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.2º C.

GC Semi VOA
Method(s) AK102 & 103: For AF68423-L9327 (580-88437-1) and AF68424-B8530 (580-88437-2), motor oil hits are due to discrete peaks within the range.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: Arctic Fox Environmental, Inc
Project/Site: 0819-4170/Lake

Job ID: 580-88437-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client: Arctic Fox Environmental, Inc
Project/Site: 0819-4170/Lake

Job ID: 580-88437-1

Client Sample ID: AF68423-L9327

Date Collected: 08/14/19 13:40
Date Received: 08/16/19 12:50

Lab Sample ID: 580-88437-1

Matrix: Water

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
RRO (nC25-nC36)	ND		0.28		mg/L		08/20/19 09:56	08/21/19 23:43	1
DRO (nC10-<nC25)	ND		0.12		mg/L		08/20/19 09:56	08/21/19 23:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*77*		*50 - 150*	*08/20/19 09:56*	*08/21/19 23:43*	*1*
n-Triacontane-d62	*97*		*50 - 150*	*08/20/19 09:56*	*08/21/19 23:43*	*1*

Method: AK102/103 - Diesel Range Organics & Residual Range Organics with Silica Gel Clean-Up

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	ND		0.031		mg/L		08/20/19 09:56	08/21/19 22:58	1
RRO (nC25-nC36)	**0.12**		0.070		mg/L		08/20/19 09:56	08/21/19 22:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*82*		*50 - 150*	*08/20/19 09:56*	*08/21/19 22:58*	*1*
n-Triacontane-d62	*93*		*50 - 150*	*08/20/19 09:56*	*08/21/19 22:58*	*1*

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050		mg/L		08/19/19 17:32	08/20/19 12:30	5
Barium	**0.069**		0.0060		mg/L		08/19/19 17:32	08/20/19 12:30	5
Cadmium	ND		0.0020		mg/L		08/19/19 17:32	08/20/19 12:30	5
Chromium	ND		0.0020		mg/L		08/19/19 17:32	08/20/19 12:30	5
Lead	ND		0.0040		mg/L		08/19/19 17:32	08/20/19 12:30	5
Selenium	ND		0.040		mg/L		08/19/19 17:32	08/20/19 12:30	5
Silver	ND		0.0020		mg/L		08/19/19 17:32	08/20/19 12:30	5

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00030		mg/L		08/21/19 09:09	08/21/19 16:45	1

Client: Arctic Fox Environmental, Inc
Project/Site: 0819-4170/Lake

Job ID: 580-88437-1

Client Sample ID: AF68424-B8530

Date Collected: 08/14/19 11:15
Date Received: 08/16/19 12:50

Lab Sample ID: 580-88437-2

Matrix: Water

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
RRO (nC25-nC36)	**0.34**		0.28		mg/L		08/20/19 09:56	08/22/19 00:05	1
DRO (nC10-<nC25)	ND		0.12		mg/L		08/20/19 09:56	08/22/19 00:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*81*		*50 - 150*	*08/20/19 09:56*	*08/22/19 00:05*	*1*
n-Triacontane-d62	*108*		*50 - 150*	*08/20/19 09:56*	*08/22/19 00:05*	*1*

Method: AK102/103 - Diesel Range Organics & Residual Range Organics with Silica Gel Clean-Up

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	**0.031**		0.031		mg/L		08/20/19 09:56	08/21/19 23:21	1
RRO (nC25-nC36)	**0.24**		0.070		mg/L		08/20/19 09:56	08/21/19 23:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*86*		*50 - 150*	*08/20/19 09:56*	*08/21/19 23:21*	*1*
n-Triacontane-d62	*108*		*50 - 150*	*08/20/19 09:56*	*08/21/19 23:21*	*1*

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050		mg/L		08/19/19 17:32	08/20/19 13:26	5
Barium	**0.055**		0.0060		mg/L		08/19/19 17:32	08/20/19 13:26	5
Cadmium	ND		0.0020		mg/L		08/19/19 17:32	08/20/19 13:26	5
Chromium	ND		0.0020		mg/L		08/19/19 17:32	08/20/19 13:26	5
Lead	ND		0.0040		mg/L		08/19/19 17:32	08/20/19 13:26	5
Selenium	ND		0.040		mg/L		08/19/19 17:32	08/20/19 13:26	5
Silver	ND		0.0020		mg/L		08/19/19 17:32	08/20/19 13:26	5

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00030		mg/L		08/21/19 09:09	08/21/19 16:52	1

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Lab Sample ID: MB 580-308826/1-A
Matrix: Water
Analysis Batch: 309026

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 308826

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
RRO (nC25-nC36)	ND		0.063		mg/L		08/20/19 09:56	08/21/19 21:52	1
DRO (nC10-<nC25)	ND		0.028		mg/L		08/20/19 09:56	08/21/19 21:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*78*		*50 - 150*	*08/20/19 09:56*	*08/21/19 21:52*	*1*
n-Triacontane-d62	*81*		*50 - 150*	*08/20/19 09:56*	*08/21/19 21:52*	*1*

Lab Sample ID: LCS 580-308826/2-A
Matrix: Water
Analysis Batch: 309026

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 308826

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
RRO (nC25-nC36)	0.500	0.525		mg/L		105	60 - 120
DRO (nC10-<nC25)	0.500	0.398		mg/L		80	75 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*90*		*50 - 150*
n-Triacontane-d62	*84*		*50 - 150*

Lab Sample ID: LCSD 580-308826/3-A
Matrix: Water
Analysis Batch: 309026

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 308826

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
RRO (nC25-nC36)	0.500	0.550		mg/L		110	60 - 120	5	20
DRO (nC10-<nC25)	0.500	0.427		mg/L		85	75 - 125	7	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl	*99*		*50 - 150*
n-Triacontane-d62	*87*		*50 - 150*

Method: AK102/103 - Diesel Range Organics & Residual Range Organics with Silica Gel Clean-Up

Lab Sample ID: MB 580-308826/1-B
Matrix: Water
Analysis Batch: 309026

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 308826

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
RRO (nC25-nC36)	ND		0.063		mg/L		08/20/19 09:56	08/21/19 20:46	1
DRO (nC10-<nC25)	ND		0.028		mg/L		08/20/19 09:56	08/21/19 20:46	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*80*		*50 - 150*	*08/20/19 09:56*	*08/21/19 20:46*	*1*
n-Triacontane-d62	*83*		*50 - 150*	*08/20/19 09:56*	*08/21/19 20:46*	*1*

Method: AK102/103 - Diesel Range Organics & Residual Range Organics with Silica Gel Clean-Up (Continued)

Lab Sample ID: LCS 580-308826/2-B
Matrix: Water
Analysis Batch: 309026

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 308826

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
RRO (nC25-nC36)	0.500	0.540		mg/L		108	60 - 120
DRO (nC10-<nC25)	0.500	0.407		mg/L		81	75 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*96*		*50 - 150*
n-Triacontane-d62	*90*		*50 - 150*

Lab Sample ID: LCSD 580-308826/3-B
Matrix: Water
Analysis Batch: 309026

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 308826

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
RRO (nC25-nC36)	0.500	0.583		mg/L		117	60 - 120	8	20
DRO (nC10-<nC25)	0.500	0.445		mg/L		89	75 - 125	9	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl	*104*		*50 - 150*
n-Triacontane-d62	*93*		*50 - 150*

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 580-308768/24-A
Matrix: Water
Analysis Batch: 308916

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 308768

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010		mg/L		08/19/19 17:32	08/20/19 12:26	1
Barium	ND		0.0012		mg/L		08/19/19 17:32	08/20/19 12:26	1
Cadmium	ND		0.00040		mg/L		08/19/19 17:32	08/20/19 12:26	1
Chromium	ND		0.00040		mg/L		08/19/19 17:32	08/20/19 12:26	1
Lead	ND		0.00080		mg/L		08/19/19 17:32	08/20/19 12:26	1
Selenium	ND		0.0080		mg/L		08/19/19 17:32	08/20/19 12:26	1
Silver	ND		0.00040		mg/L		08/19/19 17:32	08/20/19 12:26	1

Lab Sample ID: LCS 580-308768/25-A
Matrix: Water
Analysis Batch: 308916

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 308768

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	0.951		mg/L		95	80 - 120
Barium	1.00	0.988		mg/L		99	80 - 120
Cadmium	1.00	0.977		mg/L		98	80 - 120
Chromium	1.00	0.945		mg/L		94	80 - 120
Lead	1.00	0.968		mg/L		97	80 - 120
Selenium	1.00	0.953		mg/L		95	80 - 120
Silver	1.00	0.926		mg/L		93	80 - 120

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCSD 580-308768/26-A
Matrix: Water
Analysis Batch: 308916

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 308768

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic			1.00	0.956		mg/L		96	80 - 120	1	20
Barium			1.00	0.989		mg/L		99	80 - 120	0	20
Cadmium			1.00	0.995		mg/L		99	80 - 120	2	20
Chromium			1.00	0.965		mg/L		96	80 - 120	2	20
Lead			1.00	0.984		mg/L		98	80 - 120	2	20
Selenium			1.00	0.978		mg/L		98	80 - 120	3	20
Silver			1.00	0.932		mg/L		93	80 - 120	1	20

Lab Sample ID: 580-88437-1 MS
Matrix: Water
Analysis Batch: 308916

Client Sample ID: AF68423-L9327
Prep Type: Total Recoverable
Prep Batch: 308768

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Arsenic	ND		1.00	0.927		mg/L		93	80 - 120		
Barium	0.069		1.00	1.04		mg/L		97	80 - 120		
Cadmium	ND		1.00	0.975		mg/L		98	80 - 120		
Chromium	ND		1.00	0.951		mg/L		95	80 - 120		
Lead	ND		1.00	0.972		mg/L		97	80 - 120		
Selenium	ND		1.00	0.958		mg/L		96	80 - 120		
Silver	ND		1.00	0.949		mg/L		95	80 - 120		

Lab Sample ID: 580-88437-1 MSD
Matrix: Water
Analysis Batch: 308916

Client Sample ID: AF68423-L9327
Prep Type: Total Recoverable
Prep Batch: 308768

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	ND		1.00	0.933		mg/L		93	80 - 120	1	20
Barium	0.069		1.00	1.02		mg/L		95	80 - 120	2	20
Cadmium	ND		1.00	0.973		mg/L		97	80 - 120	0	20
Chromium	ND		1.00	0.923		mg/L		92	80 - 120	3	20
Lead	ND		1.00	0.978		mg/L		98	80 - 120	1	20
Selenium	ND		1.00	0.957		mg/L		96	80 - 120	0	20
Silver	ND		1.00	0.946		mg/L		95	80 - 120	0	20

Lab Sample ID: 580-88437-1 DU
Matrix: Water
Analysis Batch: 308916

Client Sample ID: AF68423-L9327
Prep Type: Total Recoverable
Prep Batch: 308768

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Arsenic	ND			ND		mg/L				NC	20
Barium	0.069			0.0708		mg/L				2	20
Cadmium	ND			ND		mg/L				NC	20
Chromium	ND			ND		mg/L				NC	20
Lead	ND			ND		mg/L				NC	20
Selenium	ND			ND		mg/L				NC	20
Silver	ND			ND		mg/L				NC	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 580-308930/10-A
Matrix: Water
Analysis Batch: 309031

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 308930

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00030		mg/L		08/21/19 09:09	08/21/19 15:58	1

Lab Sample ID: LCS 580-308930/11-A
Matrix: Water
Analysis Batch: 309031

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 308930

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.00200	0.00199		mg/L		100	80 - 120		

Lab Sample ID: LCSD 580-308930/12-A
Matrix: Water
Analysis Batch: 309031

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 308930

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury			0.00200	0.00203		mg/L		102	80 - 120	2	20

Lab Sample ID: 580-88266-A-1-C MS
Matrix: Water
Analysis Batch: 309031

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 308930

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	ND		0.00200	0.00181		mg/L		90	80 - 120		

Lab Sample ID: 580-88266-A-1-D MSD
Matrix: Water
Analysis Batch: 309031

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 308930

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		0.00200	0.00204		mg/L		102	80 - 120	12	20

Lab Sample ID: 580-88266-A-1-B DU
Matrix: Water
Analysis Batch: 309031

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 308930

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Mercury	ND		ND		mg/L		NC	20

Lab Chronicle

Client: Arctic Fox Environmental, Inc
Project/Site: 0819-4170/Lake

Job ID: 580-88437-1

Client Sample ID: AF68423-L9327

Lab Sample ID: 580-88437-1

Date Collected: 08/14/19 13:40

Matrix: Water

Date Received: 08/16/19 12:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			308826	08/20/19 09:56	T1L	TAL SEA
Total/NA	Analysis	AK102 & 103		1	309026	08/21/19 23:43	JCM	TAL SEA
Total/NA	Prep	3510C			308826	08/20/19 09:56	T1L	TAL SEA
Total/NA	Cleanup	3630C			308910	08/20/19 18:00	T1L	TAL SEA
Total/NA	Analysis	AK102/103		1	309026	08/21/19 22:58	JCM	TAL SEA
Total Recoverable	Prep	3005A			308768	08/19/19 17:32	T1H	TAL SEA
Total Recoverable	Analysis	6020A		5	308916	08/20/19 12:30	FCW	TAL SEA
Total/NA	Prep	7470A			308930	08/21/19 09:09	ART	TAL SEA
Total/NA	Analysis	7470A		1	309031	08/21/19 16:45	T1H	TAL SEA

Client Sample ID: AF68424-B8530

Lab Sample ID: 580-88437-2

Date Collected: 08/14/19 11:15

Matrix: Water

Date Received: 08/16/19 12:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			308826	08/20/19 09:56	T1L	TAL SEA
Total/NA	Analysis	AK102 & 103		1	309026	08/22/19 00:05	JCM	TAL SEA
Total/NA	Prep	3510C			308826	08/20/19 09:56	T1L	TAL SEA
Total/NA	Cleanup	3630C			308910	08/20/19 18:00	T1L	TAL SEA
Total/NA	Analysis	AK102/103		1	309026	08/21/19 23:21	JCM	TAL SEA
Total Recoverable	Prep	3005A			308768	08/19/19 17:32	T1H	TAL SEA
Total Recoverable	Analysis	6020A		5	308916	08/20/19 13:26	FCW	TAL SEA
Total/NA	Prep	7470A			308930	08/21/19 09:09	ART	TAL SEA
Total/NA	Analysis	7470A		1	309031	08/21/19 16:52	T1H	TAL SEA

Laboratory References:

TAL SEA = Eurofins TestAmerica, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Arctic Fox Environmental, Inc
Project/Site: 0819-4170/Lake

Job ID: 580-88437-1

Laboratory: Eurofins TestAmerica, Seattle

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-024	01-19-22
Alaska (UST)	State Program	17-024	01-19-20
ANAB	Dept. of Defense ELAP	L2236	01-19-22
ANAB	DoD	L2236	01-19-22
ANAB	ISO/IEC 17025	L2236	01-19-22
ANAB	ISO/IEC 17025	L2236	01-19-22
California	State	2901	11-05-19
California	State Program	2901	11-05-19
Montana (UST)	State Program	N/A	04-30-20
Oregon	NELAP	WA100007	11-05-19
Oregon	NELAP	WA100007	11-05-19
US Fish & Wildlife	Federal	LE058448-0	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	Federal	P330-14-00126	02-10-20
USDA	US Federal Programs	P330-17-00039	02-10-20
Washington	State	C553	02-17-20
Washington	State Program	C553	02-17-20

Sample Summary

Client: Arctic Fox Environmental, Inc
Project/Site: 0819-4170/Lake

Job ID: 580-88437-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-88437-1	AF68423-L9327	Water	08/14/19 13:40	08/16/19 12:50	
580-88437-2	AF68424-B8530	Water	08/14/19 11:15	08/16/19 12:50	

TestAmerica Seattle
5755 8th Street East

Tacoma, WA 98424
phone 253.922.2310 fax 253.922.5047

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Tim Johnson/ Kels Caskey	Site Contact: Tim J. / Kels C.	Date: 8.15.19	COC No: 89613
Arctic Fox Environmental	Tel/Fax: 907-659-2145	Lab Contact: Tim J. / Kels C.	Carrier: —	1 of 1 COCs
Pouch 340043	**Analysis Turnaround Time**			Sampler: —
Prudhoe Bay, AK 99734	☑ CALENDAR DAYS ☐ WORKING DAYS			**For Lab Use Only:**
Phone 907-659-2145	TAT if different from Below _____			Walk-in Client: No
FAX 907-659-2146	☐ 2 weeks			Lab Sampling: No
Project Name: Lake	☒ 1 week std			
Site:	☐ 2 days			Job / SDG No.:
PO# 0819-4170	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	DRO/RRO	DRO/RRO (silica gel)	Total Metals	Sample Specific Notes:
AF68423 - L9327 mc	8.14.19	1340		L	4			X	X	X	
AF68424 - 88530	↓	1115		L	4			X	X	X	
								2	2	4	

580-88437 Chain of Custody

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab

Therm. ID: IR2 Cor: 0.2 ° Unc: 0.5 °
Cooler Dsc: Lrg Blue
Packing: Bubble FedEx: _____
Cust. Seal: Yes X No ____ UPS: _____
(Blue Ice), Wet, Dry, None Lab Cour: _____
Other: 6.5

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arctic Fox Env.	8.15.19 1300			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [signature]	Company: SRM TM	Date/Time: 8/16/19 1250

Login Sample Receipt Checklist

Client: Arctic Fox Environmental, Inc

Job Number: 580-88437-1

Login Number: 88437
List Number: 1
Creator: Harris, Terrence C

List Source: Eurofins TestAmerica, Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Arctic Fox Environmental, Inc.
PO Box 340043 | Prudhoe Bay, AK 99734 | PHONE: (907) 659-2145 | arcticfox@astacalaska.com | www.arcticfoxenv.com

DOC 3.2.1-02 Sample Receiving Checklist

Client Name: Michael Baker Date and Time: 8.14.19 0830

Project: Lake

AF# 68423 68424 Initials: KSC

Cooler #(s) –

Temp. 14.6°C I.R. Gun: 8178 Traceable Thermometer: 111898870

DW Temp > 6° C N Env Waste Sample N

Other Temp >10° C X Within 4 hrs of sample time N

N/A	Yes	No	
		X	1. Were temp blanks received?
X			2. Cooler Seals intact? (N/A if hand delivered.)
	X		3. Chain of Custody present?
	X		4. Did C.O.C. agree with samples received?
	X		5. Was C.O.C completely filled out by client?
	X		6. Bottles received intact?
	X		7. Proper Container and preservatives used?
	X		8. Sufficient volume provided for analysis?
	X		9. Sample is not multiphasic?
X			10. Were VOA samples without headspace?
X			11. Were VOA vials preserved? Preservative _____
		X	12. Did samples require preservation with sodium thiosulfate?
X			13. If "Yes" for # 12, is was there a residual chlorine recorded?
	X		14. Are samples with short holding times for analysis received within hold?
	X		15. Was standard turn around (TAT) requested? TAT _____

Record Discrepancies:

Arctic Fox Environmental, Inc.
Pouch 340043 | Prudhoe Bay, AK 99734 | Phone (907) 659-2145 | Fax (907) 659-2146
arcticfox@astacalaska.com | www.arcticfoxenv.com

Analytical Services Order and Chain of Custody Form

~~01252019-04~~
08152019-01

0819-4173

Client Name and Address: Michael Baker International 3900 C St. Suite 900 Anchorage, AK 99503 Contact Person: Haley Runa			Account Number:		HCl						Preservative ←
			P.O. or Contract Number: 173937 Authorization Number:	Number of Containers	DRO/RRO 1L amber glass	DRO/RRO silica gel 250mL amber glass	Total RCRA 8 metals 250mL HDPE				
Phone Number: 907.351.2372 Fax Number:			Sampled By: Kieran Braun								
Email: haley.runa@mbakerintl.com			PWS Number:								
Project Name: CPAI ASDP WQ											
Data Deliverables: Level I ❑ Level II ❑ Level III ❑ EDD/Format:			Send Results to ADEC: ❑ YES ☒ No								
Requested Turnaround Time and Special Instructions: 48-hour hold time limit											
Client Sample ID	**Date Sampled**	**Time Sampled**	**Matrix**	**AF Sample ID**							Remarks
M9313	8/15/19	1000	H2O	AF 68439	4	1	2	1			
L9323	8/15/19	1540	H2O	AF 68440	4	1	2	1			
L9324	8/15/19	1440	H2O	AF 68441	4	1	2	1			
Duplicate L9324	8/15/19	1405	H2O	AF 68442	4	1	2	1			
Exp fee											

see field notes for sample times

Relinquished By (1): Haley Runa	Date: 8/16/19	Time: 5:55pm	Received By:
Relinquished By (2):	Date:	Time:	Received By:
Relinquished By (3):	Date:	Time:	Received for lab by:

TO BE COMPLETED BY LABORATORY

Temp on Arrival: 5.9 °C 8178

Security Seal ❑ INTACT ❑ BROKEN ❑ ABSENT

Shipping Bill Number: _____

Arctic Fox Environmental, Inc.
PO Box 340043 | Prudhoe Bay, AK 99734 | PHONE: (907) 659-2145 | FAX: (907) 659-2146 | www.arcticfoxenv.com

Michael Baker International
3900 C St Ste 900
Anchorage, AK 99503

Attn: Haley Runa
Phone: 907-351-2372
Fax:
Email: haley.runa@mbakerintl.com

Report Date: 8/28/2019
Date Arrived: 8/16/2019
Date Sampled: 8/15/2019
Time Sampled: 1000
Collected By: KB

AF Lab #: AF68439
Michael Baker Intl Sample ID: M9313
Location/Project: CPAI ASDP WQ
COC#: 08152019-01
Sample Matrix: Water
Test America Lab ID: 580-88501-1
Analyses Requested: DRO/RRO

Comments: Attached are the results for analyses of your samples.
These samples were analyzed by Test America in Tacoma, Washington.
Tracking information is as follows:

Parameter	Result	Units	RL	RCRA Limits	Flag	Analysis Method	Analysis Date
6020A Total Metals							
Arsenic	<MRL	mg/l	0.010			6020A	8/21/2019
Barium	0.205	mg/l	0.050			6020A	
Cadmium	<MRL	mg/l	0.004			6020A	
Chromium	0.012	mg/l	0.010			6020A	
Lead	<MRL	mg/l	0.008			6020A	
Mercury	<MRL	mg/l	0.003			6020A	
Selenium	<MRL	mg/l	0.080			6020A	
Silver	<MRL	mg/l	0.010			6020A	

Tim D Johnson
Tim D Johnson

Reported by: Ralph E. Allphin / Timothy D. Johnson / Kels J. Caskey
Arctic Fox Environmental, Inc.

Arctic Fox Environmental, Inc.
PO Box 340043 | Prudhoe Bay, AK 99734 | PHONE: (907) 659-2145 | FAX: (907) 659-2146 | www.arcticfoxenv.com

Michael Baker International
3900 C St Ste 900
Anchorage, AK 99503

Attn: Haley Runa
Phone: 907-351-2372
Fax:
Email: haley.runa@mbakerintl.com

Report Date: 8/28/2019
Date Arrived: 8/16/2019
Date Sampled: 8/15/2019
Time Sampled: 1540
Collected By: KB

AF Lab #: AF68440
Michael Baker Intl Sample ID: L9323
Location/Project: CPAI ASDP WQ
COC#: 08152019-01
Sample Matrix: Water
Test America Lab ID: 580-88501-2
Analyses Requested: DRO/RRO

Comments: Attached are the results for analyses of your samples.
These samples were analyzed by Test America in Tacoma, Washington.
Tracking information is as follows:

Parameter	Result	Units	RL	RCRA Limits	Flag	Analysis Method	Analysis Date
6020A Total Metals							
Arsenic	<MRL	mg/l	0.010			6020A	8/21/2019
Barium	0.058	mg/l	0.050			6020A	
Cadmium	<MRL	mg/l	0.004			6020A	
Chromium	0.012	mg/l	0.010			6020A	
Lead	<MRL	mg/l	0.008			6020A	
Mercury	<MRL	mg/l	0.003			6020A	
Selenium	<MRL	mg/l	0.080			6020A	
Silver	<MRL	mg/l	0.010			6020A	

Tim D Johnson
Tim D Johnson

Reported by: Ralph E. Allphin / Timothy D. Johnson / Kels J. Caskey
Arctic Fox Environmental, Inc.

Arctic Fox Environmental, Inc.
PO Box 340043 | Prudhoe Bay, AK 99734 | PHONE: (907) 659-2145 | FAX: (907) 659-2146 | www.arcticfoxenv.com

Michael Baker International
3900 C St Ste 900
Anchorage, AK 99503

Attn: Haley Runa
Phone: 907-351-2372
Fax:
Email: haley.runa@mbakerintl.com

Report Date: 8/28/2019
Date Arrived: 8/16/2019
Date Sampled: 8/15/2019
Time Sampled: 1400
Collected By: KB

AF Lab #: AF68441
Michael Baker Intl Sample ID: L9324
Location/Project: CPAI ASDP WQ
COC#: 08152019-01
Sample Matrix: Water
Test America Lab ID: 580-88501-3
Analyses Requested: DRO/RRO

Comments: Attached are the results for analyses of your samples.
These samples were analyzed by Test America in Tacoma, Washington.
Tracking information is as follows:

Parameter	Result	Units	RL	RCRA Limits	Flag	Analysis Method	Analysis Date
6020A Total Metals							
Arsenic	<MRL	mg/l	0.010			6020A	8/21/2019
Barium	0.063	mg/l	0.050			6020A	
Cadmium	<MRL	mg/l	0.004			6020A	
Chromium	0.013	mg/l	0.010			6020A	
Lead	<MRL	mg/l	0.008			6020A	
Mercury	<MRL	mg/l	0.003			6020A	
Selenium	<MRL	mg/l	0.080			6020A	
Silver	<MRL	mg/l	0.010			6020A	

Tim D Johnson
Tim D Johnson

Reported by: Ralph E. Allphin / Timothy D. Johnson / Kels J. Caskey
Arctic Fox Environmental, Inc.

Arctic Fox Environmental, Inc.
PO Box 340043 | Prudhoe Bay, AK 99734 | PHONE: (907) 659-2145 | FAX: (907) 659-2146 | www.arcticfoxenv.com

Michael Baker International
3900 C St Ste 900
Anchorage, AK 99503

Attn: Haley Runa
Phone: 907-351-2372
Fax:
Email: haley.runa@mbakerintl.com

Report Date: 8/28/2019
Date Arrived: 8/16/2019
Date Sampled: 8/15/2019
Time Sampled: 1405
Collected By: KB

AF Lab #: AF68442
Michael Baker Intl Sample ID: L9324 Dup
Location/Project: CPAI ASDP WQ
COC#: 08152019-01
Sample Matrix: Water
Test America Lab ID: 580-88501-4
Analyses Requested: DRO/RRO

Comments: Attached are the results for analyses of your samples.
These samples were analyzed by Test America in Tacoma, Washington.
Tracking information is as follows:

Parameter	Result	Units	RL	RCRA Limits	Flag	Analysis Method	Analysis Date
6020A Total Metals							
Arsenic	<MRL	mg/l	0.010			6020A	8/21/2019
Barium	0.065	mg/l	0.050			6020A	
Cadmium	<MRL	mg/l	0.004			6020A	
Chromium	0.014	mg/l	0.010			6020A	
Lead	<MRL	mg/l	0.008			6020A	
Mercury	<MRL	mg/l	0.003			6020A	
Selenium	<MRL	mg/l	0.080			6020A	
Silver	<MRL	mg/l	0.010			6020A	

Tim D Johnson
Tim D Johnson

Reported by: Ralph E. Allphin / Timothy D. Johnson / Kels J. Caskey
Arctic Fox Environmental, Inc.

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-88501-1
Client Project/Site: 0819-4173/CPAI ASDP WQ

For:
Arctic Fox Environmental, Inc
Pouch 340043
Prudhoe Bay, Alaska 99734

Attn: Arctic Fox

Authorized for release by:
8/26/2019 5:08:33 PM

Sheri Cruz, Project Manager I
(253)922-2310
sheri.cruz@testamericainc.com

Table of Contents

Client: Arctic Fox Environmental, Inc
Project/Site: 0819-4173/CPAI ASDP WQ

Job ID: 580-88501-1

Job ID: 580-88501-1

Laboratory: Eurofins TestAmerica, Seattle

Narrative

Job Narrative
580-88501-1

Comments
No additional comments.

Receipt
The samples were received on 8/19/2019 1:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.0º C.

Receipt Exceptions
The reference method requires samples to be preserved to a pH of <2. The following samples were received with insufficient preservation: AF68439-M9313 (580-88501-1), AF68440-L9323 (580-88501-2), AF68441-L9324 (580-88501-3) and AF68442-L9324 DUP (580-88501-4). The sample(s) was preserved to the appropriate pH in the laboratory.

GC Semi VOA
Method(s) AK102 & 103: Detected hydrocarbons appear to be due to an individual peak, not a typical hydrocarbon pattern. AF68441-L9324 (580-88501-3)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: Arctic Fox Environmental, Inc
Project/Site: 0819-4173/CPAI ASDP WQ

Job ID: 580-88501-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client: Arctic Fox Environmental, Inc
Project/Site: 0819-4173/CPAI ASDP WQ

Job ID: 580-88501-1

Client Sample ID: AF68439-M9313
Date Collected: 08/15/19 10:00
Date Received: 08/19/19 13:30

Lab Sample ID: 580-88501-1
Matrix: Water

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.28		mg/L		08/23/19 14:12	08/24/19 19:36	1
Residual Range Organics (RRO) (C25-C36)	ND		0.44		mg/L		08/23/19 14:12	08/24/19 19:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*84*		*50 - 150*	*08/23/19 14:12*	*08/24/19 19:36*	*1*
n-Triacontane-d62	*73*		*50 - 150*	*08/23/19 14:12*	*08/24/19 19:36*	*1*

Method: AK102/103 - Diesel Range Organics & Residual Range Organics with Silica Gel Clean-Up

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.28		mg/L		08/23/19 14:12	08/24/19 15:17	1
Residual Range Organics (RRO) (C25-C36)	ND		0.44		mg/L		08/23/19 14:12	08/24/19 15:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*77*		*50 - 150*	*08/23/19 14:12*	*08/24/19 15:17*	*1*
n-Triacontane-d62	*76*		*50 - 150*	*08/23/19 14:12*	*08/24/19 15:17*	*1*

Client: Arctic Fox Environmental, Inc
Project/Site: 0819-4173/CPAI ASDP WQ

Job ID: 580-88501-1

Client Sample ID: AF68440-L9323
Date Collected: 08/15/19 15:40
Date Received: 08/19/19 13:30

Lab Sample ID: 580-88501-2
Matrix: Water

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.27		mg/L		08/23/19 14:12	08/24/19 19:56	1
Residual Range Organics (RRO) (C25-C36)	ND		0.43		mg/L		08/23/19 14:12	08/24/19 19:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*82*		*50 - 150*	*08/23/19 14:12*	*08/24/19 19:56*	*1*
n-Triacontane-d62	*71*		*50 - 150*	*08/23/19 14:12*	*08/24/19 19:56*	*1*

Method: AK102/103 - Diesel Range Organics & Residual Range Organics with Silica Gel Clean-Up

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.27		mg/L		08/23/19 14:12	08/24/19 15:38	1
Residual Range Organics (RRO) (C25-C36)	ND		0.43		mg/L		08/23/19 14:12	08/24/19 15:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*85*		*50 - 150*	*08/23/19 14:12*	*08/24/19 15:38*	*1*
n-Triacontane-d62	*73*		*50 - 150*	*08/23/19 14:12*	*08/24/19 15:38*	*1*

Client: Arctic Fox Environmental, Inc
Project/Site: 0819-4173/CPAI ASDP WQ

Job ID: 580-88501-1

Client Sample ID: AF68441-L9324
Date Collected: 08/15/19 14:00
Date Received: 08/19/19 13:30

Lab Sample ID: 580-88501-3
Matrix: Water

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.28		mg/L		08/23/19 14:12	08/24/19 20:35	1
Residual Range Organics (RRO) (C25-C36)	ND		0.45		mg/L		08/23/19 14:12	08/24/19 20:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*79*		*50 - 150*	*08/23/19 14:12*	*08/24/19 20:35*	*1*
n-Triacontane-d62	*69*		*50 - 150*	*08/23/19 14:12*	*08/24/19 20:35*	*1*

Method: AK102/103 - Diesel Range Organics & Residual Range Organics with Silica Gel Clean-Up

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.28		mg/L		08/23/19 14:12	08/24/19 15:57	1
Residual Range Organics (RRO) (C25-C36)	**0.48**		0.45		mg/L		08/23/19 14:12	08/24/19 15:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*83*		*50 - 150*	*08/23/19 14:12*	*08/24/19 15:57*	*1*
n-Triacontane-d62	*86*		*50 - 150*	*08/23/19 14:12*	*08/24/19 15:57*	*1*

Client: Arctic Fox Environmental, Inc
Project/Site: 0819-4173/CPAI ASDP WQ

Job ID: 580-88501-1

Client Sample ID: AF68442-L9324 DUP

Lab Sample ID: 580-88501-4

Date Collected: 08/15/19 14:05

Matrix: Water

Date Received: 08/19/19 13:30

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.29		mg/L		08/23/19 14:12	08/24/19 20:55	1
Residual Range Organics (RRO) (C25-C36)	ND		0.46		mg/L		08/23/19 14:12	08/24/19 20:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*82*		*50 - 150*	*08/23/19 14:12*	*08/24/19 20:55*	*1*
n-Triacontane-d62	*68*		*50 - 150*	*08/23/19 14:12*	*08/24/19 20:55*	*1*

Method: AK102/103 - Diesel Range Organics & Residual Range Organics with Silica Gel Clean-Up

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.29		mg/L		08/23/19 14:12	08/24/19 16:17	1
Residual Range Organics (RRO) (C25-C36)	ND		0.46		mg/L		08/23/19 14:12	08/24/19 16:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*87*		*50 - 150*	*08/23/19 14:12*	*08/24/19 16:17*	*1*
n-Triacontane-d62	*78*		*50 - 150*	*08/23/19 14:12*	*08/24/19 16:17*	*1*

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Lab Sample ID: MB 590-23747/1-A
Matrix: Water
Analysis Batch: 23759

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 23747

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.25		mg/L		08/23/19 14:12	08/24/19 16:57	1
Residual Range Organics (RRO) (C25-C36)	ND		0.40		mg/L		08/23/19 14:12	08/24/19 16:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*79*		*50 - 150*	*08/23/19 14:12*	*08/24/19 16:57*	*1*
n-Triacontane-d62	*67*		*50 - 150*	*08/23/19 14:12*	*08/24/19 16:57*	*1*

Lab Sample ID: LCS 590-23747/2-A
Matrix: Water
Analysis Batch: 23759

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 23747

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics (DRO) (C10-C25)	1.60	1.81		mg/L		113	75 - 125
Residual Range Organics (RRO) (C25-C36)	1.60	1.76		mg/L		110	60 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*96*		*50 - 150*
n-Triacontane-d62	*93*		*50 - 150*

Lab Sample ID: LCSD 590-23747/3-A
Matrix: Water
Analysis Batch: 23759

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 23747

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics (DRO) (C10-C25)	1.60	1.59		mg/L		99	75 - 125	13	20
Residual Range Organics (RRO) (C25-C36)	1.60	1.62		mg/L		101	60 - 120	8	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl	*86*		*50 - 150*
n-Triacontane-d62	*84*		*50 - 150*

Method: AK102/103 - Diesel Range Organics & Residual Range Organics with Silica Gel Clean-Up

Lab Sample ID: MB 590-23747/1-B
Matrix: Water
Analysis Batch: 23759

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 23747

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (DRO) (C10-C25)	ND		0.25		mg/L		08/23/19 14:12	08/24/19 14:18	1
Residual Range Organics (RRO) (C25-C36)	ND		0.40		mg/L		08/23/19 14:12	08/24/19 14:18	1

Method: AK102/103 - Diesel Range Organics & Residual Range Organics with Silica Gel Clean-Up (Continued)

Lab Sample ID: MB 590-23747/1-B
Matrix: Water
Analysis Batch: 23759

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 23747

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	94		50 - 150	08/23/19 14:12	08/24/19 14:18	1
n-Triacontane-d62	86		50 - 150	08/23/19 14:12	08/24/19 14:18	1

Lab Sample ID: LCS 590-23747/2-B
Matrix: Water
Analysis Batch: 23759

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 23747

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics (DRO) (C10-C25)	1.60	1.69		mg/L		106	75 - 125
Residual Range Organics (RRO) (C25-C36)	1.60	1.79		mg/L		112	60 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	92		50 - 150
n-Triacontane-d62	96		50 - 150

Lab Sample ID: LCSD 590-23747/3-B
Matrix: Water
Analysis Batch: 23759

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 23747

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics (DRO) (C10-C25)	1.60	1.69		mg/L		106	75 - 125	0	20
Residual Range Organics (RRO) (C25-C36)	1.60	1.83		mg/L		115	60 - 120	2	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
o-Terphenyl	93		50 - 150
n-Triacontane-d62	96		50 - 150

Lab Chronicle

Client: Arctic Fox Environmental, Inc
Project/Site: 0819-4173/CPAI ASDP WQ

Job ID: 580-88501-1

Client Sample ID: AF68439-M9313
Date Collected: 08/15/19 10:00
Date Received: 08/19/19 13:30

Lab Sample ID: 580-88501-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			23747	08/23/19 14:12	AMB	TAL SPK
Total/NA	Analysis	AK102 & 103		1	23759	08/24/19 19:36	NMI	TAL SPK
Total/NA	Prep	3510C			23747	08/23/19 14:12	AMB	TAL SPK
Total/NA	Cleanup	3630C			23757	08/23/19 14:12	NMI	TAL SPK
Total/NA	Analysis	AK102/103		1	23759	08/24/19 15:17	NMI	TAL SPK

Client Sample ID: AF68440-L9323
Date Collected: 08/15/19 15:40
Date Received: 08/19/19 13:30

Lab Sample ID: 580-88501-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			23747	08/23/19 14:12	AMB	TAL SPK
Total/NA	Analysis	AK102 & 103		1	23759	08/24/19 19:56	NMI	TAL SPK
Total/NA	Prep	3510C			23747	08/23/19 14:12	AMB	TAL SPK
Total/NA	Cleanup	3630C			23757	08/23/19 14:12	NMI	TAL SPK
Total/NA	Analysis	AK102/103		1	23759	08/24/19 15:38	NMI	TAL SPK

Client Sample ID: AF68441-L9324
Date Collected: 08/15/19 14:00
Date Received: 08/19/19 13:30

Lab Sample ID: 580-88501-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			23747	08/23/19 14:12	AMB	TAL SPK
Total/NA	Analysis	AK102 & 103		1	23759	08/24/19 20:35	NMI	TAL SPK
Total/NA	Prep	3510C			23747	08/23/19 14:12	AMB	TAL SPK
Total/NA	Cleanup	3630C			23757	08/23/19 14:12	NMI	TAL SPK
Total/NA	Analysis	AK102/103		1	23759	08/24/19 15:57	NMI	TAL SPK

Client Sample ID: AF68442-L9324 DUP
Date Collected: 08/15/19 14:05
Date Received: 08/19/19 13:30

Lab Sample ID: 580-88501-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			23747	08/23/19 14:12	AMB	TAL SPK
Total/NA	Analysis	AK102 & 103		1	23759	08/24/19 20:55	NMI	TAL SPK
Total/NA	Prep	3510C			23747	08/23/19 14:12	AMB	TAL SPK
Total/NA	Cleanup	3630C			23757	08/23/19 14:12	NMI	TAL SPK
Total/NA	Analysis	AK102/103		1	23759	08/24/19 16:17	NMI	TAL SPK

Laboratory References:
TAL SPK = Eurofins TestAmerica, Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

Accreditation/Certification Summary

Client: Arctic Fox Environmental, Inc
Job ID: 580-88501-1
Project/Site: 0819-4173/CPAI ASDP WQ

Laboratory: Eurofins TestAmerica, Seattle

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-024	01-19-22
Alaska (UST)	State Program	17-024	01-19-20
ANAB	Dept. of Defense ELAP	L2236	01-19-22
ANAB	DoD	L2236	01-19-22
ANAB	ISO/IEC 17025	L2236	01-19-22
ANAB	ISO/IEC 17025	L2236	01-19-22
California	State	2901	11-05-19
California	State Program	2901	11-05-19
Montana (UST)	State	NA	04-13-21
Montana (UST)	State Program	N/A	04-30-20
Oregon	NELAP	WA100007	11-05-19
Oregon	NELAP	WA100007	11-05-19
US Fish & Wildlife	Federal	LE058448-0	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	Federal	P330-14-00126	02-10-20
USDA	US Federal Programs	P330-17-00039	02-10-20
Washington	State	C553	02-17-20
Washington	State Program	C553	02-17-20

Laboratory: Eurofins TestAmerica, Spokane

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-025	12-07-19
Alaska (UST)	State Program	17-025	12-07-19
Oregon	NELAP	4137	12-07-19
Oregon	NELAP	4137	12-07-19
Washington	State	C569	01-06-20
Washington	State Program	C569	01-06-20

Sample Summary

Client: Arctic Fox Environmental, Inc
Project/Site: 0819-4173/CPAI ASDP WQ

Job ID: 580-88501-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-88501-1	AF68439-M9313	Water	08/15/19 10:00	08/19/19 13:30	
580-88501-2	AF68440-L9323	Water	08/15/19 15:40	08/19/19 13:30	
580-88501-3	AF68441-L9324	Water	08/15/19 14:00	08/19/19 13:30	
580-88501-4	AF68442-L9324 DUP	Water	08/15/19 14:05	08/19/19 13:30	

TestAmerica Seattle
5755 8th Street East

Tacoma, WA 98424
phone 253.922.2310 fax 253.922.5047

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Tim Johnson/ Kels Caskey	Site Contact: Tim J. / Kels C.	Date: 8/18/19	COC No: 0425 0815 2019 -1
Arctic Fox Environmental	Tel/Fax: 907-659-2145	Lab Contact: Tim J. / Kels C.	Carrier: —	1 of 1 COCs
Pouch 340043	**Analysis Turnaround Time**			Sampler: KB
Prudhoe Bay, AK 99734	☑ CALENDAR DAYS ☐ WORKING DAYS			**For Lab Use Only:**
Phone 907-659-2145	TAT if different from Below _____			Walk-in Client: No
FAX 907-659-2146	☐ 2 weeks			Lab Sampling: No
Project Name: CPAI ASDP WQ	☒ 1 week			
Site:	☐ 2 days STO			Job / SDG No.:
PO# 0819 - 4173	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	D RO/DRO	D120/RIO Silica Gel	Sample Specific Notes:
AF68439 - M9313	8/15/19	1000		L	3			X	X	
AF68440 - L9323		1540						X	X	
AF68441 - L9324		1400						X	X	
AF68442 - L9324 Dup	↓	1405		↓	↓			X	X	

580-88501 Chain of Custody

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab

Therm. ID: A1 Cor: 2.0 ° Unc: 2.3 °
Cooler Dsc: Lg Blue
Packing: Bubble
Cust. Seal: Yes X No
Blue Ice, Wet, Dry, None
FedEx:
UPS:
Lab Courr:
Other: G.S.

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by: Tim Johnson	Arctic Fox Env.	8/18/19 1500			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: B. Hall	Company: SEA TA	Date/Time: 8.19.19 1330

Eurofins TestAmerica, Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310 Fax: 253-922-5047

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Cruz, Sheri L	Carrier Tracking No(s):	COC No: 580-69054.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: sheri.cruz@testamericainc.com	State of Origin: Alaska	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc		Accreditations Required (See note):		Job #: 580-88501-1
Address: 11922 East 1st Ave,	Due Date Requested: 8/23/2019			
City: Spokane	TAT Requested (days):			
State, Zip: WA, 99206				
Phone: 509-924-9200(Tel) 509-924-9290(Fax)	PO #:			
Email:	WO #:			
Project Name: 0819-4173/CPAI ASDP WQ	Project #: 58008239			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	AK102_103/3510C_LVI_14d DRO and RRO	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
AF68439-M9313 (580-88501-1)	8/15/19	10:00 Alaskan		Water			X	3	Split sample to run with and without silica gel
AF68440-L9323 (580-88501-2)	8/15/19	15:40 Alaskan		Water			X	3	Split sample to run with and without silica gel
AF68441-L9324 (580-88501-3)	8/15/19	14:00 Alaskan		Water			X	3	Split sample to run with and without silica gel
AF68442-L9324 DUP (580-88501-4)	8/15/19	14:05 Alaskan		Water			X	3	Split sample to run with and without silica gel

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

8/26/2019

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Login Sample Receipt Checklist

Client: Arctic Fox Environmental, Inc

Job Number: 580-88501-1

Login Number: 88501
List Number: 1
Creator: Vallelunga, Diana L

List Source: Eurofins TestAmerica, Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	False	Refer to Job Narrative for details.
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Arctic Fox Environmental, Inc

Job Number: 580-88501-1

Login Number: 88501
List Number: 2
Creator: O'Toole, Maria C

List Source: Eurofins TestAmerica, Spokane
List Creation: 08/21/19 10:46 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	497091
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	3.8
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Not present
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	No analysis requiring residual chlorine check assigned.

Arctic Fox Environmental, Inc.
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DOC 3.2.1-02 Sample Receiving Checklist

Client Name: Michael Baker International Date and Time: 8/16/19 @ 1755

Project: CPAI ASDP WQ

AF# 68439 - 68442 Initials: TOS

Cooler #(s) 1

Temp. 5.9 I.R. Gun: 8178 Traceable Thermometer: 111898870

DW Temp > 6° C NA Env Waste Sample N

Other Temp >10° C N Within 4 hrs of sample time N

N/A	Yes	No	
		X	1. Were temp blanks received?
	X		2. Cooler Seals intact? (N/A if hand delivered.)
	X		3. Chain of Custody present?
	X		4. Did C.O.C. agree with samples received?
	X		5. Was C.O.C completely filled out by client?
	X		6. Bottles received intact?
	X		7. Proper Container and preservatives used?
	X		8. Sufficient volume provided for analysis?
	X		9. Sample is not multiphasic?
X			10. Were VOA samples without headspace?
X			11. Were VOA vials preserved? Preservative _____
		X	12. Did samples require preservation with sodium thiosulfate?
X			13. If "Yes" for # 12, is was there a residual chlorine recorded?
	X		14. Are samples with short holding times for analysis received within hold?
	X		15. Was standard turn around (TAT) requested? TAT _____

Record Discrepancies: