II. General Information and Basic Data Requirements

II.A. Treatment System Description

1. On which of the following are you basing your application: a current discharge, improved discharge, or altered discharge, as defined in 40 CFR 125.58?

This application is based on a current discharge.

2. Description of the Treatment/Outfall System [40 CFR 125.62(a) and 125.62(e)]

a. Provide detailed descriptions and diagrams of the treatment system and outfall configuration which you propose to satisfy the requirements of Section 301(h) and 40 CFR Part 125, Subpart G. What is the total discharge design flow upon which this application is based?

The John M. Asplund Water Pollution Control Facility (AWPCF) serves the entire Anchorage area. Plant influent is primarily of domestic origin, although a minor industrial component is included. There are no combined sewers in the Anchorage sewer system. Location maps are shown on Figure IIA-1. A site plan of the facility is provided on Figure IIA-2.

The existing facility provides primary treatment for a design average flow of 2.5 cubic meters per second (m^3/sec) (58 million gallons per day [mgd]) and a maximum hourly flow of 6.7 m^3/sec (154 mgd). Existing treatment units provide screening, grit removal, sedimentation, skimming, and on site chlorination. A schematic flow diagram of the plant is shown on Figure IIA-3.

Currently, sludge from the primary clarifiers is thickened and dewatered. The dewatered sludge and skimmings are incinerated and the ash disposed of in a sanitary landfill. Within the permit period, the sludge volume may increase above the incinerator capacity. If the incinerator capacity is exceeded, the excess sludge will be dewatered and disposed of at the landfill.

Chlorinated primary effluent is discharged through a 3.0-meter (m)- (120-inch-) diameter chlorine contact tunnel and then through a 2.1-m- (84-inch-) diameter outfall to Cook Inlet. The outfall extends 245 m (804 feet) from shore. The water depth at the top of the AWPCF outfall turret off Point Woronzof is -13 feet at mean lower low water (MLLW), as was confirmed by the bathymetry survey sonar. The AWPCF outfall turret ports centerlines are situated 2 feet below the top of the concrete turret. The ports discharge at a depth of -15 feet MLLW under lower low tide elevation conditions. The mean tide level (MTL) at Point Woronzof is +15.34 feet (MLLW); therefore, the AWPCF outfall turret ports discharge at a water depth of -30.3 feet (MLLW) (calculated as 15+15.34 feet) under MTL.

The outfall configuration is shown on Figure IIA-1.

Design flows are:

Average daily flow:	2.5 m^3/sec (58 mgd)
Maximum daily flow:	5.6 m^3/sec (128 mgd)
Peak hourly flow:	6.7 m^3/sec (154 mgd)

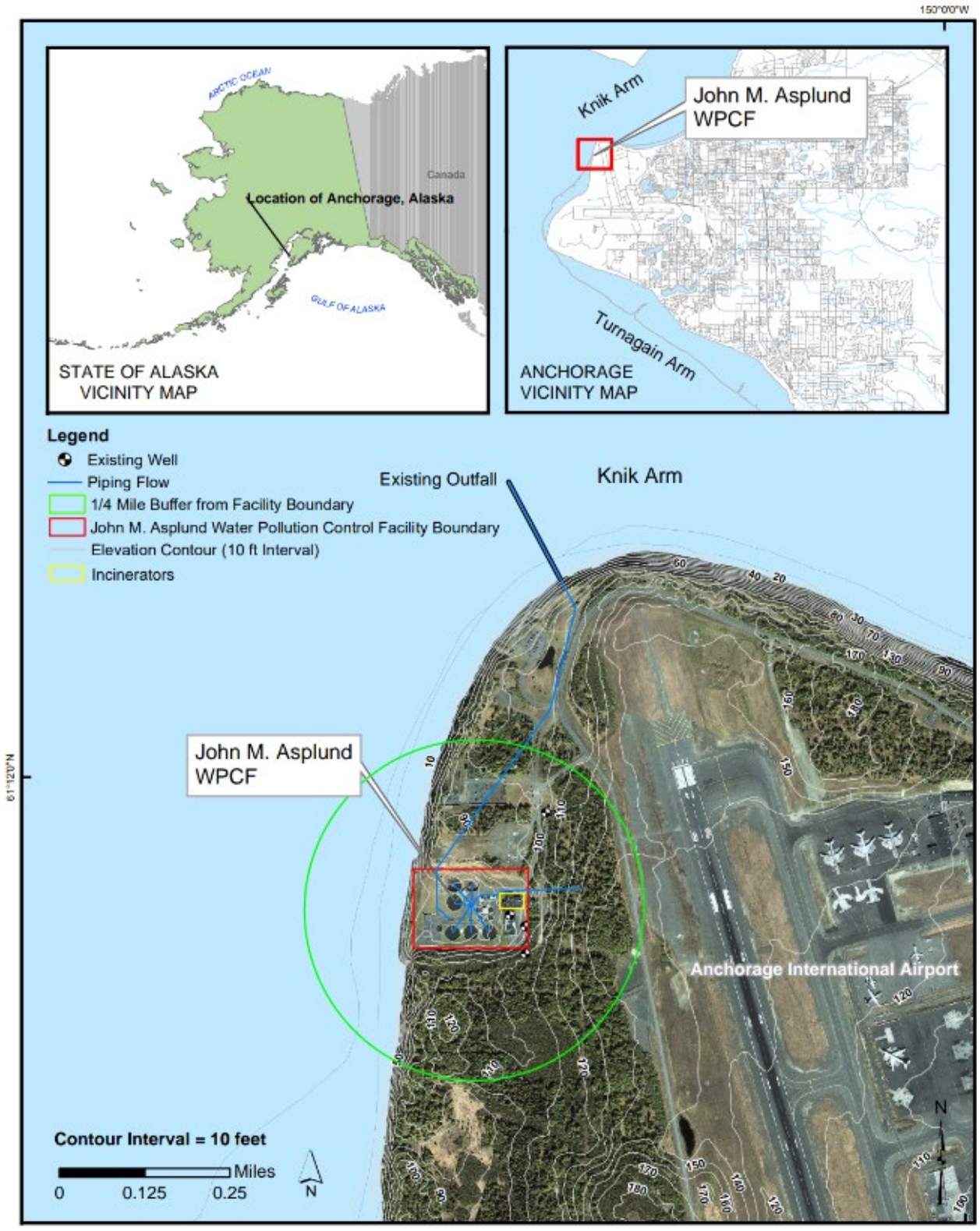


Figure IIA-1. Location Maps of Asplund WPCF, Outfall 001, and the Anchorage Area
Source: Municipality of Anchorage 2005
WPCF = Water Pollution Control Facility

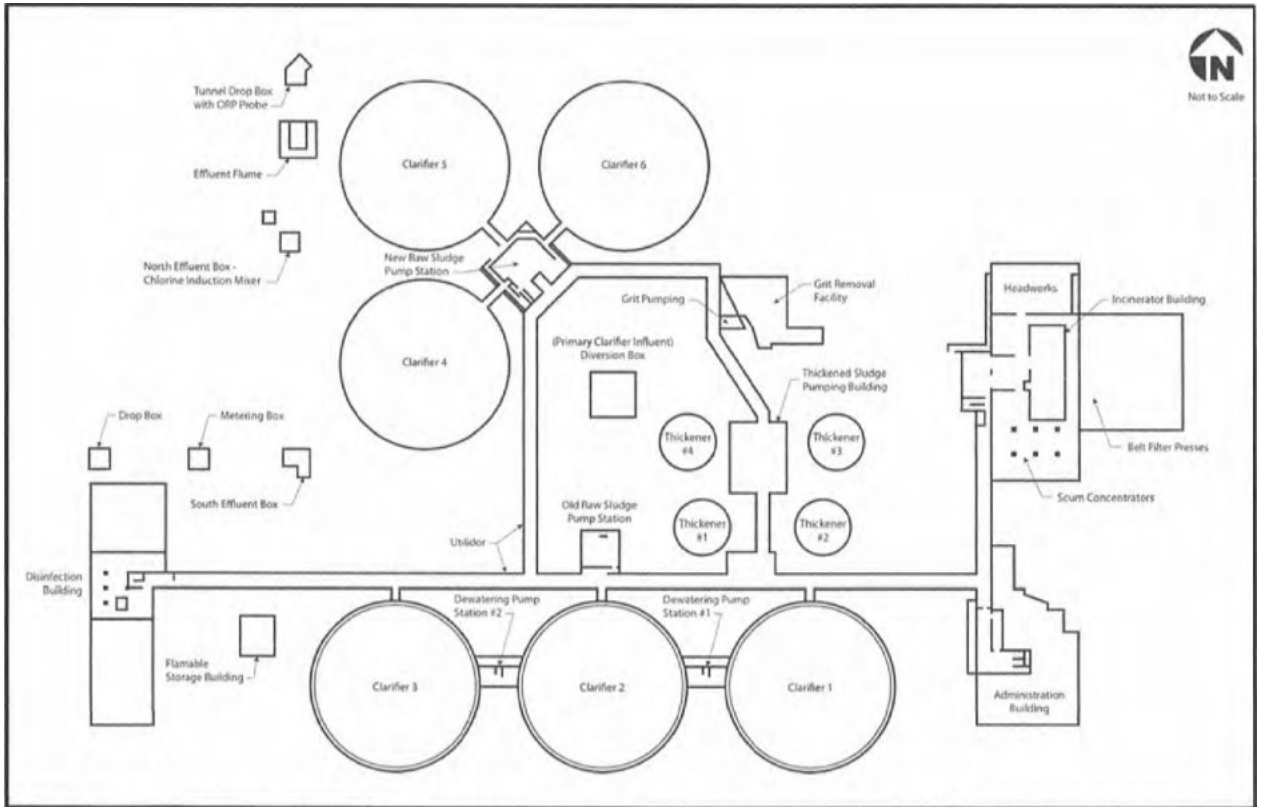


Figure IIA-2. Asplund WPCF Site Map
Source: Municipality of Anchorage

Figure IIA-3. Asplund WPCF Schematic of Wastewater Flow
Source: Municipality of Anchorage 2005

b. Provide a map showing the geographic location of the proposed outfall(s) (i.e., discharge). What is the latitude and longitude of the proposed outfall(s)?

The outfall diffuser is located in the upper Cook Inlet at latitude 61˚12'22.5"N and longitude 150˚01'8.7"W, as shown on Figure IIA-4.

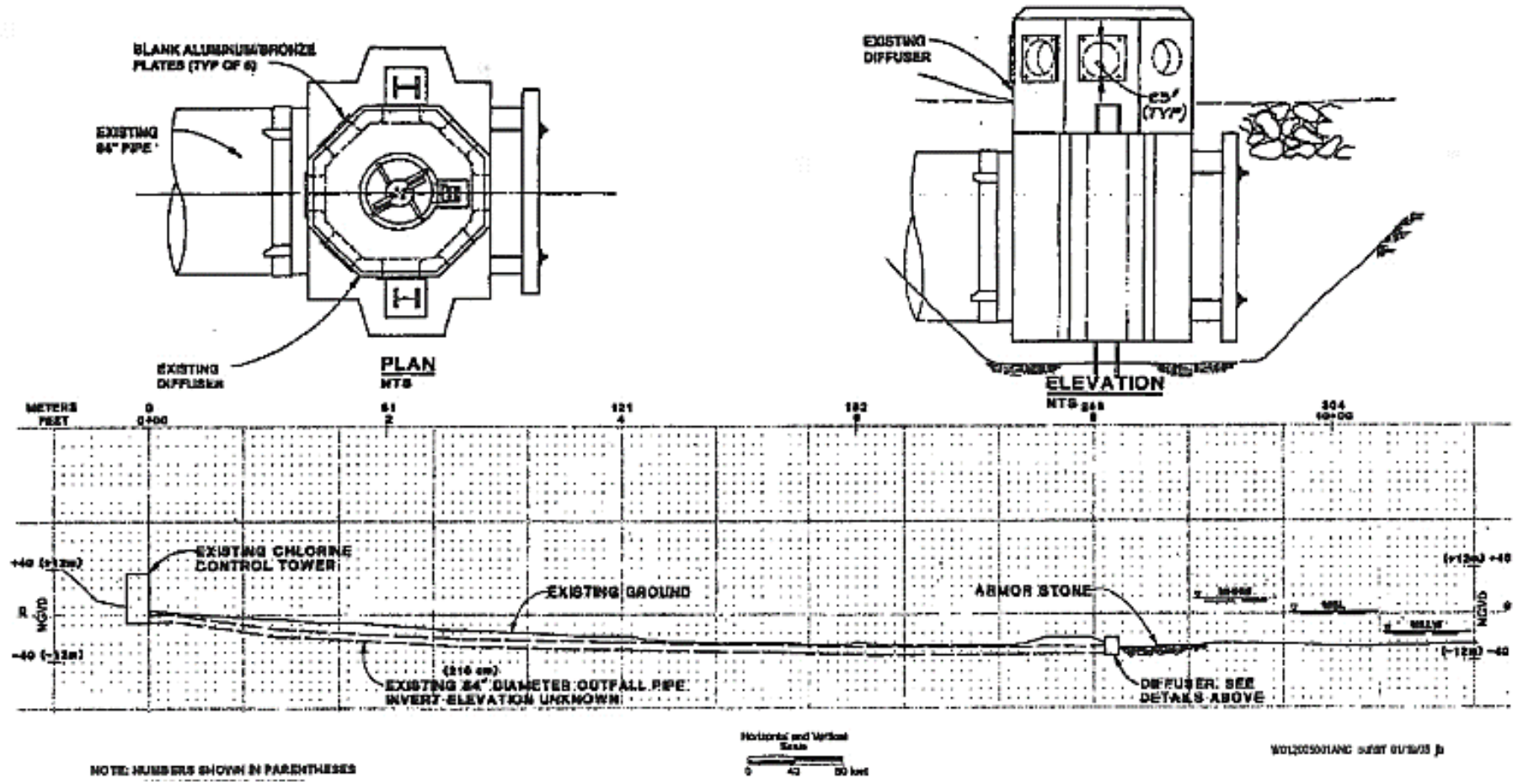


Figure IIA-4. Existing Outfall Diffuser
Source: Municipality of Anchorage 2005
NGVD = National Geodetic Vertical Datum
NTS = not to scale

c. For a modification based on an improved or altered discharge, provide a description and diagram of your current treatment system and outfall configuration. Include the current outfall's latitude and longitude, if different from the proposed outfall:

There are no proposed modifications to the discharge.

3. Primary or equivalent treatment requirements [40 CFR 125.60]

a. Provide data to demonstrate that your effluent meets at least primary or equivalent treatment requirements as defined in 40 CFR 125.58 (r). [40 CFR 125.60]

Table IIA-1 shows the monthly average biochemical oxygen demand (BOD) and total suspended solids (TSS) obtained from the 2019 to 2023 Discharge Monitoring Reports (DMRs). The AWPCF consistently met the minimum 30% removal requirement for BOD and TSS (AWWU 2020; Municipality of Anchorage 2022). Additionally, effluent concentrations for BOD and TSS did not exceed the permit limits throughout the entire 5-year reporting period.

Table IIA-1. Influent and Effluent Monthly Average and Percentage Removal for BOD and TSS from 2019 to 2023

Month	Year	BOD			TSS		
		Influent (mg/L)	Effluent (mg/L)	% Removal	Influent (mg/L)	Effluent (mg/L)	% Removal
Jan.	2023	268	161	40	251	67	74
Feb.	2023	283	163	43	260	59	77
Mar.	2023	274	165	40	269	67	75
Apr.	2023	253	157	38	250	66	74
May	2023	251	163	35	239	65	73
June	2023	275	175	36	300	70	77
July	2023	255	149	42	271	64	76
Aug.	2023	254	153	40	286	67	77
Sept.	2023	253	164	35	248	72	71
Oct.	2023	241	146	39	249	62	75
Nov.	2023	233	149	36	233	61	74
Dec.	2023	238	153	36	234	62	74
Jan.	2022	289	177	39	328	60	82
Feb.	2022	265	169	36	288	60	79
Mar.	2022	272	163	40	319	64	80
Apr.	2022	248	166	33	255	63	75
May	2022	268	183	32	309	70	77
June	2022	285	180	37	355	64	82
July	2022	289	172	41	360	68	81
Aug.	2022	245	150	39	284	63	78
Sept.	2022	212	130	39	234	62	74

Month	Year	BOD			TSS		
		Influent (mg/L)	Effluent (mg/L)	% Removal	Influent (mg/L)	Effluent (mg/L)	% Removal
Oct.	2022	229	141	38	261	67	74
Nov.	2022	201	152	24	198	72	63
Dec.	2022	243	157	35	235	67	71
Jan.	2021	287	188	34	326	65	80
Feb.	2021	287	188	34	344	70	80
Mar.	2021	287	188	34	324	59	82
Apr.	2021	287	188	34	234	66	72
May	2021	283	181	36	271	64	76
June	2021	273	184	33	307	74	76
July	2021	281	187	33	327	70	79
Aug.	2021	251	168	33	268	64	76
Sept.	2021	290	164	44	375	60	84
Oct.	2021	295	157	47	378	58	85
Nov.	2021	283	163	42	323	60	81
Dec.	2021	282	178	37	307	60	80
Jan.	2020	266	174	35	315	69	78
Feb.	2020	304	189	38	388	73	81
Mar.	2020	297	161	46	385	73	81
Apr.	2020	244	147	40	303	70	77
May	2020	299	182	39	364	79	78
June	2020	306	167	45	410	77	81
July	2020	324	178	45	436	78	82
Aug.	2020	276	165	40	339	73	79
Sept.	2020	278	165	41	374	73	80
Oct.	2020	288	167	42	441	79	82
Nov.	2020	264	173	35	358	74	79
Dec.	2020	264	168	36	335	60	82
Jan.	2019	258	177	31	289	63	78
Feb.	2019	251	183	27	269	60	78
Mar.	2019	244	172	30	289	68	76
Apr.	2019	240	154	36	278	71	74
May	2019	273	147	46	334	66	80
June	2019	300	169	44	421	71	83

Month	Year	BOD			TSS		
		Influent (mg/L)	Effluent (mg/L)	% Removal	Influent (mg/L)	Effluent (mg/L)	% Removal
July	2019	334	174	48	497	72	86
Aug.	2019	313	179	43	447	71	84
Sept.	2019	285	163	43	396	76	81
Oct.	2019	277	158	43	365	75	79
Nov.	2019	279	158	44	365	70	81
Dec.	2019	248	153	38	300	66	78

mg/L = milligram(s) per liter

b. If your effluent does not meet primary or equivalent treatment requirements, when do you plan to meet them? Provide a detailed schedule, including design, construction, start-up and full operation, with your application. This requirement must be met by the effective date of the new section 301(h) modified permit:

The AWPCF consistently meets these requirements.

4. Effluent Limitations and Characteristics [40 CRF 125.61(b) and 125.62(e)(2)]

a. Identify the final effluent limitations for five-day biochemical oxygen demand (BOD), suspended solids, and pH upon which your application for a modification is based:

Table IIA-2 shows the final effluent limitation for BOD, TSS, and pH, based on the existing National Pollutant Discharge Elimination System permit.

Table IIA-2. Final Effluent Limitation for BOD, TSS, and pH

Effluent Characteristics	Unit of Measurement	Monthly Average	Weekly Average	Daily Maximum
BOD_5	mg/L	240	250	300
Suspended Solids	mg/L	170	180	190
pH	-	6.5–8.5	6.5–8.5	6.5–8.5

BOD_5 = BOD over a 5-day period

b. Provide data on the following effluent characteristics for your current discharge as well as for the modified discharge if different from the current discharge:

The following effluent characteristics for flow, BOD, and suspended solids are based on the 2019 to 2023 DMRs.

Flow (m^3/ sec):

Monthly average minimum: 1.05
Monthly average maximum: 1.68
Annual average: 1.25

BOD_5 (mg/L) for the following plant flows:

Monthly average minimum: 130
Monthly average maximum: 189
Annual average: 166

Suspended solids (mg/L) for the following plant flows:

Monthly average minimum: 58
Monthly average maximum: 79
Annual average: 67

Toxic pollutants and pesticides (µg/L):

AWPCF monitors toxic pollutants and pesticides twice per year, once in summer dry conditions and once in summer wet conditions. The pollutants are listed and results are reported in the Monitoring Program Annual Reports. The maximum and average daily concentrations detected in the most recent 5-year period (2019 to 2023) are summarized in Supplement A of this Renewal Application (Form 2A) and its appendices.

The following effluent characteristics for pH and dissolved oxygen are based the 2019 to 2023 DMRs:

pH:

Minimum: 6.62
Maximum: 8.48

Dissolved oxygen (mg/L, before chlorination) for the following plant flows:

Monthly average minimum: 1.13
Monthly average maximum: 3.96
Annual average: 2.51

5. Effluent Volume and Mass Emissions [40 CFR 125.62(e)(2) and 125.67]

a. Provide detailed analyses showing projections of effluent volume (annual average, m^3/sec) and mass loadings (mt/year) of BOD, and suspended solids for the design life of your treatment facility in five-year increments. If the application is based upon an improved or altered discharge, the projections must be provided with and without the proposed improvements or alterations.

AWPCF is currently significantly below its permitted flow, as well as its mass discharge limits for BOD and TSS, as demonstrated in Table IIA-3.

Table IIA-3. AWPCF Flow and Mass Limits

Parameter	Existing Conditions (2019–2023)	Design
Annual Average Flow (m^3/sec)	1.25	2.5
BOD_5 (metric tons/year)	6,542	18,922
Suspended Solids (metric tons/year)	2,648	13,403

Existing conditions for annual average flow, BOD, and TSS are calculated based on the annual average flow, BOD, and TSS from the 2019 to 2023 DMRs. The design values are based on the average daily design flow and the existing monthly average permit limits for BOD and TSS.

b. Provided projections for the end of your five-year permit term for 1) the treatment facility contributing population and 2) and average daily total discharge flow for the maximum month of the dry weather season.

The contributing population is expected to decrease during the 5-year permit term (Alaska Department of Labor and Workforce Development, *Population Projections*, July 2024). No

changes in the permitted limits for flow, BOD, or TSS are being requested for the next permit cycle (2025 to 2030).

6. Average Daily Industrial Flow (m^3/sec). Provide or estimate the average daily industrial inflow to your treatment facility for the same time increments as in question II.A.5 above [40 CRF 125.66].

Industrial users contribute an average daily flow of approximately 0.12 m^3/sec (2.76 mgd). Industrial inflows are not projected to significantly increase.

7. Combined Sewer Overflows [40 CFR 125.67(b)]

a. Does (will) your collection and treatment system include combined sewer overflows?

No. AWPCF does not have combined sewers. Anchorage has an ongoing program to reduce infiltration and inflow.

b. If yes, provide a description of your plan for minimizing combined sewer overflows to the receiving water.

Not applicable.

8. Outfall/Diffuser Design. Provide the following data for your current discharge as well as for the modified discharge, if different from the current discharge: [40 CFR 125.62(a)(1)]

Outfall diameter, m (inches)	2.13(84)
Outfall length, m (feet)	245 (804)[a]
Diffuser diameter, m (feet)	
Diffuser length, m (feet)	3.7 (12)
Angle of port orientation from horizontal, degrees	0
Port diameter, cm (inches)	58 (23)[b]
Orifice contraction coefficient	
Port discharge depth under low tide conditions, m (feet) MLLW	4.6 (15)
Number of ports	3
Port spacing, m (feet)	1.1 (3.7)
Design maximum hydraulic rate for each port, m^3/sec (mgd) (peak day flow rate)[c]	2.2 (51)

[a] The outfall ends in a trifurcated diffuser.

[b] The existing 23-inch ports have a total head loss (entrance and exit) factor of 1.05.

[c] Maximum flow rate at an annual high tide of 17 feet. Capacity is higher at lower tides.

References

Anchorage Water and Wastewater Utility (AWWU). 2020. *2019 Annual Pretreatment Report and Non-Industrial Source Control Program*. Submitted to U.S. Environmental Protection Agency, Region X. February 13.

Anchorage Water and Wastewater Utility (AWWU). 2022. *Monitoring Program Annual Report, January– December 2021*. The John M. Asplund Water Pollution Control Facility. Prepared for Municipality of Anchorage. Prepared by Kinnetic Environmental. February.

Municipality of Anchorage. 2005. *Renewal Application for NPDES Permit and 301 (h) Variance from Secondary Treatment for John M. Asplund Water Pollution Control Facility*. Submitted to U.S. Environmental Protection Agency, Region X. Prepared by CH2M HILL, Inc. January.

II.B. Receiving Water Description

1. ***Are you applying for a modification based on a discharge to the ocean [40 CFR 125.58 (n)] or to a saline estuary [40 CFR 125.58(v)]? [40 CFR 125.59(a)]***

Yes. The Asplund Water Pollution Control Facility (WPCF) discharges to upper Cook Inlet, a saline estuary. The term "saline estuarine waters" is defined in 40 CFR 125.58(n) as "semi-enclosed coastal waters which have a free connection to the territorial sea, undergo net seaward exchange with ocean waters, and have salinities comparable to those of the ocean." The oceanographic data presented and reviewed in this Section II.B Receiving Water Description documents that upper Cook Inlet meets the conditions of a saline estuary. In addition, EPA Region 10 Fact Sheet (2000) for the AWPCF states the following in Section V. Receiving Waters: "The outfall discharges to the saline estuarine waters of Knik Arm in Cook Inlet, 804 ft from shore off Point Woronzof....and Knik Arm in the vicinity of the Anchorage outfall is classified by the State of Alaska as marine water subject to water quality criteria established for water use classes 2 (A-D) (18 AAC 70.020)."

The Asplund WPCF outfall is located offshore of Point Woronzof in upper Cook Inlet and south of Knik Arm (Figure IIB-1). The Asplund WPCF outfall extends approximately 800 feet west (offshore) of Point Woronzof as shown in Figure IIB-2, an excerpt from the NOAA chart for upper Cook Inlet.

Cook Inlet is a unique saline estuary with one of the largest tidal ranges (12 m or 39.4 feet) in the world. Upper Cook Inlet and Knik Arm exhibit high tidal velocities (up to 2.3 meters per second or 7.5 feet per second), extensive intertidal mudflats (60 percent of Knik Arm), and periodic ice flows out of Knik Arm from November through April. Currents are influenced primarily by the very large tide elevation changes, and secondarily by winds and freshwater flows. The brackish salinities in upper Cook Inlet and Knik Arm range from 4 practical salinity units (psu) in Knik Arm in summer when river outflows are greatest to 22 psu in winter when freshwater outflows are lowest. In comparison, extensive hydrographic water column surveys that were conducted approximately 60 miles southwest of Anchorage at the Forelands (near Nikiski) during flood tides measured salinities ranging from 25.2 to 25.8 psu in the spring to 19 to 24 psu in the fall of 2003 (Okkonen and Howell, 2003; and Okkonen, 2005). As expected, the salinities measured near the Forelands are higher than those seen near Anchorage due to the estuarine nature of Cook Inlet. These hydrographic water column measurements show the highest fall salinities were less than the lowest spring salinities in the water column, reflecting the effect of summer freshwater flows into upper Cook Inlet.

Upper Cook Inlet and Knik Arm conditions are dominated by tidal characteristics. The mixed semidiurnal tides in upper Cook Inlet and Knik Arm have an average diurnal range of 9 m (30 ft) and an extreme range of 12 m (39 ft). These tidal elevation changes produce very strong currents and vigorous mixing near Point Woronzof. The major rivers and streams contributing fresh water to upper Cook Inlet and Knik Arm include the Matanuska River, Knik River, Eagle River, Susitna River, Little Susitna River, as well as Ship Creek, Chester Creek, Fish Creek, and Hood Creek in the Anchorage basin (refer to Figure IIB-1). These sources of fresh water, combined with other rivers flowing into Cook Inlet, keep the salinity of upper Cook Inlet and Knik Arm generally below 20 psu. The strong tidal mixing results in weak vertical density gradients in the water column year-round. Net seaward exchange of water occurs at all times of the year, with the amount increasing significantly in summer because of the increased freshwater input.

The bathymetry of upper Cook Inlet between Point Woronzof and Point MacKenzie shows an incised deep channel created by tidal currents with rocky ridges, boulders, and cobble seabed (refer to Figure IIB-2). In addition, the combination of very high suspended solids input from the rivers and creeks and large tidal exchange amplitudes creates extensive tidal flats along the shorelines in upper Cook Inlet and Knik Arm. Approximately 60 percent of the surface area covered by high water is tidal flats at mean lower low water (MLLW). Almost the entire surface area of Knik Arm above Cairn Point are tidal flats. In

lower Knik Arm, tidal flats are shore-connected and extend as much as 610 m (2,000 ft) from shore.

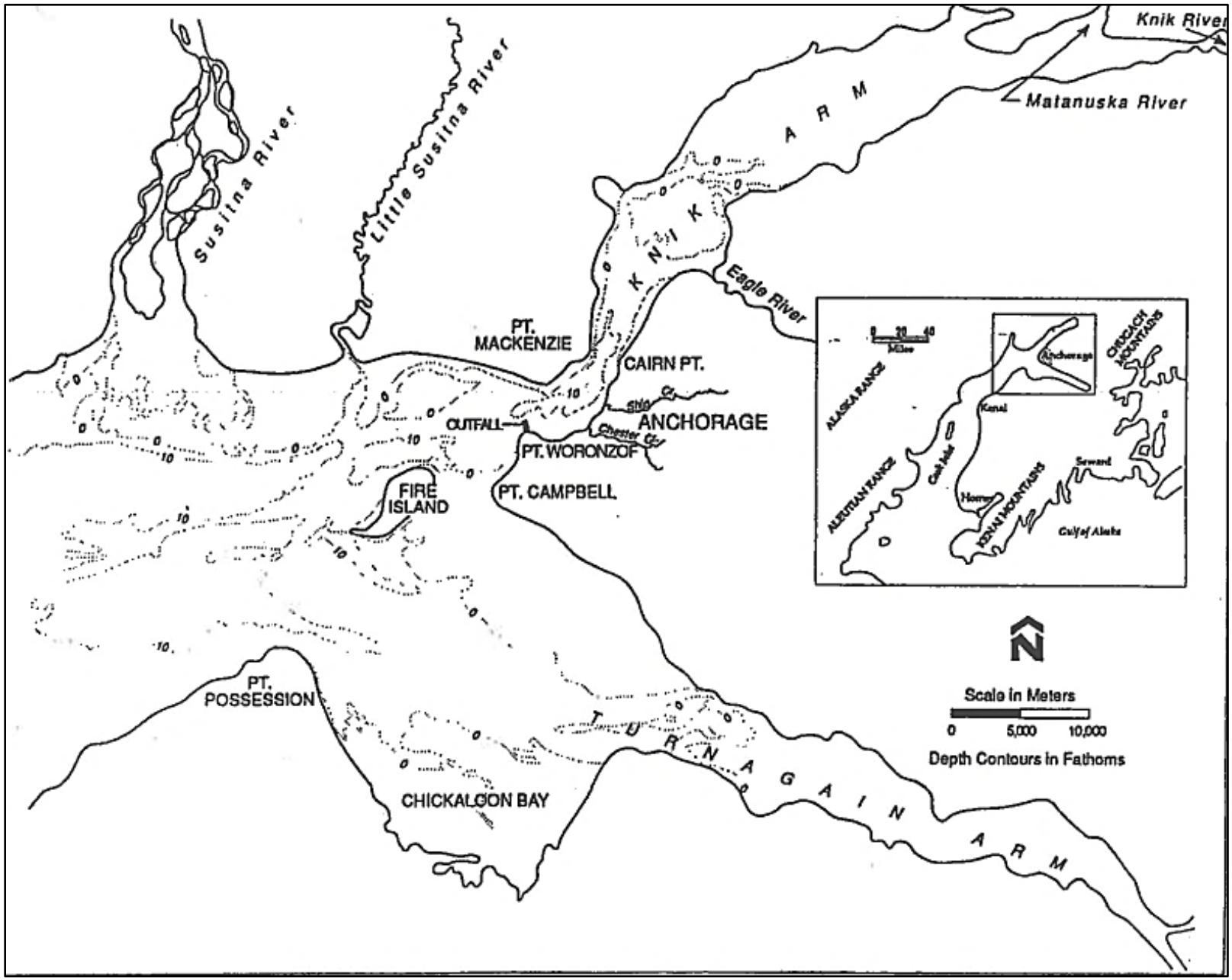


Figure IIB-1. Overview of Location of the AWPCF Point Woronzof Outfall in Upper Cook Inlet

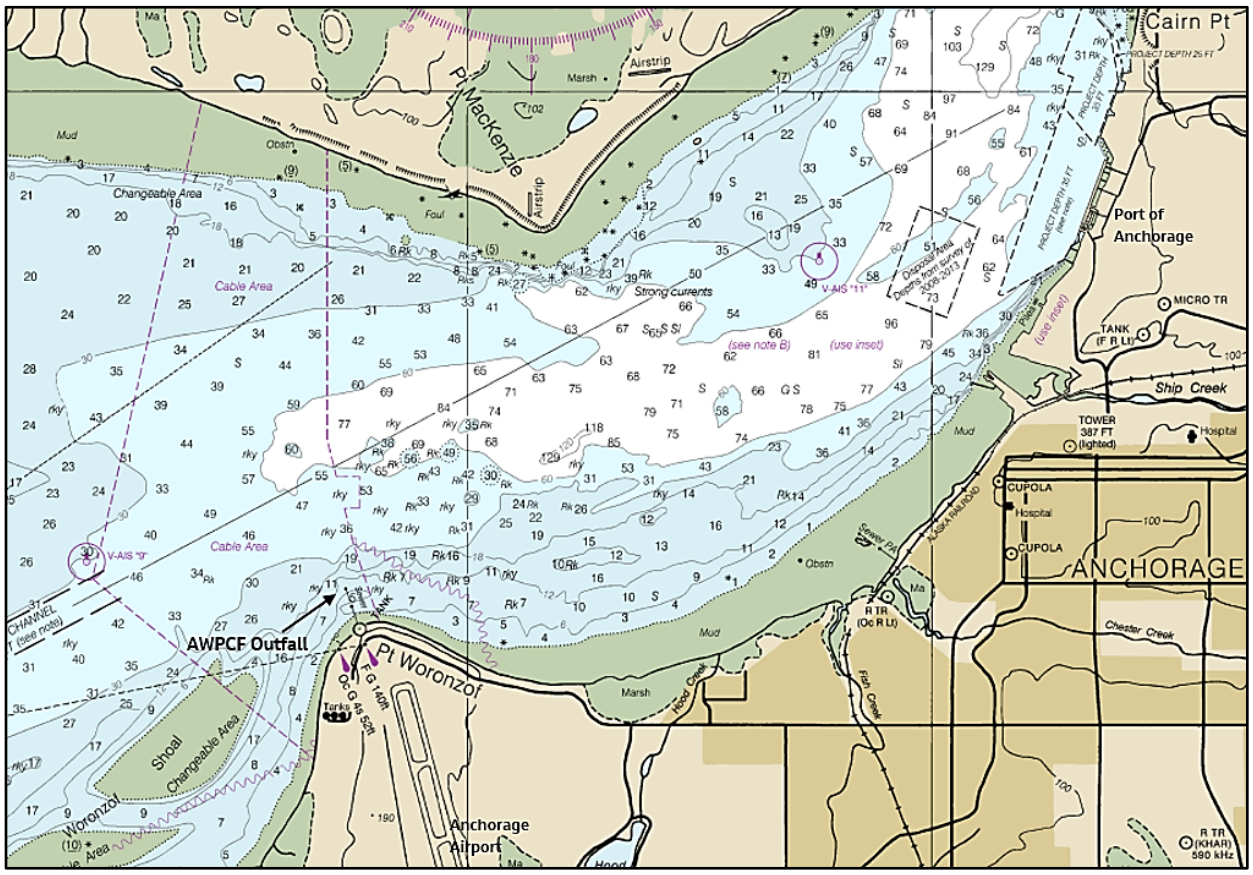


Figure IIB-2. AWPCF Outfall Location off Point Woronzof (excerpt from NOAA Chart 16665)

2. ***Is your current discharge or modification discharge to stressed waters as defined in 40 CFR 125.58(z)? If yes, what are the pollution sources contributing to the stress? [40 CFR 125.59(b)(4) and 125.62(f)]***

No. The receiving waters in upper Cook Inlet and Knik Arm are not listed as stressed waters as defined in 40 CFR 125.58(z). Stressed waters are defined in 40 CFR 125.58(z) as ocean waters without a "balanced indigenous population that is caused solely by human perturbations other than the applicant's modified discharge", and data provided in Sections II.C Biological Conditions and III.D Biological Impact of Discharge in this Large Questionnaire and the 2025 Biological Evaluation document demonstrate that upper Cook Inlet has a balanced indigenous population and are not stressed waters. Receiving waters in upper Cook Inlet and Knik Arm are unique due to the extremely high ambient suspended solids concentrations and associated ambient turbidity levels. The annual ambient monitoring program performed by AWWU in upper Cook Inlet has recorded suspended solids concentrations ranging from 68 to 1,490 mg/L, and suspended solids concentrations off Point Woronzof are typically 175 to 500 mg/L. An extensive ambient monitoring program implemented by the applicant over the past 38 years (1986 to present), in accordance with the NPDES Permit requirements, provides extensive receiving water data from the annual monitoring program in upper Cook Inlet and Knik Arm.

This is also discussed in more detail in Section III.B Compliance with Applicable Water Quality Standards.

3. ***Provide a description and data on the seasonal circulation patterns in the vicinity of your current and modified discharge(s). [40 CFR 125.62(a)]***

Numerous studies of seasonal circulation patterns, currents, flushing, and density structure near the Asplund WPCF outfall in upper Cook Inlet have been conducted since 1965. The following information

summarizes the receiving water oceanographic conditions in the vicinity of the Asplund WPCF outfall based on available references and study reports including the AWWU annual ambient monitoring program data and the Outfall Mixing Zone Study conducted in October 2022 (Jacobs, June 2024).

Another significant source of information on lower Knik Arm was collected as part of environmental and engineering studies conducted for the Knik Arm Crossing (KAC) bridge project, located in lower Knik Arm. The proposed project was to design and construct a roadway and bridge crossing of lower Knik Arm that would connect the Municipality of Anchorage with the Matanuska-Susitna Borough. A Draft Environmental Impact Statement (DEIS) for the Knik Arm Crossing Project was developed and released in September 2006 by the U.S. Department of Transportation, Federal Highway Administration, and the Alaska Department of Transportation and Public Facilities. The proposed Knik Arm Crossing bridge site was approximately 15,000 meters north of Point Woronzof.

The report titled Hydrology and Hydraulic Environment of Knik Arm (KABATA, 2007) was prepared for the Knik Arm Bridge and Toll Authority (KABATA), the Alaska Department of Transportation and Public Facilities, and the Federal Highway Administration. This report summarizes the hydrologic, oceanographic, and hydraulic environment of Knik Arm. These documents provided detailed investigations of bathymetry, water column properties, geology and sediments, tides and tidal current measurements, suspended sediments, water surface elevations, and seabed sediments. Supplemental field studies were also conducted in September and October of 2006 to obtain additional oceanographic and sedimentation data to improve modeling analyses and predictions, particularly in the vicinity of the Port of Anchorage (located 7,300 meters north of Point Woronzof).

Circulation

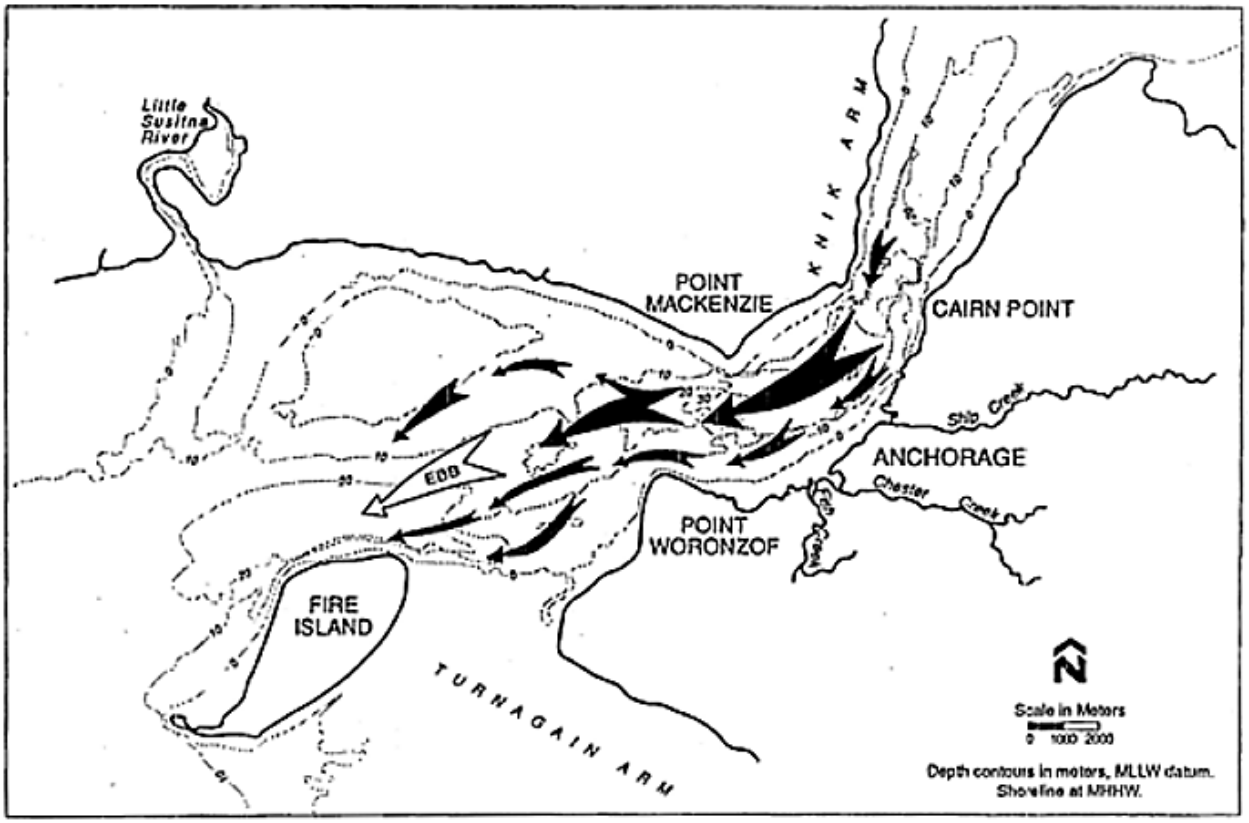
Circulation flow patterns in upper Cook Inlet and Knik Arm have been determined from field observations that include: (1) drogue releases at the outfall site during ebb and flood tidal flows, and (2) anchored current meters near the outfall site that provide current speed and direction measurements. In addition, modeling results obtained from a three-dimensional (3D) hydrodynamic and transport mathematical model have provided current simulations and graphical plots of current flow and circulation.

The circulation of upper Cook Inlet in the vicinity of the Asplund WPCF outfall is determined by tides, shoreline features, seabed bathymetry of the channel between Point Woronzof and Point MacKenzie, and the seabed bathymetry between Point Campbell and Fire Island to the west of Point Woronzof (refer to Figures IIB-1 and -2) as well as influences of density structure and river inflows. The channel bathymetry between Point Woronzof and Point MacKenzie, and the location of Fire Island directs ebb and flood tidal currents along the main east-west channel. These strong tidal currents also create nearshore eddy systems at sites downcurrent from prominent shoreline points on the flood and ebb tides. The eddies observed during ebb and flood tides are of varying sizes and duration dependent on tidal flows. At Point Woronzof and Point MacKenzie, eddies have been primarily observed during the early part of the flood tide downcurrent from the two points as evidenced by the drogue surveys conducted during the Asplund's annual NPDES monitoring program. Eddies on ebb tides at Point Woronzof are less pronounced, which may be the result of the shoal that exists west of Point Woronzof. Circulation pattern information for upper Cook Inlet and lower Knik Arm are available from Marine Advisors (1965), Britch (1976), Patchen (1981), Tetra Tech (1977), Kinnetic Laboratories (1979), CH2M HILL, (1985), from the various Asplund annual monitoring reports (Kinnetic Environmental, 1986 – present).

More recently (since the 301(h) application submittal in 2005), the Alaska Ocean Observing System (AOOS) [https://legacy.aoos.org/cook-inlet/cook-inlet-models/] summarized a number of modeling studies conducted by NOAA, the U.S. Army Corps of Engineers, the University of Alaska, and others in order to better understand circulation, waves, and winds in Cook Inlet. The AOOS works with state,

federal, local agencies and other organizations to provide coastal and ocean data and information products to the public through collaborative networks and an online ocean data portal. Access to the AOOS ocean data portal can be found at: https://portal.aoos.org/.

Generalized flow patterns during flood and ebb tides, deduced from the available current data, are shown in Figures IIB-3 and IIB-4. In general, the studies show very energetic circulation in Knik Arm alternating between flood and ebb flow patterns. Based on available data, there does not appear to be observable seasonal variation in the overall circulation patterns, although there is a stronger net outflow during the summer months due to increased riverine inputs.



Note: Size of current vector indicates the relative strength of the current.

Figure IIB-3. Generalized Current Pattern near Point Woronzof during Ebb Tide (after CH2M HILL, 2005)

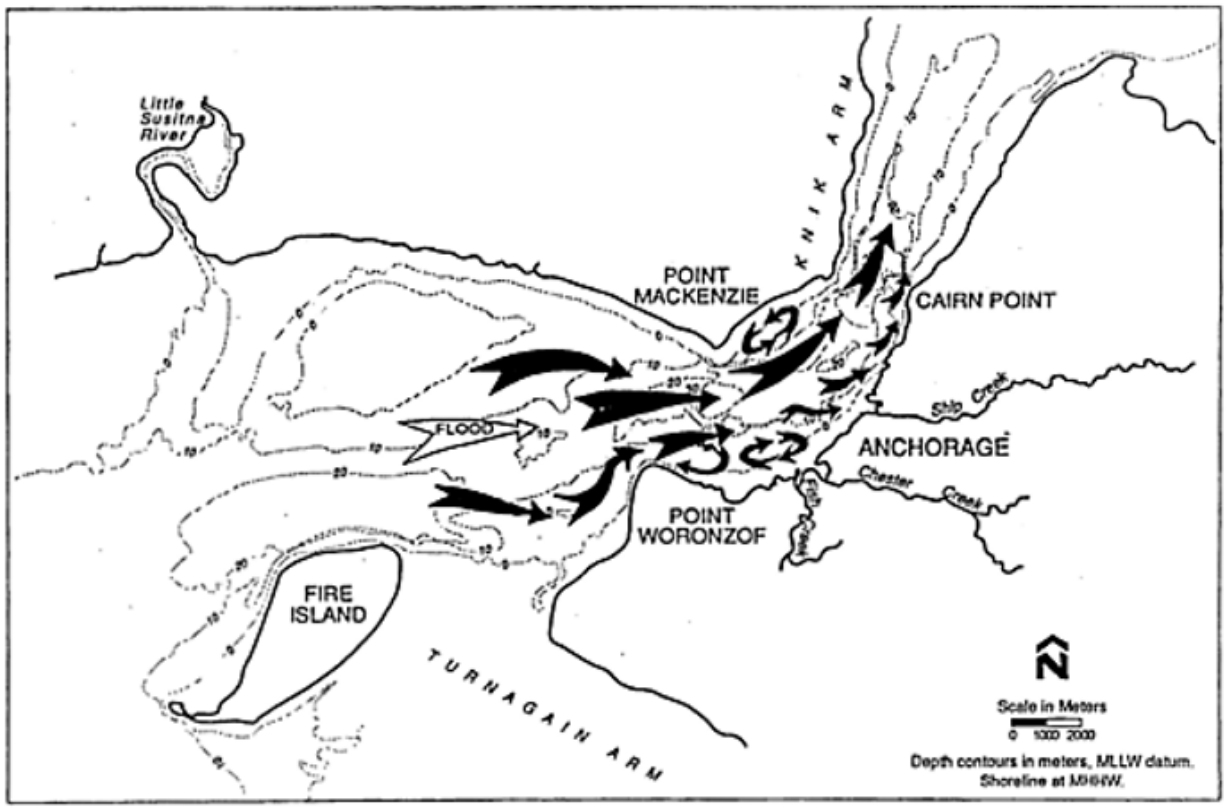


Figure IIB-4. Generalized Current Pattern near Point Woronzof during Flood Tide (after CH2M HILL, 2005)

Since the original 301(h) approval and associated NPDES permit issuance in 1984, Kinnetic Environmental (formerly known as Kinnetic Laboratories) has conducted an extensive annual monitoring program for a period of 40 years. Typical flood and ebb drogue tracks, representative of the circulation in the vicinity of the discharge, are shown in Figures IIB-5 and IIB-6.

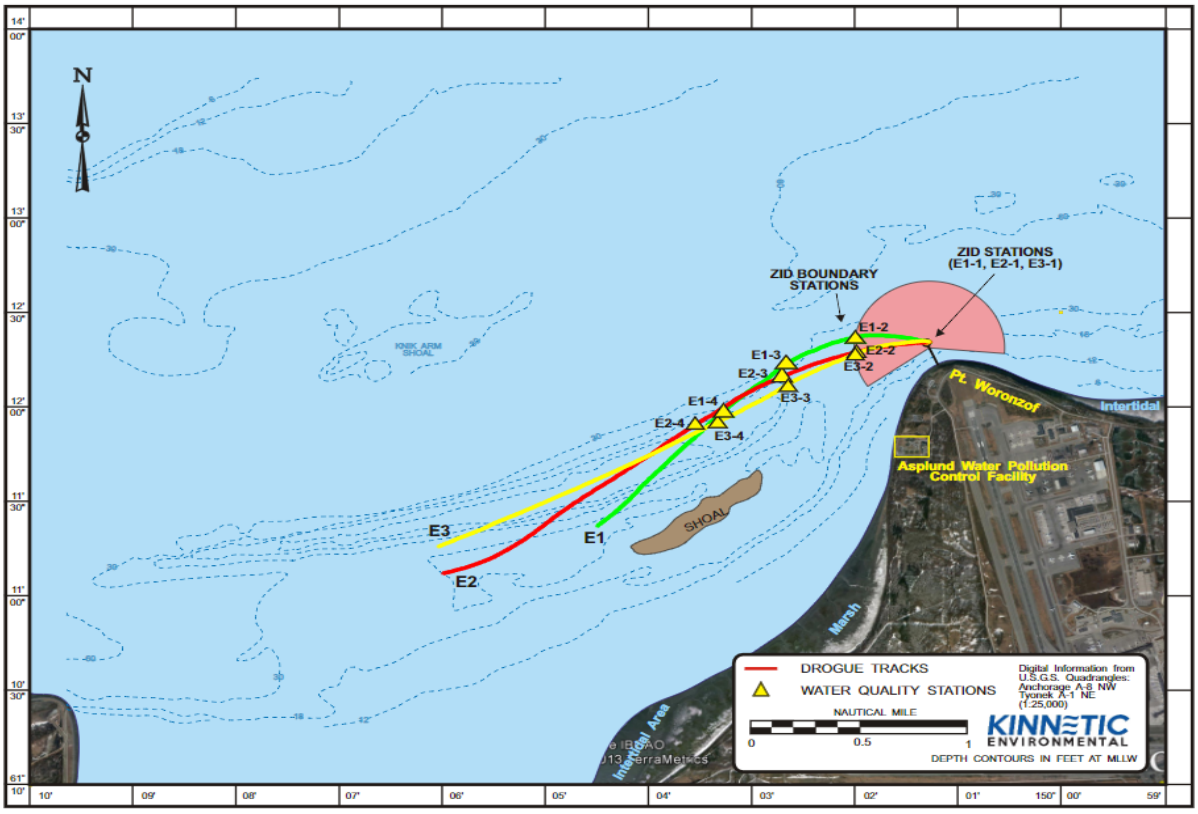


Figure IIB-5. Summary of Drogue Tracks during Ebb Tide and Receiving Water Sampling Stations in June 2021 (after Kinnetic Environmental, 2021)

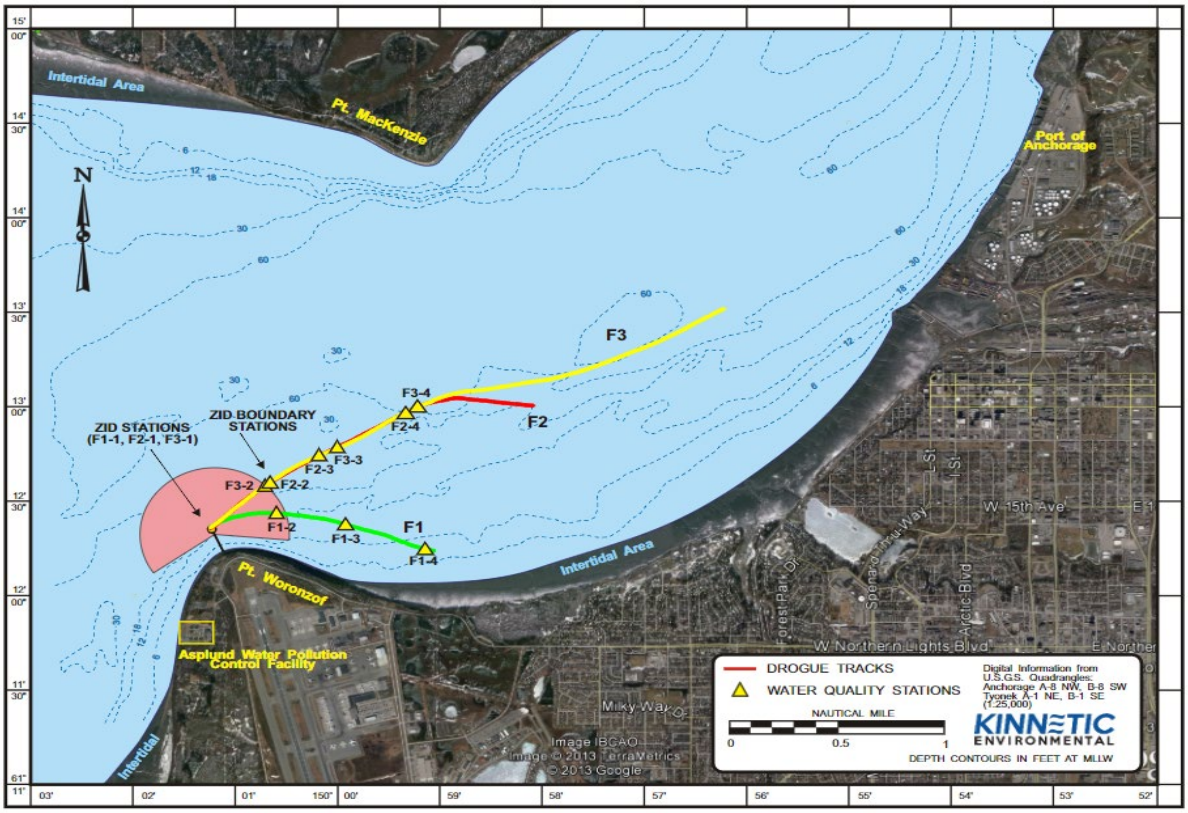


Figure IIB-6. Summary of Drogue Tracks during Flood Tide and Receiving Water Sampling Stations in June 2021 (after Kinnetic Environmental, 2021)

Based on the current measurements and drogue studies and observations in the field, the following

pattern of flood currents off Point Woronzof was developed. As ebb tide ends, water ebbing from the Turnagain Arm channel imparts a northerly component to waters ebbing west past Fire Island. As flood tide begins, this northerly component is forced to the northeast and then more easterly as the flood tide develops. At the same time, flooding water is constricted between Point Woronzof and Point MacKenzie, and the "shedding' of eddies occurs downcurrent (east) of these points (refer to Figures IIB-3 and -4). In early flood tide, there is a strong eddy system just east of Point Woronzof. As the tide proceeds, the eddy system constantly moves east and gradually loses energy, creating smaller eddy systems. In the latter stages of flood tide, there is almost no eddy system east of Point Woronzof.

A three-dimensional (3D) hydrodynamic and transport model was developed for the upper Cook Inlet including Knik and Turnagain Arms (CH2M HILL, 2011) for application in the Biological Evaluation of upper Cook Inlet beluga whales. This model was used to predict mixing and transport of effluent-derived water column and sediment constituents. The Environmental Fluid Dynamics Code (EFDC) (Hamrick, 1996) model was selected as the most appropriate farfield model to address the mixing, fate, and transport of the parameters of concern (POC), based on experience with hydrodynamic models, plume modeling, The model simulates hydrodynamic and transport processes based on the following factors: tidal forcing, water column densities, open water and iced-over conditions, wind-generated surface currents, and inflow from major rivers.

Bathymetric data used as the primary data source were obtained from the National Geophysical Data Center (NGDC, at http://www.ngdc.noaa.gov/mgg/bathymetry/ relief.html). The primary data for calibration consisted of water levels recorded at the Port of Anchorage (POA) NOAA gauge, current velocities from five acoustic Doppler current profiling (ADCP) current meter stations in upper Cook Inlet (by the National Ocean Survey for the calibration of tidal and current predictions), and temperatures from the POA. Water levels were calibrated using data from the Anchorage NOAA data station (ID 9455920). ADCP velocity data used for model calibration were from five NOAA stations located in upper Cook Inlet near Beluga Shoal and Fire Island, and in Knik Arm near Port Mackenzie, Northwest of the Port of Anchorage, and on eastside of Knik Arm. Figures IIB-7 and IIB-8 illustrate model-predicted tidal velocities and circulation during ebb and flood tides, respectively.

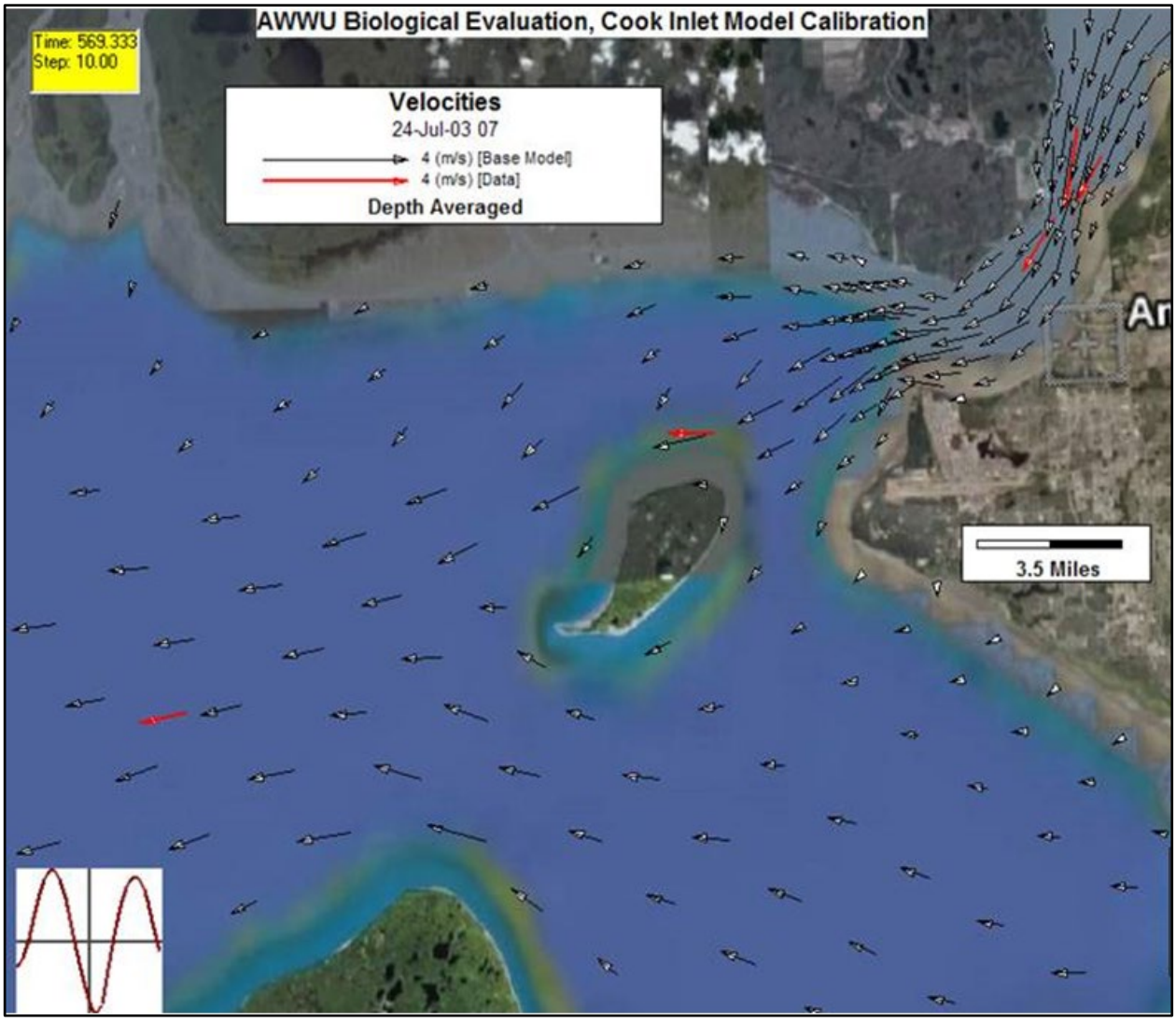


Figure IIB-7. Plan View of Ebb Tide Velocities and Circulation during Ebb Tide from EFDC Model-prediction and NOAA ADCP Measurements

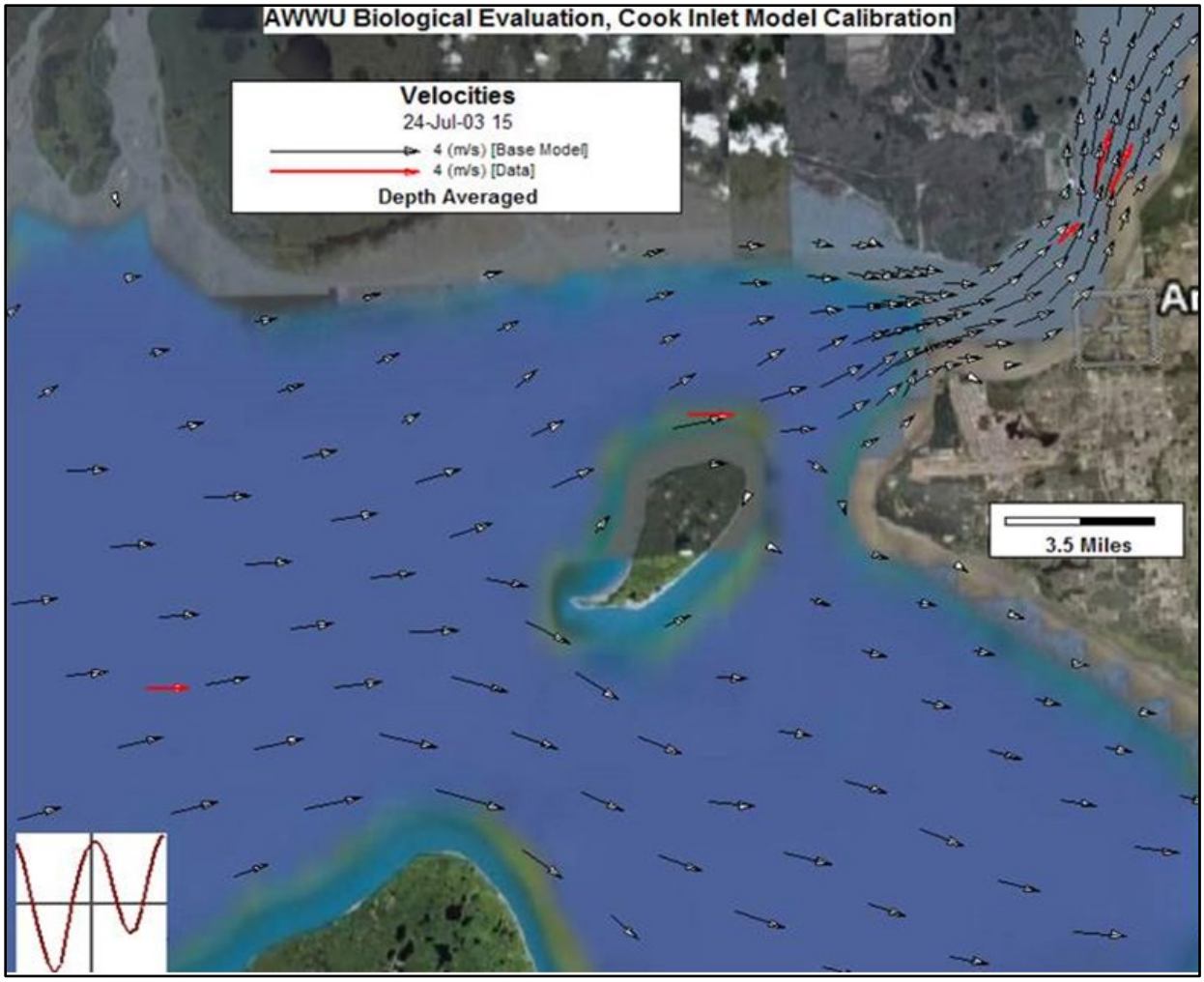


Figure IIB-8. Plan View of Ebb Tide Velocities and Circulation during Flood Tide from EFDC Model-prediction and NOAA ADCP Measurements

Currents

Tidally driven alternating ebb and flood current velocities have been recorded in upper Cook Inlet as well as lower Knik Arm. Historical current data are available from numerous sources, as follows: Marine Advisors (1965), Everts and Moore (1976), Kinnetic Laboratories (1979; unpublished 1987), Patchen, et al. (1981), Smith, et al., 2005, and from studies conducted by CH2M HILL (1985). The locations of historic current meter stations and measured current directions in upper Cook Inlet and lower Knik Arm are shown in Figure IIB-9. In addition to these stations, the average velocities and direction of the drogues released during the monitoring studies (1985 to 2024) are available for various tide levels.

Because of inclement weather, seasonal ice formation, and other hazards in Knik Arm, the majority of current meter data were recorded during a narrow time frame of approximately 4 months, during June through September (Table IIB-1). Although seasonal differences in wind, stream, and river flow may alter water mass movement, the basic patterns are expected to be tidally dominated and remain relatively unchanged throughout the year. Seasonal differences are not likely to significantly alter current speeds and direction in the vicinity of the outfall. Currents produced by wind stress, freshwater runoff, and thermohaline processes are expected to be at least an order of magnitude smaller than tidally induced currents. Current meter data provides records of current speed and direction as a time series in the vicinity of the Point Woronzof outfall. Several data sets were collected between 1965 and 1983.

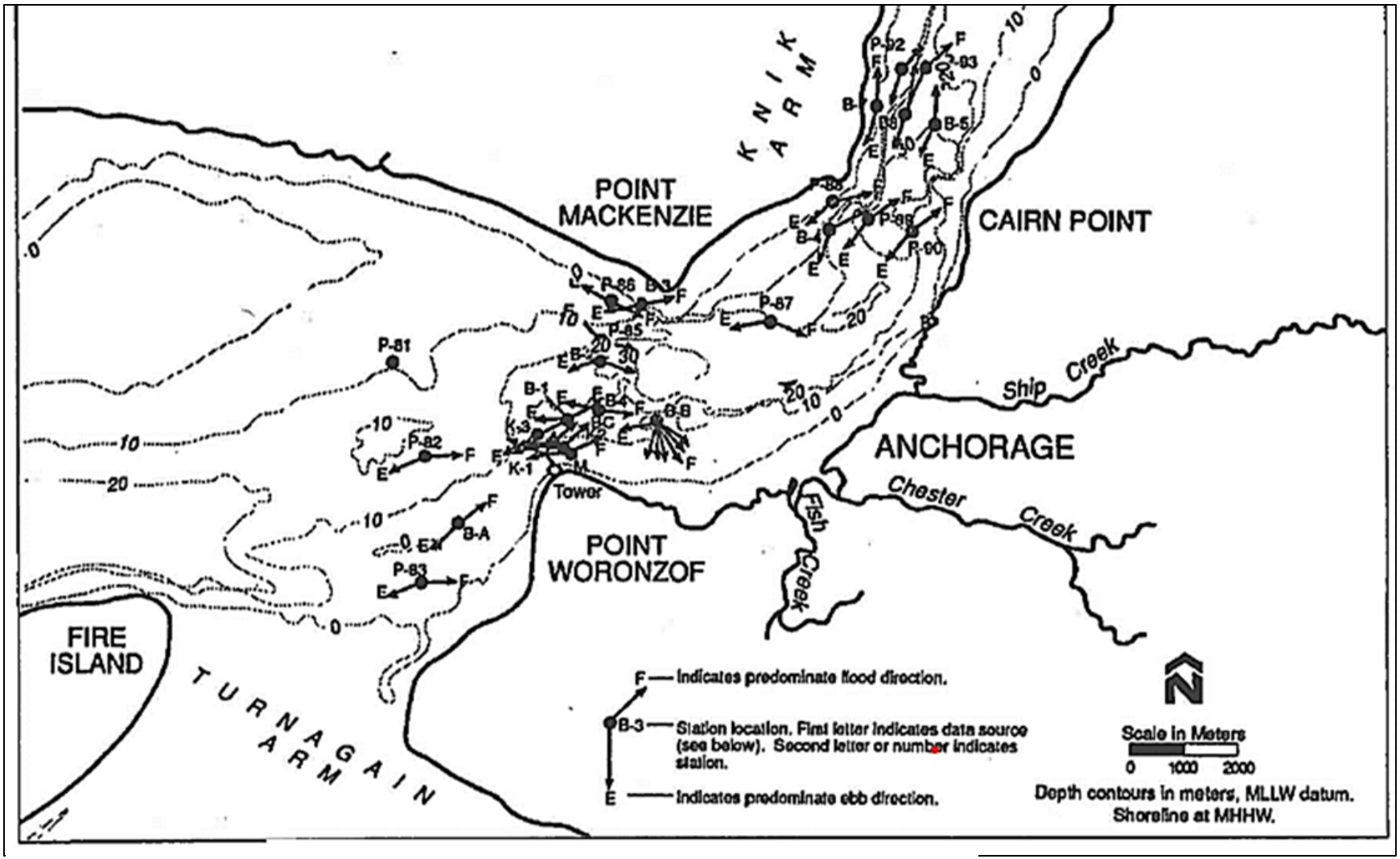


Figure IIB-9. Current Meter Sites and Current Directions Measured in Upper Cook Inlet and Lower Knik Arm

SOURCES:
B - Britch (1976)
C - CH2M HILL (1984)
E - Everts and Moore (1976)
K – Kinnetic Laboratories (1979)
M – Marine Advisers (1965)
P – Patchen, et. al. (191)

Based on historical current measurements studies using anchored current meters, a total of approximately 26 days of data are available and these include the following:

- 24 hours of speed and direction from August 6 to 7, 1965 (Marine Advisers, 1965)
- 137 hours of speed and direction from August 14 to 20, 1979 (Kinnetic Laboratories, 1979)
- 19 hours of speed and direction from September 25 to 30, 1983 (Kinnetic Laboratories, unpublished)
- 115 hours of speed and direction from September 30th to October 5, 1983 (CH2M HILL, unpublished)
- 58 hours of speed recorded from July 27 to 29, 1987 (Kinnetic Laboratories, unpublished)

These historical current measurements yield principal directions for flood tide of 40° (northeast) and 285° (southwest) for ebb tide (note directions are degrees relative to true north). The trajectories of drogues released at the outfall diffuser indicate a greater variation in direction than observed from fixed position current meter data. These historical measured currents in the vicinity of the Point Woronzof outfall yielded 10th percentile, 50th percentile, and 90th percentile current speeds of 66 cm/sec, 146 cm/sec, and 195 cm/sec, respectively. Table IIB-1 provides a summary of current measurements and water quality data collections conducted in the vicinity of Point Woronzof and the AWPCF outfall from 1965 through 2024.

Table IIB-1. Current Measurements Data and Water Quality Data Collections in the Vicinity of Point Woronzof (1965 through 2024)

Year	Month	Current Measurements	Program or Study	Source
1965	August	Current Meters	Oceanographic study	Marine Advisors
1969	May	Currents measured from Vessel	Oceanographic study	Kinney, et al.,1970 (Univ. of AK)
1972	June-Sept.	Current Meters	Currents study	Britch, 1976 (Univ. of AK)
1975		Current Meters	Circulation study	Patchen, et al. (NOAA) 1981
1976	July	Current Meters	Shoaling rates	Everts and Moore
1976	August	Current Meters	Shoaling rates	Everts and Moore
1976	September	Current Meters	Shoaling rates	Everts and Moore
1977	July	Drogues	Water quality study	Tetra Tech
1977	August	Drogues	Water quality study	Tetra Tech
1979	August	Current Meters	Supplemental studies for Waiver Application	Kinnetlc Laboratories
1983	February	Drogues	Outfall studies	CH2M HILL
1983	September	Current Meters	Outfall studies	CH2M HILL
1983	October	Drogues	Outfall studies	CH2M HILL
1986	May	Drogues	Annual monitoring program	Kinnetic Laboratories
1986	August	Drogues	Annual monitoring program	Kinnetic Laboratories
1986	October	Drogues	Annual monitoring program	Kinnetic Laboratories
1987	August	Drogues	Annual monitoring program	Kinnetic Laboratories
1988	August	Drogues	Annual monitoring program	Kinnetic Laboratories
1989	May & Sept.	Drogues	Annual monitoring program	Kinnetic Laboratories
1990	August	Drogues	Annual monitoring program	Kinnetic Laboratories
1991	August	Drogues	Annual monitoring program	Kinnetic Laboratories

Year	Month	Current Measurements	Program or Study	Source
1992	August	Drogues	Annual monitoring program	Kinnetic Laboratories
1993	August	Drogues	Annual monitoring program	Kinnetic Laboratories
1994	August	Drogues	Annual monitoring program	Kinnetic Laboratories
1995	August	Drogues	Annual monitoring program	Kinnetic Laboratories
1996	August	Drogues	Annual monitoring program	Kinnetic Laboratories
1997	August	Drogues	Annual monitoring program	Kinnetic Laboratories
1998	August	Drogues	Annual monitoring program	Kinnetic Laboratories
1999	August	Drogues	Annual monitoring program	Kinnetic Laboratories
2000	August	Drogues	Annual monitoring program	Kinnetic Laboratories
2001	June	Drogues	Annual monitoring program	Kinnetic Laboratories
2002	July	Drogues	Annual monitoring program	Kinnetic Laboratories
2003	June	Drogues	Annual monitoring program	Kinnetic Laboratories
2004	June	Drogues	Annual monitoring program	Kinnetic Laboratories
2005	June	Drogues	Annual monitoring program	Kinnetic Laboratories
2006	July	Drogues	Annual monitoring program	Kinnetic Laboratories
2007	June	Drogues	Annual monitoring program	Kinnetic Laboratories
2008	June	Drogues	Annual monitoring program	Kinnetic Laboratories
2009	June	Drogues	Annual monitoring program	Kinnetic Laboratories
2010	July	Drogues	Annual monitoring program	Kinnetic Laboratories
2011	June	Drogues	Annual monitoring program	Kinnetic Laboratories
2012	June	Drogues	Annual monitoring program	Kinnetic Laboratories
2013	June	Drogues	Annual monitoring program	Kinnetic Laboratories
2014	July	Drogues	Annual monitoring program	Kinnetic Laboratories
2015	June	Drogues	Annual monitoring program	Kinnetic Laboratories
2016	June	Drogues	Annual monitoring program	Kinnetic Laboratories
2017	June	Drogues	Annual monitoring program	Kinnetic Laboratories
2018	July	Drogues	Annual monitoring program	Kinnetic Laboratories
2019	June	Drogues	Annual monitoring program	Kinnetic Laboratories
2020	June	Drogues	Annual monitoring program	Kinnetic Laboratories
2021	June	Drogues	Annual monitoring program	Kinnetic Environmental
2022	July	Drogues	Annual monitoring program	Kinnetic Environmental
2022	Sept.-October	Current Meters	AWPCF Outfall Mixing Zone Study	Jacobs & Kinnetic Environmental
2023	June	Drogues	Annual monitoring program	Kinnetic Environmental
2024	June	Drogues	Annual monitoring program	Kinnetic Environmental

In 2022, as part of field data collections for the AWPCF Outfall Mixing Zone Study, current measurements were recorded continuously for an 11-day period to coincide with the outfall field dye tracer study in order to capture current velocities under both neap and spring tidal cycles. Acoustic Doppler Current Profiler (ADCP) current meters were deployed at two locations near the AWPCF outfall using anchored and bottom mounted ADCPs. Current measurements data were recorded between September 24th and October 4th, 2022, during both spring and neap tide periods.

Figure IIB-10 includes three time-series plots of water depth (meters), near-bottom current velocities at 3.2 to 4.2 meters above the seabed and at 2.2 to 4.2 meters above the seabed. These three plots show the following:

- The water depth plot illustrates the tidal elevation range of 10 meters (33 feet) during the spring tide period and decreasing to 5 to 7 meters (16 to 23 feet) during the neap tide period—when the outfall field tracer study was performed on October 1st and 2nd, 2022.
- These tidal current velocity plots for the two depth ranges show the same results with flood tide velocities of 200 cm/sec and ebb tide velocities of 250 cm/sec during the spring tide period.
- For the neap tide period, these tidal current velocity plots for the two depth ranges show flood tide velocities that average ~125 to 150 cm/sec and ebb tide velocities that average 160 to 190 cm/sec.

Current vectors recorded for ebb and flood currents are very consistent and clearly confined to a very narrow range of current directions. Flood tide currents are directed to the east-northeast (ENE) at approximately 65° true and ebb tide currents are directed westerly at approximately 275° true. Figure IIB-11 provides a polar scatter plot of speed and direction data for the NE ADCP mooring data showing an offset in direction because of proximity to Point Woronzof. When speed and direction pairs were sorted into 16 direction bins and 10 current speed bins, fifteen percent of the currents were < 50 cm/s, with most of the speeds exceeding 150 cm/s (4.9 feet per second). Figure IIB-12 illustrates that the ebb and flood current directions at the AWPCF outfall turret are nearly orthogonal to the outfall turret ports discharge.

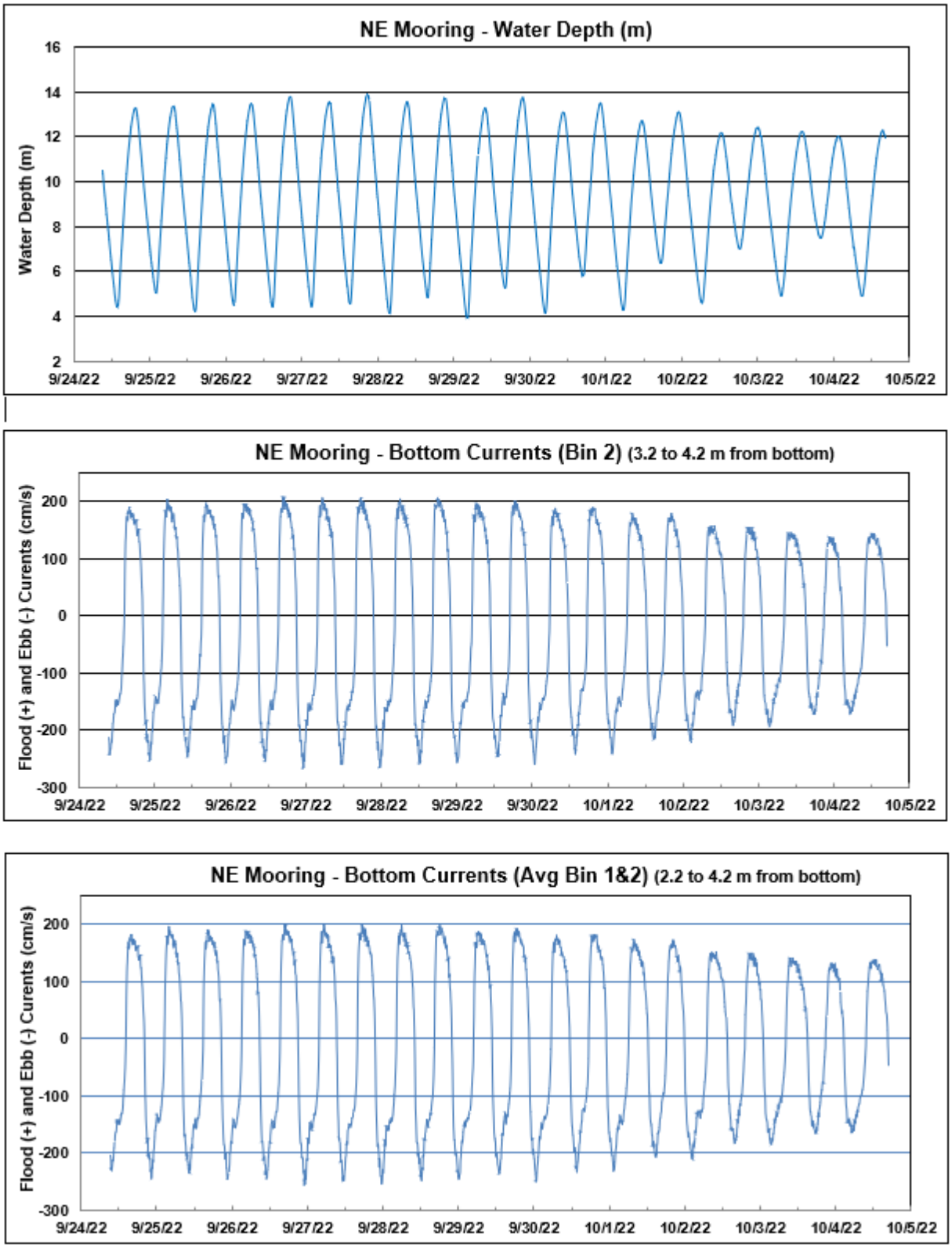


Figure IIB-10. Time-Series Plots of Water Depth (meters) and Near-Bottom Current Velocities (at 3.2 to 4.2 meters and at 2.2 to 4.2 meters above the seabed) near the AWPCF Outfall off Point Woronzof

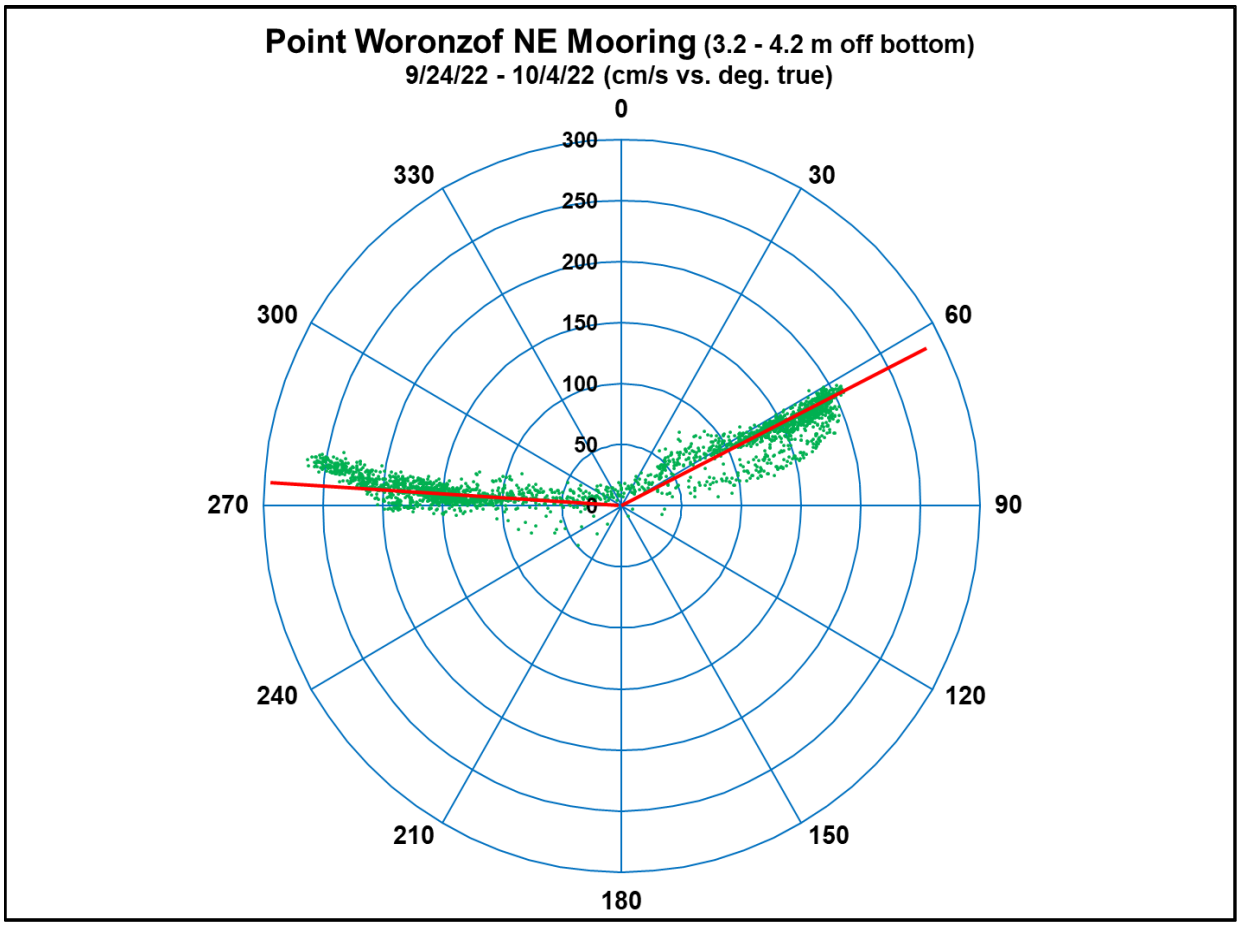


Figure IIB-11. Polar Vector Scatter Plot of Near-Bottom Current Velocities and Directions (at 3.2 to 4.2 meters above the seabed) near the AWPCF Outfall off Point Woronzof (9-24-2022 to 10-4-2022)

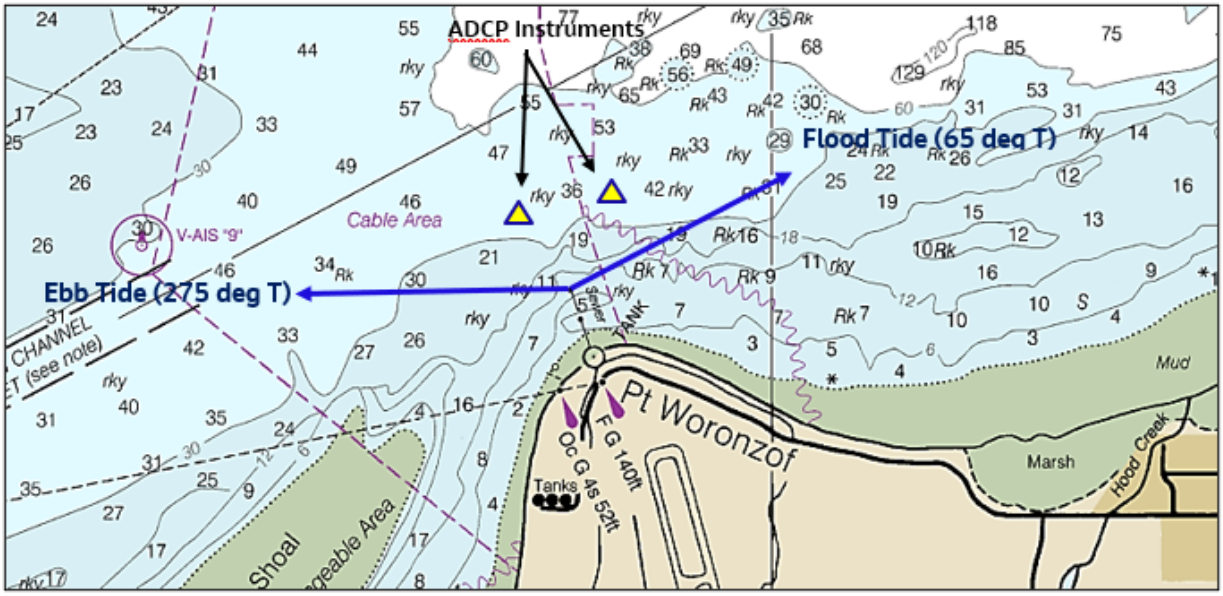


Figure IIB-12. Plot of Principal Ebb and Flood Tide Current Directions at the AWPCF Outfall off Point Woronzof (9-24-2022 to 10-4-2022)

Figure IIB-13 provides a progressive vector diagram of discharge plume transport in Cook Inlet that demonstrates that effluent constituents discharged will not build up in the vicinity of the discharge over

subsequent tidal cycles in upper Cook Inlet. This figure was developed by adding each 6-minute current vector end-to-end to determine net water transport from the AWPCF outfall site. The progressive vector diagram plot originates at the outfall site (in the lower right portion of the plot) and shows continuous transport to the west-southwest (down Cook Inlet) on each tidal cycle. Transport during ebb tides ranged from approximately 25 to 40 kilometers (km) on each tidal cycle with a net transport to the west, whereas during flood tides, plume transport was less, ranging from approximately 20 to 35 km and directed to the east-northeast. The net transport over the period of record based on the measurements at the NE ADCP mooring was directed west and out of Cook Inlet. This diagram illustrates that after initial mixing of any effluent plume, the dispersed plume is not expected to pass back over the AWPCF outfall on subsequent tidal cycles due to the geometry of the coast at Point Woronzof and the location of the outfall. Therefore, any pollutants being discharged will not build up over subsequent tidal cycles other than in trace amounts. Also, since the ebb tides are stronger than the flood tidal currents, net transport will be out of Knik Arm and down Cook Inlet.

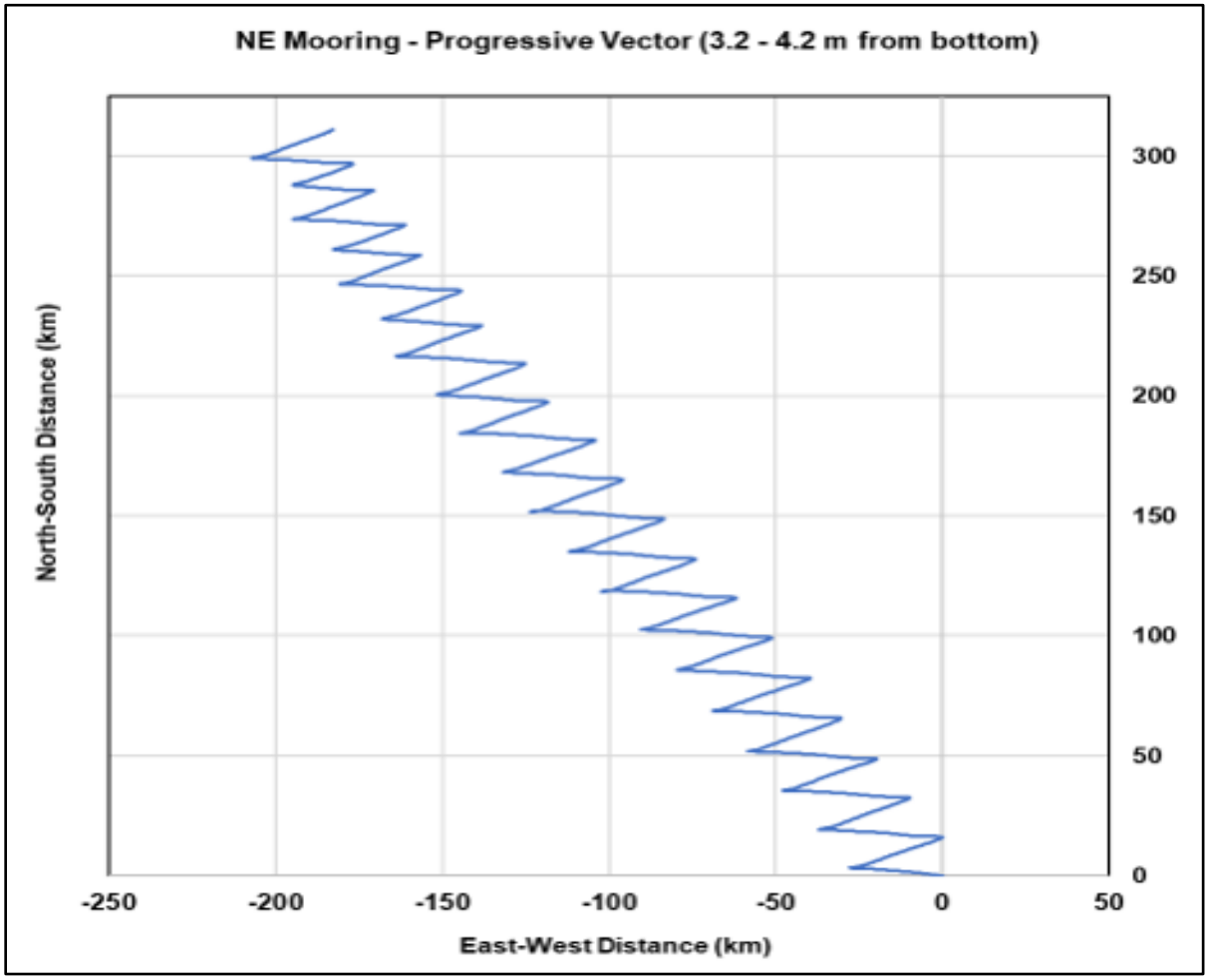


Figure IIB-13. Progressive Vector Scatter Plot of Near-Bottom Currents Travel Direction and Distance (at 3.2 to 4.2 meters above the seabed) from the AWPCF Outfall off Point Woronzof (9-24-2022 to 10-4-2022)

Ambient current speed and direction recordings by the installed NE ADCP current meter are plotted in Figure IIB-14 for October 1, 2022, to illustrate the details of current speeds and directions (recorded every 6 minutes) during ebb and flood tides and during tidal reversal. Figure IIB-14 shows current speeds range from 50 to 170 cm/sec during flood tide and range from 50 to 210 cm/sec during ebb tide. The current direction plot clearly demonstrates a very rapid tide reversal with flood to ebb tide reversal duration of 6-12 minutes, and ebb to flood tide reversal within 6 minutes. (Note that the vertical lines on

the direction plots during tide reversals are artifacts of the two-dimensional plot and actual current directions during tidal reversal show the plume rotating offshore of the outfall site.) The plot also illustrates that the periods with reducing ambient current velocities (less than 100 cm/sec) prior to tidal reversal were limited to approximately 30 minutes.

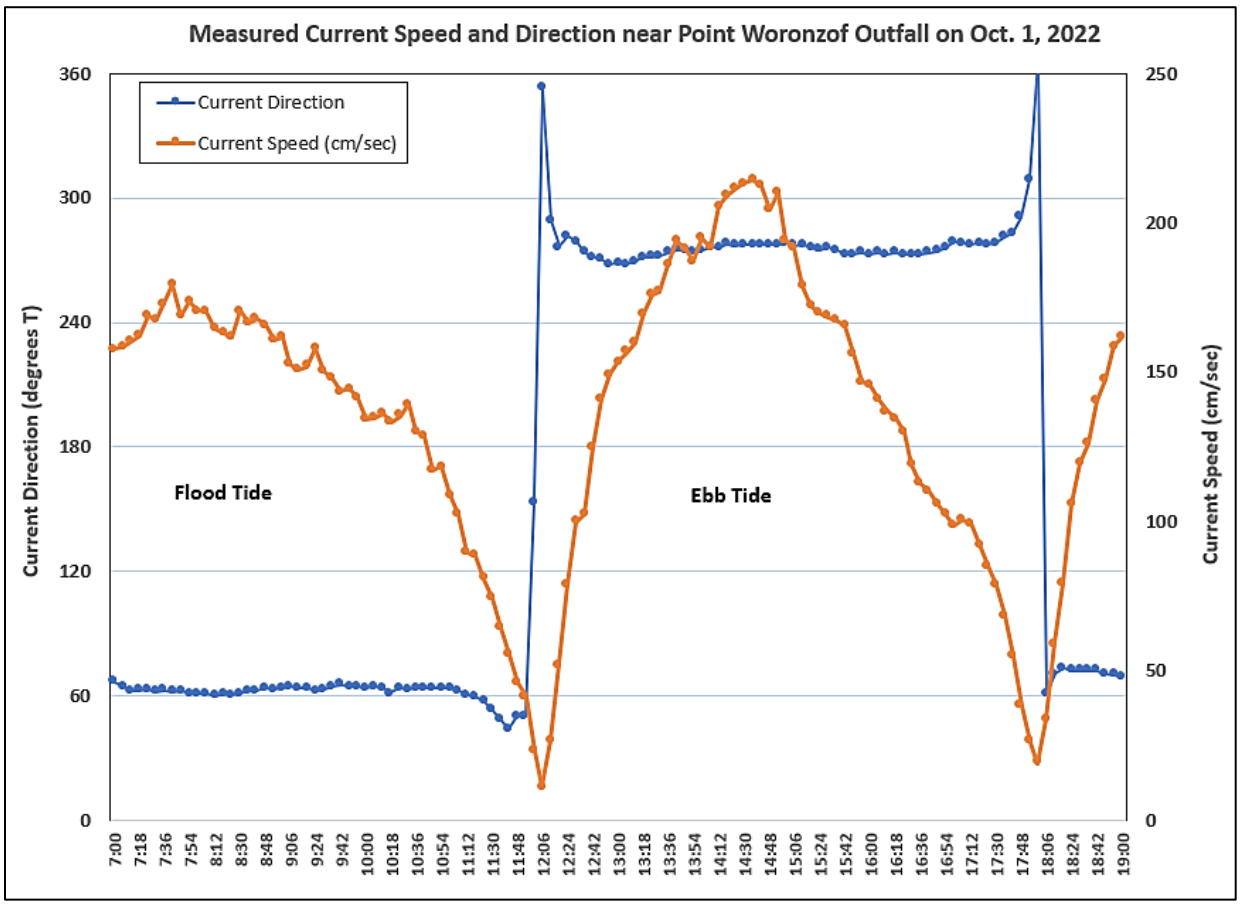


Figure IIB-14. Time-Series Plot of Near-Bottom Currents Velocities and Direction Recorded October 1, 2022, at the ADCP NE Meter Near the AWPCF Outfall off Point Woronzof

The key findings and observations based on 2022 ADCP current data collections are summarized as follows:

- During the study, a tidal range of 10 meters (33 feet) occurred during the spring tide period and 5 to 7 meters (16 to 23 feet) during the neap tide period;
- During the spring tide period, tidal current velocities for the two depth ranges show the same results with flood tide velocities of 200 cm/sec and ebb tide velocities of 250 cm/sec;
- For the neap tide period, tidal current velocities for the two depth ranges show flood tide velocities that average 125 to 150 cm/sec and ebb tide velocities that average 160 to 190 cm/sec;
- Current vectors were very consistent for ebb and flood currents, with ebb flows being directed to the east-northeast at approximately 65° true and flood currents westerly at approximately 275° true;
- Ebb and flood current directions at the AWPCF outfall diffuser turret are nearly orthogonal to the discharge direction of the ports;
- Analysis of progressive current vector data (long-term discharge plume transport in Cook Inlet) indicates that pollutants being discharged will not build up over subsequent tidal cycles;

- Because of the geometry of the coastline at Point Woronzof and the location of the outfall, and because ebb tides are stronger than flood tidal currents, net transport of the AWPCF discharge plume is westward into lower Cook Inlet and the Gulf of Alaska; and
- The time-series evaluation of current speeds and direction around tidal reversals clearly demonstrates a very rapid tide reversal with flood to ebb tide reversal duration of 6-12 minutes, and ebb to flood tide reversal within 6 minutes.

Based on current measurements data collected in 2022, the cumulative frequency distribution of ebb and flood current speeds are summarized as follows: 0.69 m/sec (ebb) & 0.59 m/sec (flood) are the lowest 10th percentile velocities; 1.53 m/sec (ebb) & 1.47 m/sec (flood) are the 50th percentile velocities; and 2.25 m/sec (ebb) & 1.89 m/sec (flood) are the 90th percentile velocities.

Density Structure

The receiving waters in the vicinity of the Point Woronzof outfall are very well-mixed, with very limited or no density stratification. Results from the AWPCF annual water quality monitoring and other receiving water data collections show that density differences from the surface to the bottom in upper Cook Inlet are small at all times of the year, as indicated by the density profiles in Figures IIB-15, IIB-16, and IIB-17. Only weak and transient (tidal dependent) density gradients have been measured in summer (Tetra Tech, 1977; Kinnetic Laboratories, 1979; AWPCF Monitoring Program Annual Reports). However, uniformity in water column density is generally maintained by the vigorous tidal mixing in Knik Arm. The 1998 permit renewal application reported that, in the fall temperatures begin to drop and the salinity slowly increases. In the winter, the temperatures drop to near 0° C and salinity increases to about 21 psu. In oceanography, a salinity value expressed in practical salinity units (psu) can be considered directly equal to the same value in parts per thousand (ppt).

The major rivers and streams contributing fresh water to Upper Cook Inlet and Knik Arm include the Susitna River, Matanuska River, Knik River, Eagle River, Ship Creek, Chester Creek, and the Little Susitna River. These sources of fresh water, combined with other rivers flowing into upper Cook Inlet, keep the salinity generally below 21 psu. Measured water column salinities in upper Cook Inlet near Point Woronzof show a range from 4 to 13 psu during the summer and early fall to 16 to 21 psu in spring (refer to Figure IIB-15), and ice flows can occur from November through April. Water column density profiles (based on salinity and temperature data) show little to no water column stratification (Figure IIB-16) due to the strong tidal-driven currents and vertical mixing in upper Cook Inlet and the Point Woronzof area.

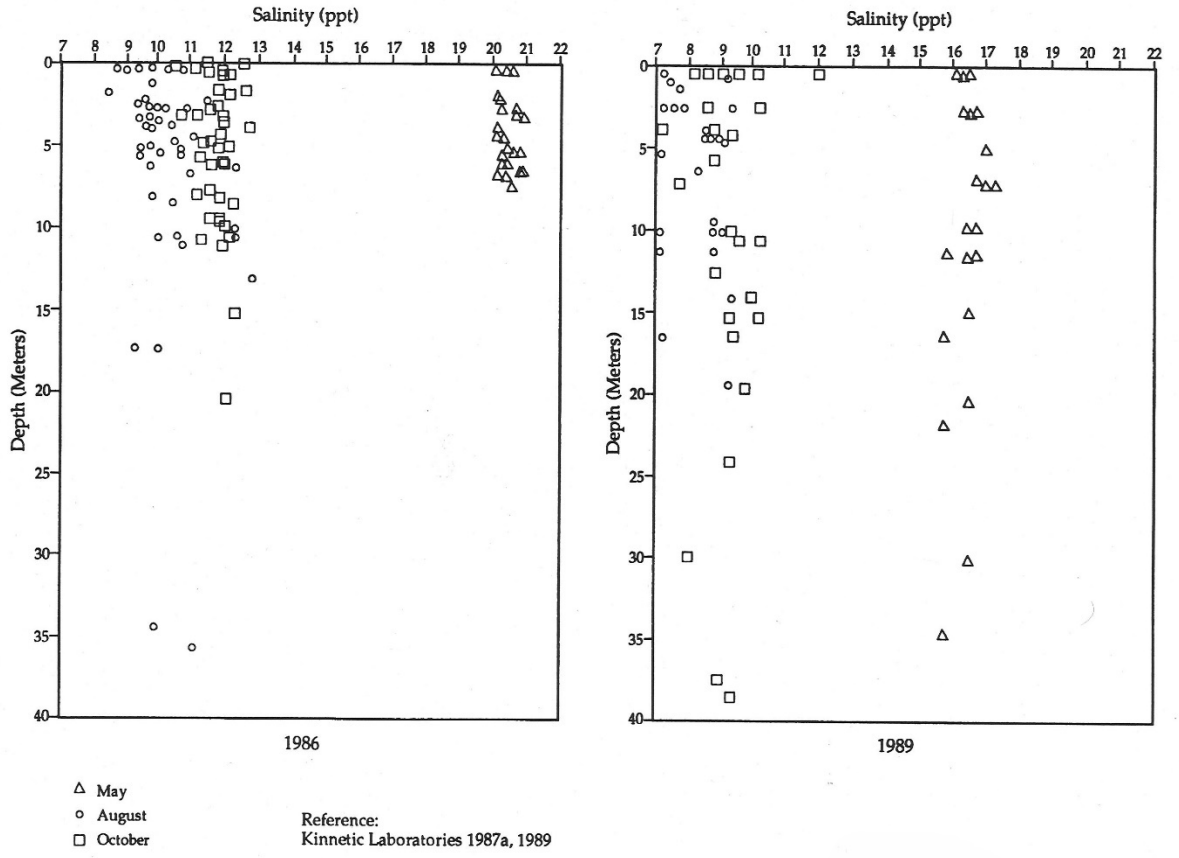


Figure IIB-15. Water Column Profiles of Seasonal Salinity Measurements in the Water Column near Point Woronzof in May, August, and October of 1986 and 1989 (after CH2M HILL 2005)

Hydrographic profiles recorded at the AWPCF outfall site and the Point MacKenzie control site (located across the mouth of Knik Arm and outside of any plume influence from the AWPCF outfall) are presented in Figure IIB-17, and these profile data show a well-mixed water column with no vertical stratification, which is typical for upper Cook Inlet and lower Knik Arm. Upper Cook Inlet temperatures and salinities were compiled from annual NPDES monitoring data, and other studies in upper Cook Inlet and Knik Arm. Receiving water temperatures and salinities for dry season (November–June) and wet season (July–October), are summarized as follows: dry season temperature and salinity of 5.0°C & 21.0 practical salinity units (psu), and wet season temperature and salinity of 12.0°C & 13.0 psu.

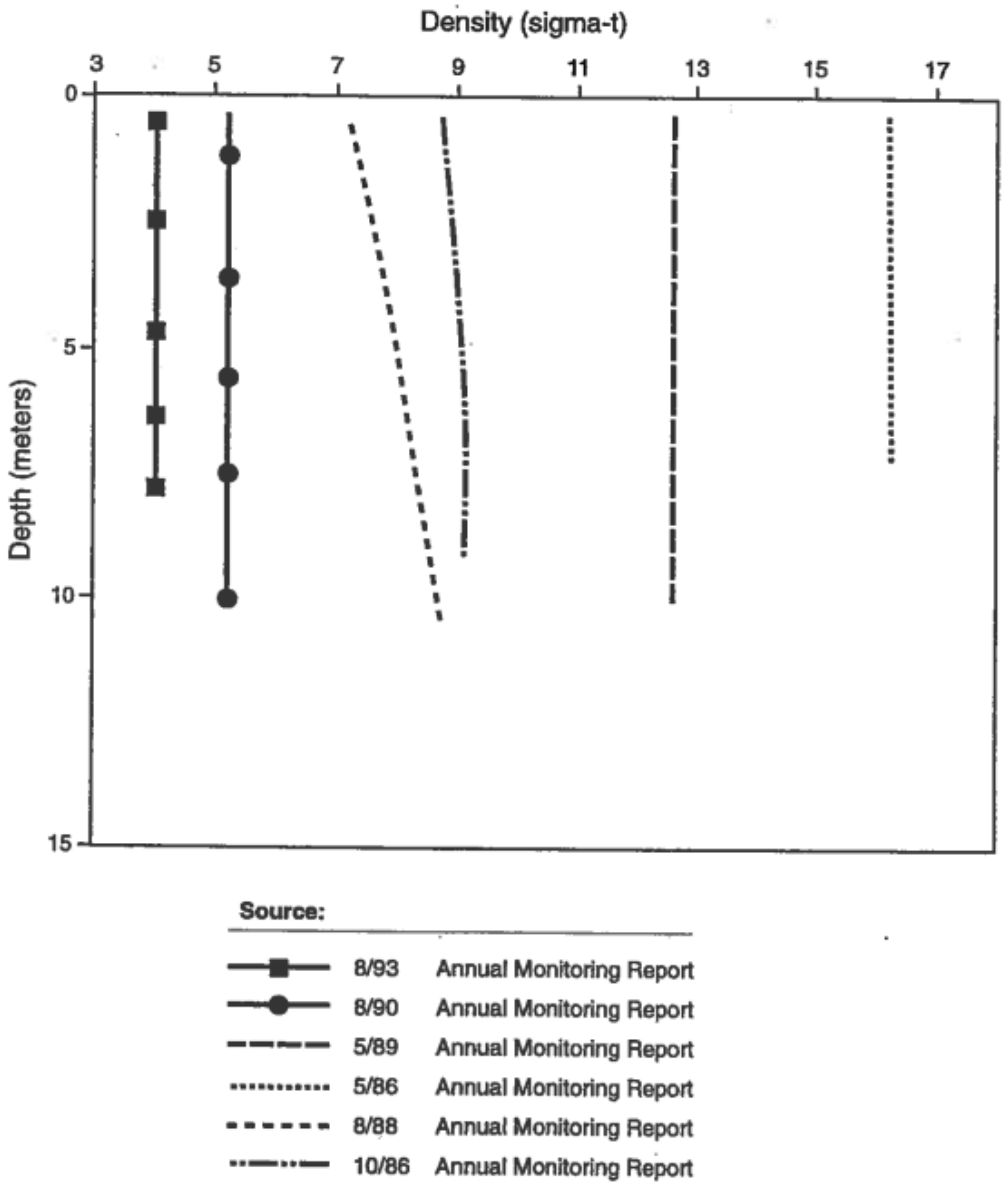


Figure IIB-16. Examples of Seasonal Density Profile Variability in Knik Arm Based on AWWU Annual Monitoring Data (after CH2M HILL, 2005)

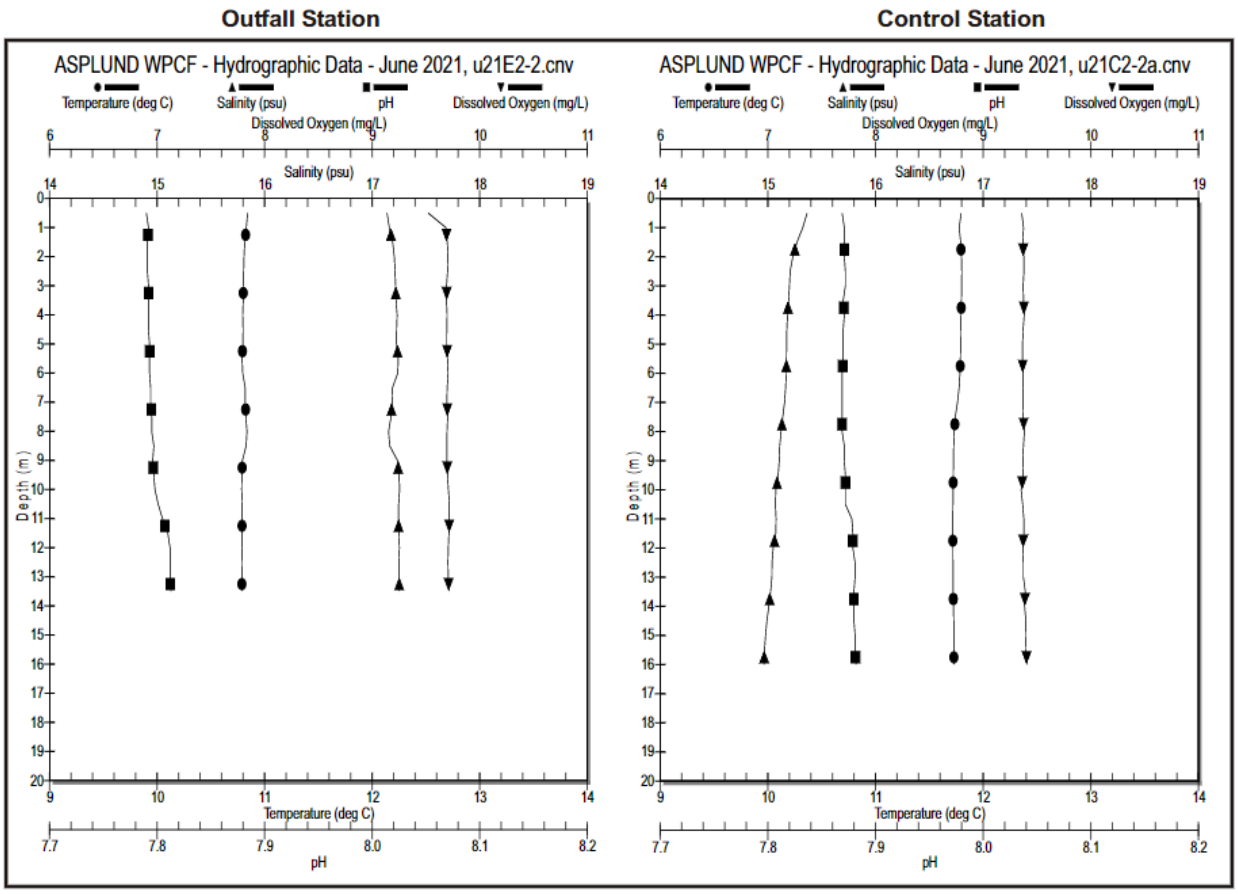


Figure IIB-17. Hydrographic Profiles at AWPCF Outfall and Control Stations in June 2021 (after KEI, 2022)

Based on these available density data, density stratification in the vicinity of the outfall varies slightly with the tidal cycle, reaching a maximum at high tide. Higher densities occur at high tide and during the winter. Receiving water densities in summer range from 1.0015 to1.0072 g/cm3 (1.5 to 7.2 sigma-t units) near the surface and from 1.0023 to 1.0082 g/cm3 (2.3 to 8.2 sigma-t units) at the bottom. Winter densities range from 1.014 to 1.016 g/cm3 (14 to16 sigma-t units) for both surface and bottom measurements. Plots of summer and winter season density profiles during low and high tide near the AWPCF outfall site are presented in Figure IIB-18.

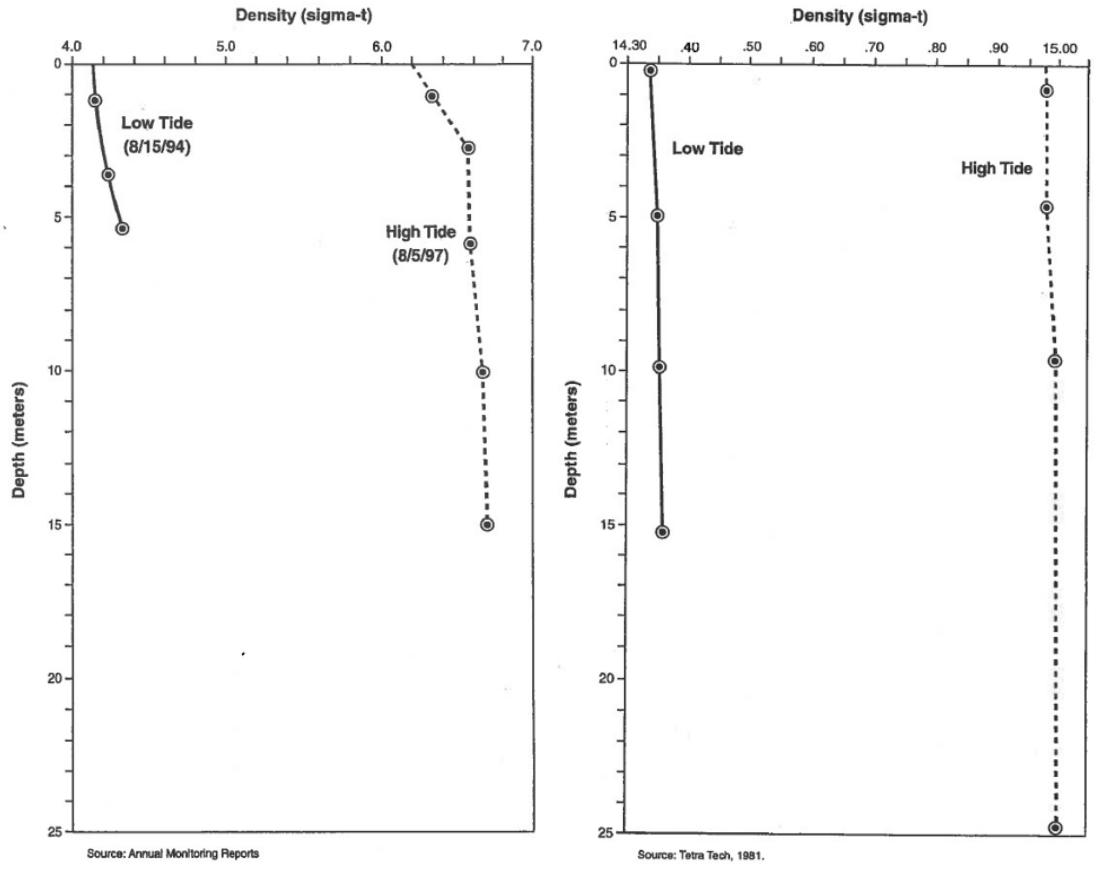


Figure IIB-18. Examples of Water Column Density Profiles in Summer (Left Plot) and Winter (Right Plot) Seasons near the AWPCF Outfall (after KEI)

4. ***Oceanographic conditions in the vicinity of the current and proposed modified discharge(s). Provide data on the following [40 CFR 125.62(a)]:***

<u>Lowest ten percentile current speed (m/sec)</u>

The lowest 10-percentile current speeds recorded near the AWPCF outfall were recorded by the NE ADCP instrument installation in September-October 2022 (11-day data record). Table IIB-2 summarizes ambient current velocities percentiles for ebb and flood tides, as well as combined, and based on upper and lower ADCP bins and for the average of multiple depth bins. The recorded 10th-percentile current velocities are 69 cm/sec under ebb tide and 59.3 cm/sec under flood tide, based on the average of bins 1-3. The recorded 50th-percentile current velocities are 152.8 cm/sec under ebb tide and 146.8 cm/sec under flood tide, based on the average of bins 1-3. The recorded 90th-percentile current velocities are 224.9 cm/sec under ebb tide and 189.2 cm/sec under flood tide, based on the average of ADCP bins 1-3.

Table IIB-2. Ambient Current Velocities Percentiles for Ebb and Flood Tides and Combined Recorded at Depths by ADCP NE Meter near the AWPCF Outfall off Point Woronzof (cm/sec)

NE ADCP Mooring (9/24/22 thru 10/4/22)

Distance from bottom	Bin1 (2.2-3.2 m)	Bin2 (3.2-4.2 m)	Bin3 (4.2-5.2 m)	Avg Bin1-2 (2.2-4.2)	Avg Bin1-3 (2.2-5.2 m)
10% tile - Flood	54.3	61.3	62.3	57.8	59.3
50% tile - Flood	136.6	148.0	155.8	142.0	146.8
90% tile - Flood	175.9	189.8	201.9	182.7	189.2
10% tile - Ebb	69.0	68.8	67.7	68.9	68.5
50% tile - Ebb	142.0	153.7	162.7	147.8	152.8
90% tile - Ebb	210.3	226.3	238.1	217.8	224.9
10% tile - Total	61.8	64.6	65.3	63.3	63.9
50% tile - Total	139.8	151.4	160.6	145.6	150.6
90% tile - Total	191.1	205.8	218.4	198.5	205.1

Predominant current speed (m/sec) and direction (true) during the four seasons

Seasonal changes in predominant current speeds and directions have not been observed and are not expected near the AWPCF outfall site off Point Woronzof due to the dominance of tidal-induced currents. All ambient current data analyses and studies in upper Cook Inlet and lower Knik Arm clearly demonstrate the over-riding dominance of tides on current speeds and the resulting circulation patterns. Freshwater inputs from various rivers and streams into upper Cook Inlet and Knik Arm is a variable that has been shown to have negligible effects on currents, ranging between 0.046 to1.9 percent of the volume of the tidal prism. Contributions from other seasonal variables such as winds and precipitation are expected to be of even lesser importance.

Table IIB-2 summarizes ambient current velocities percentiles for ebb and flood tides (as well as combined total) and based on upper and lower ADCP bins and for the average of multiple depth bins. Based on the 11-day continuous current data record collected in September-October 2022, the predominant (50th-percentile) current speeds for ebb and flood tide conditions were calculated to be 1.53 m/sec and 1.47 m/sec, respectively.

The predominant current directions as determined by the 11-day continuous current data record collected in September-October 2022 are directed to the east-northeast at approximately 65° true under flood tides and directed westerly at approximately 275° true under ebb tides (see Figures IIB-11 and IIB-12). These current measurements are consistent with current measurements recorded by NOAA during a series of current measurement surveys using Acoustic Doppler Current Profilers (ADCPs) in the summer months between 2005 and 2012 in Cook Inlet.

Period(s) of maximum stratification (months)

Generally, the Knik Arm is a thoroughly mixed water body with a small vertical density gradient. However, weak and temporary density gradients have been recorded during peak periods of freshwater runoff (Tetra Tech, 1977; Kinnetic Laboratories, 1979). Representative historical seasonal data on density gradients are shown in Figure IIB-15, IIB-16, and IIB-18. Density profiles for other periods do not show any significant gradients. Figure IIB-18 shows the high and low tide profiles for summer and winter seasons.

Period(s) of natural upwelling events (duration and frequency, months)

Current speed, current direction, and circulation patterns in upper Cook Inlet are controlled predominantly by the prevailing tides and by the local bathymetry. These forces combine to induce constant mixing within the water mass. Other forces, such as winds and seasonal inputs from fresh water sources that may influence the water mass movement in upper Cook Inlet and Knik Arm have not shown significant effects. Under the site-specific conditions at the AWPCF outfall site with 4.6 meters depth at MLLW, it is very unlikely that upwelling would occur.

Although, not considered upwelling or downwelling in the traditional sense, reoccurring tidal rips have been well documented in Cook Inlet particularly near the Forelands and near Kalgin Island where converging currents result in vertical current shears with a convergent zone at the surface. No persistent tidal rips have been documented in Knik Arm or in the vicinity of the outfall.

Density Profiles During Period(s) of Maximum Stratification

Maximum density stratification, which is essentially insignificant at the AWPCF outfall site in upper Cook Inlet, occurs in summer during peak freshwater runoff from rivers and creeks. Example profiles are provided in Figures IIB-15 through IIB-18. Even in the summer, however, the density gradient is weak and varies from surface to bottom by no more than about one sigma-t unit.

5. ***Do the receiving waters for your discharge contain significant amounts of effluent previously discharged from the treatment works for which you are applying for a Section 301(h) modified permit? [40 CFR 125.57(a)(9)]***

No. The large tidal excursions and currents in upper Cook Inlet and Knik Arm provide substantial flushing that prevents the buildup of effluent constituent concentrations of previously discharged wastewater in the vicinity of the discharge. Flushing characteristics of upper Cook Inlet and Knik Arm can be described in terms of net flow, tidal excursion and tidal exchange (tidal mixing processes), flushing time, and background dilution. Some of these methods are more appropriate and realistic for this particular system, but all of the methods are useful for describing the various flushing processes that combine to determine the overall flushing action of the water body.

Net transport is an important aspect of assessing discharge waste field dispersion in a dynamic system. The rate of net down-Inlet transport of water past Point Woronzof has been calculated by estimating the stream discharges into upper Cook Inlet and Knik Arm and dividing this estimate by the adjacent channel cross-sectional area using a 2-dimensional model. Stream flow into upper Cook Inlet and Knik Arm was derived mainly from ice and glacier melt water via the local rivers and which varies seasonally. Significant river flows typically occur between May and September. Summer net transport distances for July and August are estimated between 1,200 to 1,500 m (4,000 to 5,000 ft) per day; and estimates for winter range between 30 to 40 m (100 to 125 ft) per day (Marine Advisors, 1965; Murphy, et al., 1972).

Other sources of freshwater also need to be accounted for in net flow estimates. Secondary sources of freshwater include sheet runoff at the shoreline and direct precipitation. Sheet runoff, which is limited to a strip a few meters wide along the shoreline, can be neglected. Precipitation in the Anchorage area averages 0.37 m (14.6 in) per year. The area of the Knik Arm at MLLW is about 404 km2 (156 square miles). The volume of precipitation is, therefore, 1.5×10^8 m3/yr (5.3×10^9 ft3/yr). The mean river discharge volume is1.1×10^{10} m3/yr (3.9×10^{11} ft3/yr}, a factor of 74 greater than the direct precipitation. Therefore, direct precipitation is negligible as a flushing source (Tetra Tech, 1981), even if the area is taken at mean higher high water (MHHW), which would more than double the direct precipitation volume.

As described above, upper Cook Inlet and Knik Arm are strongly dominated by tides, and tidal mixing processes dominate the flushing of the system. To compare the importance of flushing by freshwater to that by tidal movement, the tidal excursion and tidal prism are compared to net flow and freshwater flows. Tidal excursion is the linear distance a particle moves on each half tidal cycle (ebb or flood directions) or on a tidal cycle regardless of direction, depending on the particular convention in use.

The net transport of water containing effluent discharged from the AWPCF outfall during each tidal cycle can be depicted as a progressive vector plot of current direction and velocities, where the outfall (origin) is zero (0) on the east-west axis and each 6-minute current vector is added end-to-end of the preceding vector to determine the net water mass transport (refer to Figure IIB-13). Transport of this water during ebb tides ranged from approximately 25 to 40 kilometers (km) to the west-southwest out of Cook Inlet on each tidal cycle. During flood tides travel ranged from approximately 20 to 35 km to the east-northeast on each tidal cycle. The net transport over the period of record, based on the measurements at the NE ADCP mooring, was directed west-northwest out of Cook Inlet. This progressive vector plot illustrates that after mixing and dispersion of the AWPCF outfall plume during each tidal exchange, the dispersed plume will not travel back over AWPCF's outfall on subsequent tidal cycles because of the geometry of the shoreline around Point Woronzof and the location of the outfall, and the greater magnitude of ebb tide currents. Ebb tides have higher current velocities than the flood tidal currents, plus the addition of riverine inputs results in net transport out of upper Cook Inlet. Therefore, effluent constituents discharged from the AWPCF outfall do not accumulate in the discharge area on subsequent tidal cycles.

Net tidal excursion, which can be used to estimate tidal exchange and flushing time, is calculated after

accounting for current direction. Based on the 50th percentile ebb current velocity (153 cm/sec) from the 2022 current measurements at the outfall site, tidal excursions (over a half tidal cycle) at the discharge point are on the order of 20 times the net streamflow for the summer and 1,000 times the net stream flows for the winter. Calculations of tidal excursion distance indicate a net excursion of approximately 5 km in a west-southwest (ebb) direction per tidal cycle, with a flood tide excursion of 20 to 35 km and an ebb excursion of 25 to 40 km.

Tidal prism is the volume of water exchanged over a half tidal cycle (volume between high water and low water) in a particular basin. Tidal prism volume can be compared with the freshwater volume introduced over a tidal cycle (approximately 12 hours). The tidal prism is 2.75 x 109 m3 (9.71 x1010 ft3). Freshwater input varies from 5.26 x 107 m3 (1.86 x109 ft3) in July to1.26 x 106 m3(4.45 x107 ft3) in March. Freshwater input is, therefore, 1.9 percent of the tidal prism in July and 0.046 percent of the tidal prism in March. A freshwater input of 1.9 percent of the tidal prism is not considered significant (Tetra Tech, 1977). From the above calculations it is clear that the movement of water out of Knik Arm into upper Cook Inlet on ebb tides is the primary flushing mechanism. However, the calculation of overall flushing must account for that fraction of water leaving on ebb flows, that is returned on the subsequent flood (the remainder being newly introduced water). Overall flushing depends on the mixing processes both within Knik Arm, Turnagain Arm, and upper Cook Inlet. Therefore, the flushing of Knik Arm and adjacent upper Cook Inlet are directly related to the flushing of the other portions of Cook Inlet, as water is exchanged within this region.

Flushing time is the time required to remove a volume of discharged wastewater from a region of waterbody. Gatto (1976) and Kinnetic Laboratories (1979) have both calculated flushing times for Knik Arm; the results are shown in Table IIB-3. Gatto used the modified tidal prism method, whereas Kinnetic Laboratories used the simplified prism method. The difference in assumptions made and methods used helps to explain the variations in the estimated flushing time. It is recognized that these are rough estimates and should only be considered order of magnitude approximations.

Table IIB-3. Estimated Flushing Times Calculated for Knik Arm into Upper Cook Inlet

Reference	Time of Year	Flushing Time (hours)
Gatto, 1976[a], [b]	March	205.6
	July	13.2
	Annual Average	48.2
Kinnetic Laboratories, 1979[c]	Summer	120[c]
	Winter	744[c]
Tetra Tech, 1981[c]	Annual Average	37.7[d]

[a] Knik Arm is the body of water north of the line between Point MacKenzie and Fish Creek in Anchorage.

[b] Values are based on the modified tidal prism method.

[c] Values are calculated using the methods developed by Officer and Ryther (1977).

[d] Flushing time based on mean net tidal excursion.

The estimated flushing times shown in Table IIB-3 indicate that flushing times for Knik Arm are on the order of hundreds of hours in the winter months and tens of hours in the summer months, with annual average flushing times in an intermediate range. This indicates that the freshwater flows in the summer have an appreciable effect, although the tidal exchanges dominate flushing. It is noted that the times discussed above are calculated for Knik Arm as a whole. Flushing times will vary from point to point, generally increasing toward the head of the estuary.

A more meaningful measure of the flushing characteristics, in the context of the discharge of wastewater into upper Cook Inlet, is the long-term buildup of effluent concentrations throughout the area and particularly in the immediate vicinity of the AWPCF discharge.

Tetra Tech (1977) employed a set of link-node one-dimensional numerical models, the results of which can be used to predict the ambient concentrations of effluent throughout Cook Inlet. The set of models consisted of a hydrodynamic model and a tidally averaged water quality (transport) model. The hydrodynamic model was calibrated using observed tidal elevations and currents. The calibration is considered very good, with minor under-prediction of currents at the extremes. The water quality model was calibrated using observed salinity values for spring (low runoff) and fall (high runoff) conditions. The calibration appears to be reasonable, with model predictions matching observed salinity values throughout the system and somewhat over-predicting salinity for the low runoff period in the vicinity of Point Woronzof. It is noted that underpredicting currents and overpredicting salinity results is an underprediction of flushing and is, therefore, considered conservative for the application presented below.

The results of the link-node one-dimensional numerical model developed by Tetra Tech (1977) provide a conservative estimate of the flushing characteristics for the long-term ambient effluent concentrations or buildup in upper Cook Inlet and lower Knik Arm. The results are presented for an area of approximately 30 square miles extending from Cairn Point in Knik Arm (northeast) to a point approximately 3 miles southwest of Point Woronzof in upper Cook Inlet. The model results were presented as average, maximum, and minimum concentrations of a tracer. The average concentration is representative of the entire area. The maximum concentration is representative of the area around the node at the outfall location and represents an area of 1.5 square miles. The relative concentrations were converted to dilutions and are shown for the high runoff (fall) and low runoff (spring) periods on Figure IIB-19 for a range of effluent discharge flows. Note that minimum dilution corresponds to maximum concentration and represents the smaller area immediately adjacent to the discharge, as described above.

The highest monthly effluent discharges occur during the summer wet season (35.7 mgd maximum monthly flow for 2018-2022). This maximum monthly effluent flow will result in effluent ambient concentrations in the receiving waters in the immediate vicinity of the discharge of about 0.08 percent (dilution of at least 1200:1).

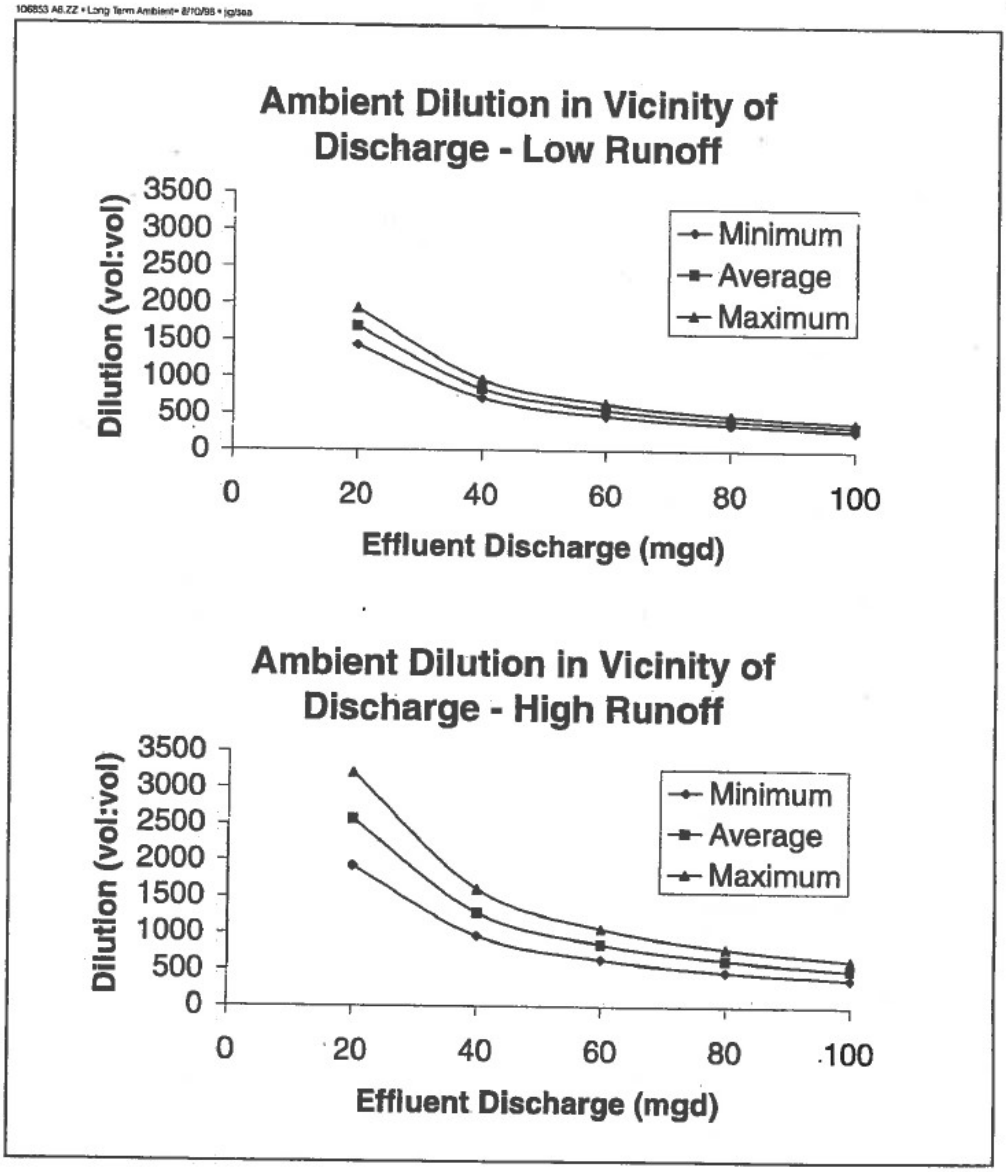


Figure IIB-19. Predicted Long-term Ambient Dilution of Effluent Discharge in the Vicinity of the AWPCF Outfall (after Tetra Tech,1977)

In addition to the link-node model calculations presented above (as developed in Tetra Tech, 1977), three- dimensional (3-D) numerical modeling of the transport and distribution of effluent constituents from the Asplund WPCF outfall was developed to support an ecological risk assessment during the development of the 2011 Biological Evaluation of the Asplund WPCF Discharge to Upper Cook Inlet (CH2M HILL, 2011). Appendix F in the 2011 Biological Evaluation (BE) presents the model development, calibration, and applications for the upper Cook Inlet BE model. These results of the numerical modeling have also been applied in the 2025 Updated Biological Evaluation of the Asplund WPCF Discharge to Upper Cook Inlet (Jacobs and ECO49, 2025).

The numerical modeling developed for the upper Cook Inlet applied a 3-D hydrodynamic and transport model to predict mixing and transport of effluent-derived water column and sediment constituents. The Environmental Fluid Dynamics Code (EFDC) model (Hamrick, 1996) was selected as the most appropriate farfield model to address the mixing, fate, and transport of the parameters of concern, based on experience with hydrodynamic models, plume modeling, Cook Inlet, and the objectives of the BE. Details

of the EFDC numerical model application in upper Cook Inlet and Knik Arm are described in detail in Section IIIB-3 in this Large Applicant Questionnaire.

The EFDC model of upper Cook Inlet was developed to investigate the physical processes, sediment dynamics, and concentrations of pollutants of concern at distances from the AWPCF outfall in upper Cook Inlet. The model quantified exposure concentrations of effluent-derived constituents from the Asplund WPCF discharge. The model simulated hydrodynamic and transport processes based on the following factors: tidal forcing, water column density effects, wind-generated currents, inflow from major rivers, effluent loading from the Asplund WPCF, and open water and iced-over conditions. The EFDC model grid in Upper Cook Inlet is illustrated in Figures IIIA-12 and IIIA-13 in Section IIIB-3. The modeling approach used to address the winter "ice" condition was to turn off surface wind-forcing for the area of the model expected to be frozen over. This approach removed any wind-driven currents and mixing during the winter period (November to March) to provide a conservative representation of winter "ice" conditions in upper Cook Inlet and Knik Arm.

The transport and distribution of whole effluent was simulated in the model using a dye-tracer as a surrogate. The concentrations of individual effluent constituents were represented by dye-tracer concentrations at any point in space and time and the known or assumed concentrations of individual constituents in the AWPCF whole effluent. Model simulations were conducted for the following three representative categories: conservative substances (no degradation of the dye tracer), slowly degrading substances (half-life of the dye tracer = 150 days), and rapidly degrading substances (half-life of the dye tracer = 7 days).

The 3-D hydrodynamic modeling development and findings are summarized as follows:

- The 3-D hydrodynamic/transport model (EFDC) was developed for upper Cook Inlet and Knik Arm and calibrated using water levels recorded at the Port of Anchorage NOAA gauge, current velocities recorded by five acoustic Doppler current profiling (ADCP) current meter stations in upper Cook Inlet, and temperature records from the Port of Anchorage NOAA gauge.
- The model calibrations demonstrate that the model simulations are realistic and accurate, and model simulations reproduce the circulation and transport patterns of Upper Cook Inlet and provide a sound technical basis to evaluate the transport and distribution of Asplund WPCF discharge constituents in the modeled area.
- The model results clearly show the geographic and seasonal variability of effluent distribution, and the effects of degradation on the distribution of effluent constituents were clearly demonstrated.
- The model-predicted dye-tracer average dilutions of whole effluent over the upper Cook Inlet regions range from over 1,000:1 to approximately 20,000:1 for conservative substances that do not degrade rapidly with time.

6. ***Ambient water quality conditions during the period(s) of maximum stratification: at the zone of initial dilution (ZID) boundary, at other areas of potential impact, and at control stations: [40 CFR 125.62(a)(2)]***

As previously indicated, there is essentially little to no stratification in the vicinity of the AWPCF discharge. Receiving water quality data in the vicinity of the Point Woronzof outfall are available from past studies, from the 2022 AWPCF Outfall Mixing Zone Study, and from the AWWU annual receiving water quality monitoring program performed in accordance with the NPDES permit (see Table IIB-1). The NPDES monitoring program, initiated in 1986 and performed by Kinnetic Laboratories (now Kinnetic Environmental), has been conducted annually for the last 39 years. During 1986 and 1989 three seasonal samplings were conducted in accordance with the NPDES permit. The monitoring program has focused the greatest sampling efforts on the summer season since this period represents the time of maximum

biological activity and maximum potential stratification at the discharge area. The purpose of the program is to determine compliance with applicable state water quality standards and regulatory criteria of Section 301(h) of the Clean Water Act.

Table IIB-1 shows the receiving water monitoring dates. This monitoring program has been conducted in accordance with the existing NPDES permit and modifications in Section III.F of the Renewal Application for 301(h) Waiver (April 1990). Receiving water quality monitoring data were collected in spring, summer, and fall of 1986 (Year 1) and 1989 (Year 4) and in the summer only in all other years of the program (1987,1988, and 1990 to present) in accordance with the NPDES permit. The 1999 - 2024 monitoring reports for data collected from 1998 to 2024 are included in Monitoring Program Annual Reports, previously submitted to EPA.

The very high currents in upper Cook Inlet at the outfall site prohibit safely anchoring, therefore water quality monitoring samples and measurements are collected at drifting stations adjacent to drogues released at the outfall diffuser – thereby following in the discharge plume. This approach was followed to avoid difficulties in anchoring the vessel and to adjust for various tidal stages. Figures IIB-5 and IIB-6 summarize selected representative drogue trajectories conducted off Point Woronzof during receiving water sampling conducted in June 2021.

Water quality is sampled at four stations along the drogue trajectories. These stations are located in the vicinity of the outfall, as follows:

- Within the stipulated ZID,
- As near the stipulated ZID boundary (650 meters) as practical, on the down-current side of the diffuser,
- Approximately 1200 to 1500 meters down current from the diffuser along the drogue path, and
- After the drogue has traveled at least 30 minutes or 2 km along the drogue's path or in the subtidal shallows before the drogue grounds.

To determine background receiving water quality, sampling is conducted at the control site prior to or following the sampling at the diffuser stations. The control station is located off Point MacKenzie, approximately 3 nautical miles northeast from the AWPCF outfall off Point Woronzof. Temperature, pH, salinity, dissolved oxygen (DO), and turbidity profiles with depth were measured at each station. Surface samples were also taken to determine color, total residual chlorine, and fecal coliform bacteria concentrations.

a. Provide profiles (with depth) on the following for the current discharge location and for the modified discharge location, if different from the current discharge:

The discharge location has not changed and is not proposed to be changed or modified. The following summarizes receiving water monitoring data for the Point Woronzof outfall. The 1999-2024 annual monitoring reports have previously been submitted to the EPA.

BOD_5 (mg/L)

The concentration of biochemical oxygen demand (BOD_5) in upper Cook Inlet receiving water was determined by a study conducted for the U.S. Army Corps of Engineers in September 1976 (Tetra Tech, 1977). The BOD_5 ranged from a high of 11 mg/L approximately 180 m (600 ft) from the diffuser to a low of 3 mg/L measured approximately 260 m (850 ft) and farther from the diffuser. The average BOD_5 concentration was approximately 4.3 mg/L. No new measurements of receiving water BOD_5 were collected from the monitoring program. BOD_5 data are only included in the database for the plant influent and effluent. The NPDES receiving water monitoring program does not include sample analyses for BOD_5 since it is not required by the NPDES permit and there are no criteria in the Alaska

Water Quality Standards (18AAC70) (ADEC, 2024). Note that the permit does include effluent limits for BOD_5, however, these are technology-based effluent limits (TBEL) rather than based on water quality standards.

Dissolved oxygen (mg/L)

All available data indicate that the upper Cook Inlet waters are near saturation and have no detectable vertical stratification. Dissolved oxygen (DO) data are currently collected during the receiving water sampling every year as part of the annual monitoring program and are also recorded approximately four times per week as part of AWPCF's monitoring. Figure IIB-20 shows the DO data collected in the 1986 and 1989 monitoring programs during the spring, summer, and fall. There is very little variation of DO with depth and no distinct gradient can be determined. Generally, the values for DO were constant for a given season. The maximum difference between surface and bottom readings was approximately 2.0 mg/L. Figure IIB-21 shows the hydrographic profile plots of DO, temperature, pH, and salinity measurements at the AWPCF outfall site and at the control station in June 2023.

Some seasonal variation is observed in DO, as it varies inversely with water temperature. In May, the DO concentration ranged from 7.5 to 11.0 mg/L (at approximate temperature of 7° C); as the water temperature increases in August to over 14° C, the DO concentration decreases to approximately 8.0 to 9.5 mg/L. October DO concentrations typically fall between the spring and summer values. In all seasons, the ambient DO exceeds Alaska's water quality standard of 5 mg/L for marine water uses (estuaries and tidal tributaries). DO values at the ZID and ZID boundary stations were well within the seasonal range of the control station values.

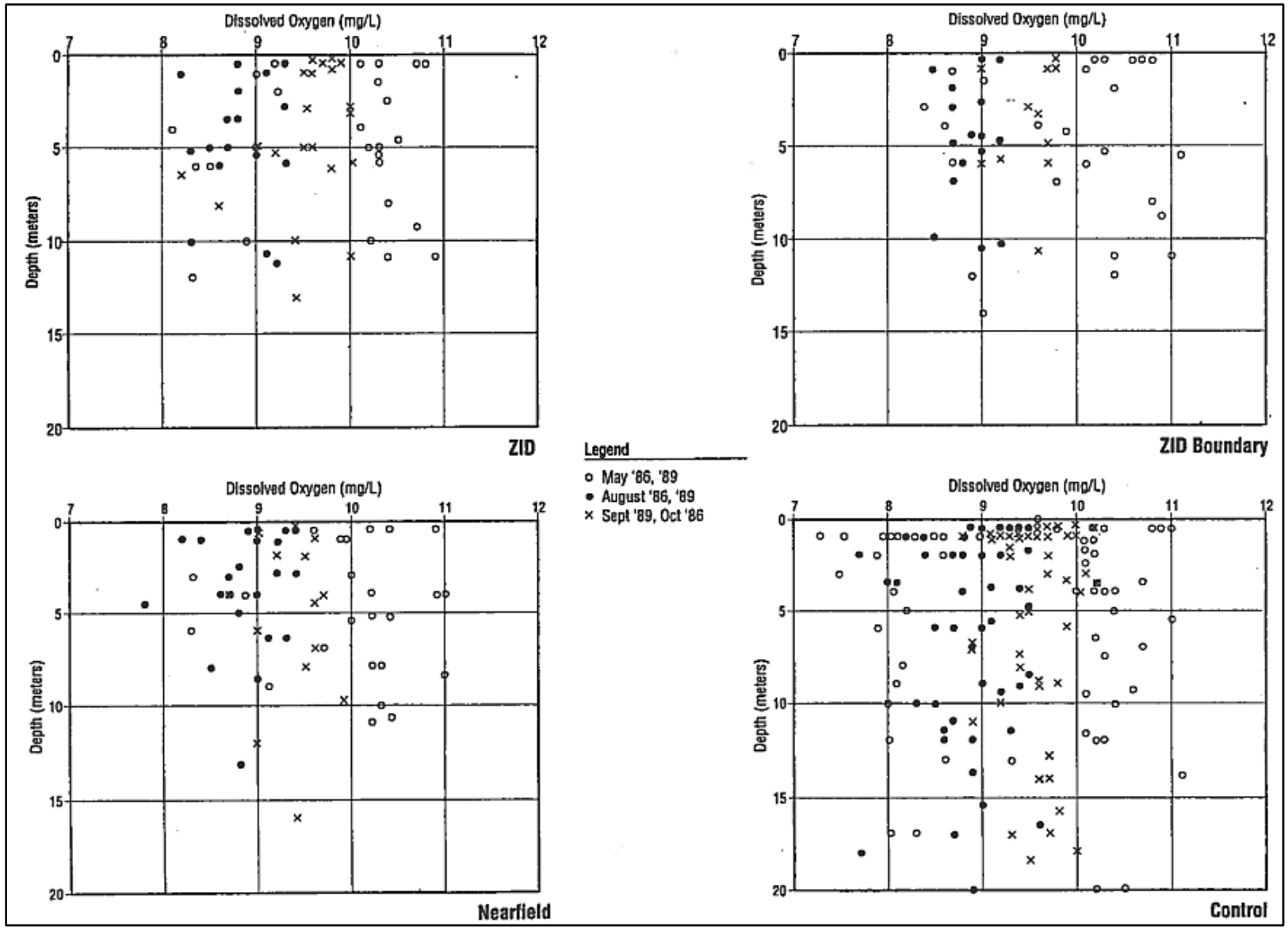


Figure IIB-20. Profile Plots of Dissolved Oxygen Measurements Taken at the AWPCF Point Woronzof Outfall and at Control Stations during 1986 and 1989

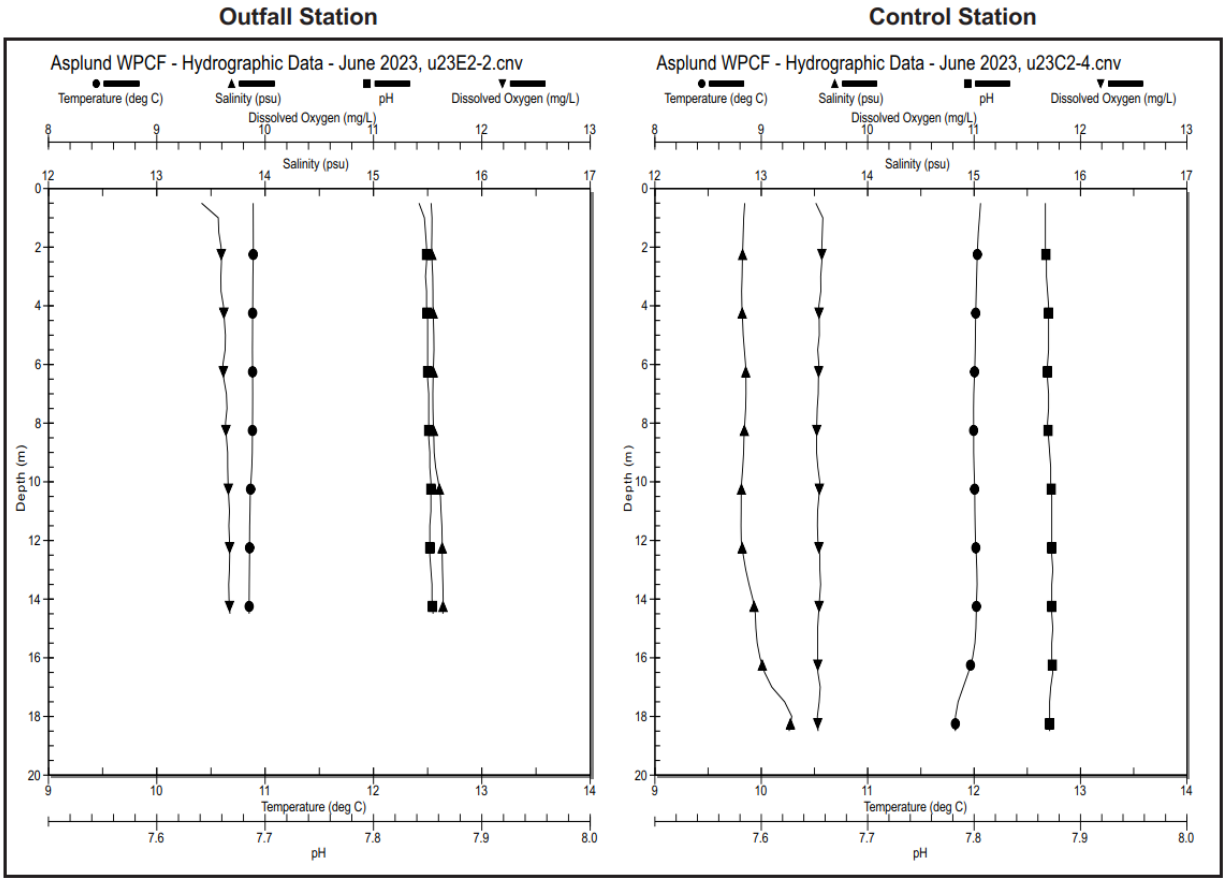


Figure IIB-21. Hydrographic Profile Plots of Dissolved Oxygen, Temperature, pH, and Salinity Measurements at the AWPCF Point Woronzof Outfall and at Control Station in June 2023

Suspended solids (mg/L)

Upper Cook Inlet and Knik Arm have very high levels of suspended solids due to the large freshwater inputs from glacial sources that tend to have very high levels of suspended sediments with very small grain sizes (silts and clay) and because of the turbulent tidal currents that resuspends fine sediments. The receiving water suspended solid concentration exceeds the effluent suspended solids concentrations by a factor ranging from 2 to 25. The concentration of suspended solids in upper Cook Inlet and Knik Arm varies with the tidal stage and time of year, although there is also some variation with depth with lower concentrations near the surface. The suspended solids in upper Cook Inlet and Knik Arm are several orders of magnitude higher than the suspended solids in other water bodies referenced in Table B-6 in the Amended Section 301(h) Technical Support Document (EPA, 1994)).

Suspended solids data have been collected annually by AWPCF's NPDES monitoring program since 2000 as part of ambient metals' sampling effort. The monitoring has included three near-surface samples taken near the outfall and three at the control site that were collected. Based on a total of 150 measurements collected since 2000, TSS has ranged from 34 to 1,483 mg/L with an average concentration of 383 mg/L. These measurements are considered to be biased low since the sampling was conducted near low slack tide. Historical data also provide valuable information. Murphy, et al. (1972) measured suspended sediment in upper Cook Inlet and Knik Arm at the surface, mid-depth, and near-bottom. These results show that the amount of suspended sediment varied with the tides at the time of sampling. At one station sampled, suspended sediments were 300 mg/L at the surface and 1,700 mg/L at 9 m (30 ft). At another station sampled 2 hours later, values of 2,100, 1,400, and 2,000 mg/L

were measured at the surface, mid-depth, and near bottom, respectively. Other sources of historical data on suspended solids in Knik Arm include:

- Tetra Tech (1977) sampled suspended solids within the ZID. The average concentration was 1,195 mg/L, with a range from 519 mg/L to 2,480 mg/L.
- Kinnetic Laboratories (1979) collected some TSS data near the outfall and some variation with depth, concentrations range from 660 to 1,490 mg/L.
- Kinnetic Laboratories, Inc. (2007) sampled TSS and turbidity in Knik Arm across multiple tide cycles as part of the KABATA studies with concentrations ranging from 53 to 3,210 mg/L in the top 2/3 of the water column as seen in Figure IIB-22.

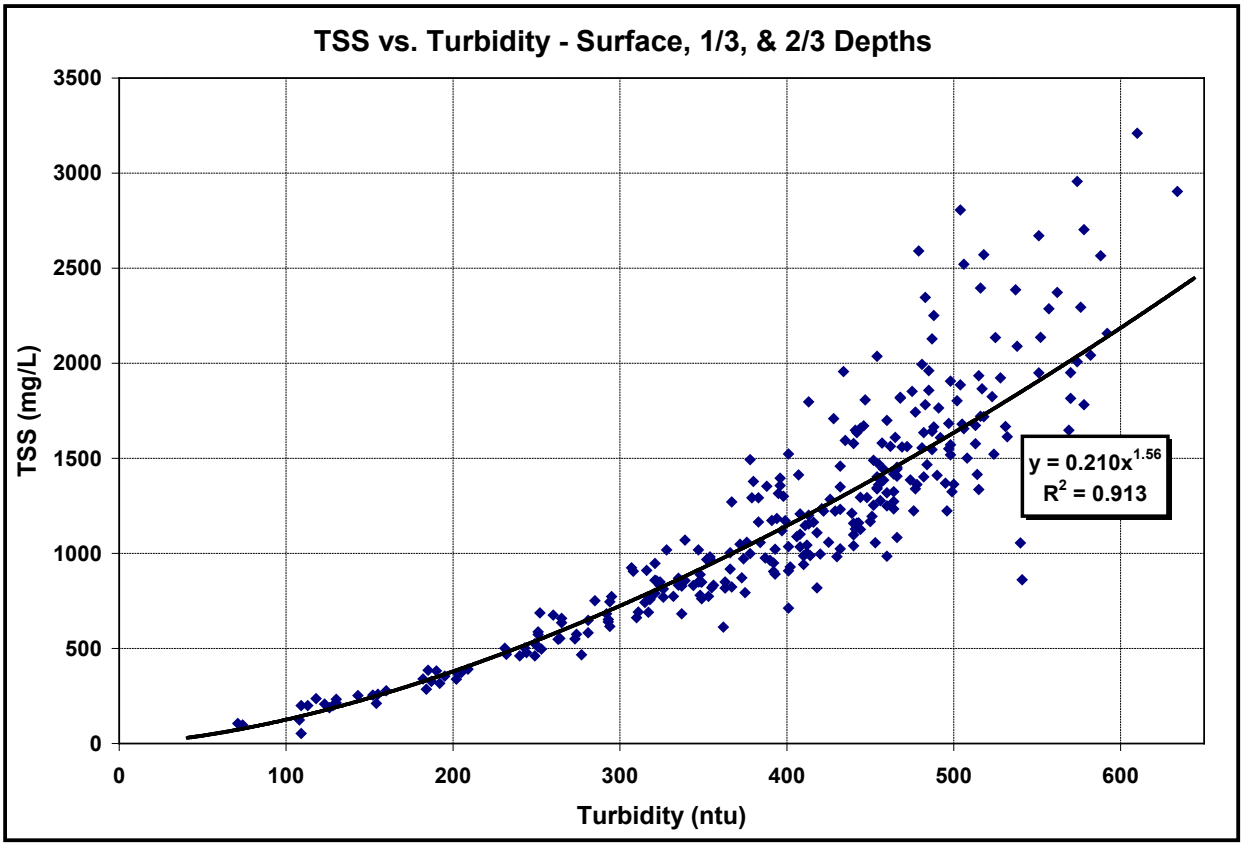


Figure IIB-22. Total Suspended Solids versus Turbidity Measured in Knik Arm (source: KLI 2007).

Results of the August 1996 and 1997 and June 2003 water sampling are summarized in Table IIB-4. Total suspended solids measurements range from 46 to 470 mg/L at the control stations, and from 68 to 1,100 mg/L at the sampling stations near the Point Woronzof outfall. As mentioned above, these measurements are biased low since they were collected at low slack water at the surface and so do not represent the higher concentrations that have been seen in some of the historic sampling efforts. TSS is also included in the 4 times/week influent and effluent monitoring effort conducted by AWPCF's staff. Note that the permit does include effluent limits for TSS, however, these are technology-based effluent limits (TBEL) rather than based on water quality standards.

pH

Data on pH were collected by Murphy (1972) and from 1985 to present (2024) during the NPDES annual receiving water monitoring. The NPDES monitoring has measured pH throughout the water column and for various stages of the tidal cycle. Over the past five years (2020-24) pH measurements ranged from 7.79 to 8.04 in the receiving water and there were virtually no differences between locations (outfall

versus control) and no depth variations. The 1985-2024 sets of ambient pH data collected in the ambient monitoring program are provided in the Monitoring Program Annual Reports, previously submitted to EPA. Figure IIB-21 shows the hydrographic profile plots of pH measurements at the AWPCF outfall site and at the control station in June 2023. Data on pH are included in the plant influent and effluent database that are submitted to EPA and ADEC.

Temperature

Ambient temperature data for upper Cook Inlet and Knik Arm have been collected for nearly 60 years. Some of the data consisted of surface samples, such as Marine Advisors (1965) and Everts and Moore (1976). Some reports have presented temperature profiles with depth (Tetra Tech, 1977; and the 1985 to 2024 NPDES monitoring data). The complete set of NPDES monitoring data from 1985 through 2024, including temperature and salinity values with depth, are typically collected in the month of June every year and are provided in the Monitoring Program Annual Reports, previously submitted to EPA. Data on temperature are also included in the plant influent and effluent database.

Ambient temperature data for upper Cook Inlet and Knik Arm shows pronounced seasonal variation. The maximum temperature occurs in July or August when water temperatures range from 13.5° to14.5° C. In March, water temperatures measured less than -1.0° C (Murphy, 1972). However, in both instances, the temperature was constant throughout the water column. There was no significant thermocline in upper Cook Inlet or Knik Arm stations. Figure IIB-21 shows the hydrographic profile plots of temperature measurements at the AWPCF outfall site and at the control station in June 2023.

Figure IIB-22 presents seasonal temperature profiles data recorded in 1986 and 1989 in the NPDES ambient monitoring program. Although distinct seasonal variation is observed, there is little or no temperature variation with depth for a particular season. The plots illustrate the range of temperatures measured in spring, summer, and fall. In general, for a given season, the temperatures varied less than 1° C with depth.

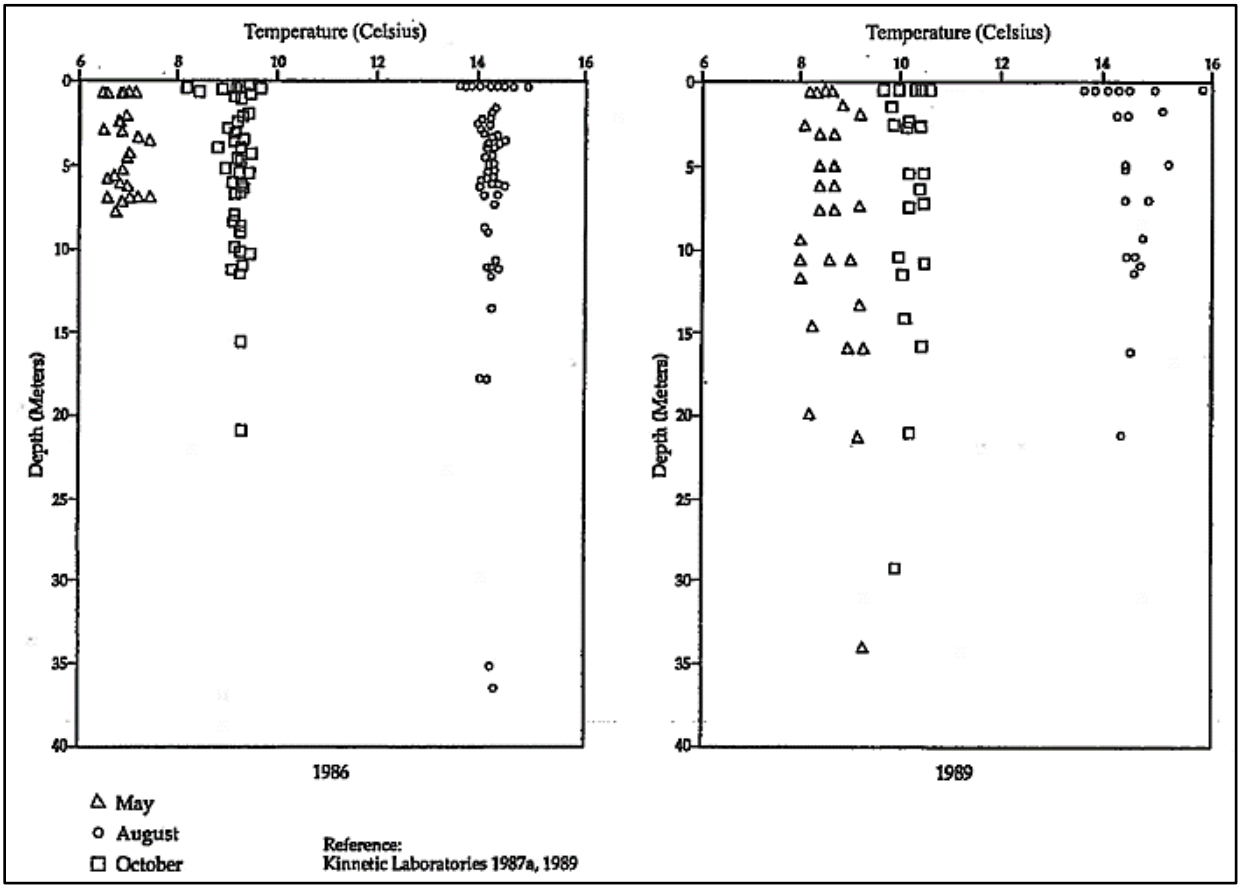


Figure IIB-23. Hydrographic Profile Plots of Seasonal Temperature Measurements at the AWPCF Point Woronzof Outfall in 1986 and 1989

Salinity

Seasonal variations in salinity result from changes in the freshwater inflow and tidal influence. Ambient salinity data are typically collected in the month of June every year as part of the annual monitoring program. The NPDES monitoring data show these seasonal variations range from 8 psu in August to 21 psu in May, and this range is largely because of peak freshwater runoff in the summer throughout upper Cook Inlet and Knik Arm. Variations in salinity are also seen through the tidal cycle with salinities increasing during a flood tide and decreasing during the ebb due to freshwater inputs in Knik Arm. The control sites near Pt. MacKenzie are usually found to have lower salinities when compared to the outfall stations due to greater riverine influences. Figure IIB-15 illustrates the seasonal variation in salinity recorded in 1986 and 1989. Figure IIB-21 shows the hydrographic profile plots of salinity measurements at the AWPCF outfall site and at the control station in June 2023.

Transparency (turbidity, percent light transmittance)

Limited transparency data have been collected in upper Cook Inlet and Knik Arm using secchi depth measurements because of the current velocities present. In 1983, secchi depth measurements were made within the ZID and at a control station. The transparency was the same at both stations, with an extremely low value of 10 cm (CH2M HILL, 1985).

The NPDES receiving water monitoring program has collected turbidity data near the outfall diffuser in the month of June during all 39 years of the monitoring program. The complete set of turbidity data collected for the ambient monitoring program is provided in the Monitoring Program Annual Reports, previously submitted to EPA. Seasonal turbidity data collected in 1989 at the AWPCF outfall site and at the control station are presented in Figure IIB-24. These plots illustrate the seasonal ranges of turbidity

values and the range overlap.

Turbidity in August ranged from about 100 nephelometric turbidity units (NTU) to over 800 NTU. The highest turbidity was in the fall, and there was also a significant scatter in the October data (200 to 950 NTU). The turbidity data for May showed lowest turbidity values and the least amount of scatter, with a range of 50 to 300 NTU at stations near the outfall and a range of 50 to over 500 NTU at the control sites. Seasonal variation in turbidity occurs, with winter and early spring having lower turbidity measurements and summer and fall periods having the highest turbidity levels caused by runoff.

Variations in turbidity have also been seen as a result of the tidal cycle, with higher turbidities seen during spring tides when currents are at their maximum and lower during neap tides. Also, lower turbidities are typically seen near the surface at slack water due to the settling of suspended sediment and higher when mid tide stage when currents are at their maximum.

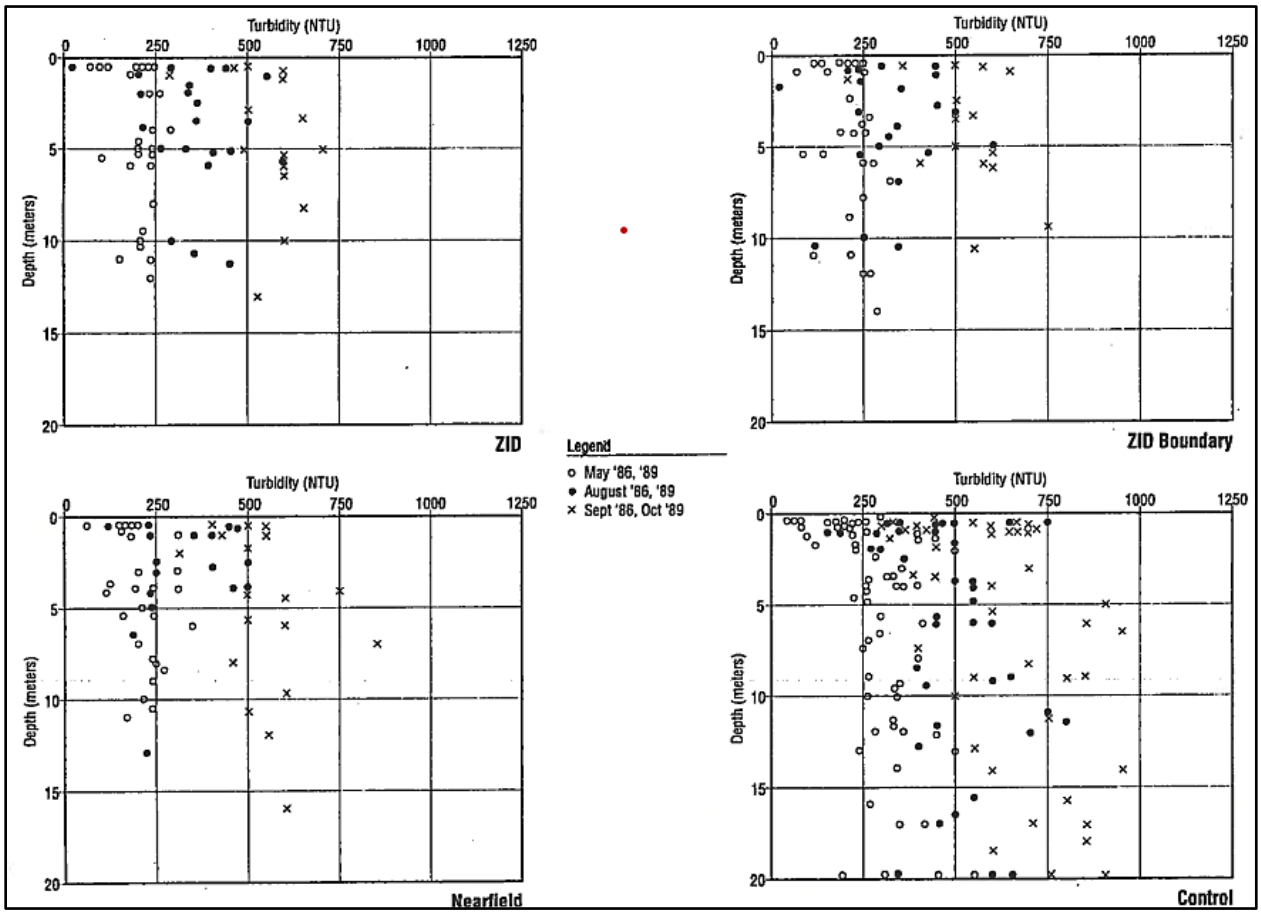


Figure IIB-24. Hydrographic Profile Plots of Seasonal Turbidity Measurements at the AWPCF Point Woronzof Outfall and Control Stations in 1989

Other significant variables (e.g., nutrients, toxic pollutants and pesticides, fecal coliform)

Nutrients

Nitrogen, phosphorus, and silica are typically found in very low concentrations. Nutrients analyses are not included in the AWPCF NPDES monitoring program. Nutrient analyses were performed by Murphy, et al. (1972) and Kinnetic Laboratories (1979) in upper Cook Inlet and Knik Arm in 1972 and 1979, and these results are provided in Tables IIB-5 and IIB-6. All three nutrients were found in concentrations lower than those typical for seawater and Alaska Water Quality Standards do not include nutrient criteria in seawater.

Table IIB-5. Nutrient Concentrations Data Collected in Upper Cook Inlet and Knik Arm

Total Nitrogen (mg/L)			Total Phosphorus (mg/L)				Silica (mg/L)		
Date	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg,	Max.	Min.
11/06/69	0.237	0.323	0.141	0.0022	0.0028	0.0009	1.27	1.49	1.04
03/05/70	0.191	0.210	0.113	0.0074	0.0074	0.0031	1.27	1.40	0.73
05/21/70	0.147	0.171	0.094	0.0097	0.014	0.0053	1.34	1.69	0.73
08/17/70	0.21	0.344	0.142	0.0066	0.012	N.D.	2.39	2.53	2.22

Source: Murphy et al. (1972).

Table IIB-6. Nutrient Concentrations Data Collected in Upper Cook Inlet and Knik Arm

Sampling Conditions	Dissolved Phosphorus (mg/L)	Dissolved Silica (mg/L)	NO_{3}- (mg/L)	NO_{2}- (mg/L)	
High Slack Water Depth Surface	0.112	1.60		0.24	0.01
Middle	0.155	1.61		0.26	0.01
Bottom	0.096	1.61		0.19	0.01
Low Slack Water Depth Surface	0.079	1.46		0.25	0.01
Middle	0.068	1.44		0.18	0.01
Bottom	0.093	1.45		0.35	0.01

Source: Kinnetic Laboratories, August 1979, measured 460 m offshore of Point Woronzof in 15 m of water.

Fecal Coliform Bacteria

From 1986 to the present (2024), the NPDES monitoring program has typically included sample collections in the month of June at intertidal (shoreline) stations and at offshore stations for fecal coliform analyses. The intertidal (shoreline) sampling program also includes sampling stations above the influence of tides near the mouths of the three main creeks that discharge into the intertidal region. These three creeks have consistently shown elevated bacteria concentrations that influence the intertidal shoreline areas of Anchorage. The intertidal sampling stations and creek sampling stations are shown in Figure IIB-26. The intertidal and creek sampling stations monitoring data are summarized in Table IIB-7 for the period of 2000 through 2023. The fecal coliform concentrations range from <2 to 240 MPN FC/100 mL at the seven intertidal stations near Point Woronzof and range from <2 to 23 MPN FC/100 mL at the control station located near Point Mackenzie. These data show that the highest fecal coliform concentrations are consistently found in the waters of the three creeks, with values ranging from 2 to >2400 MPN FC/100 mL.

The offshore sampling program includes sampling stations within the ZID, at the ZID boundary, and at control stations located near Point Mackenzie. Table IIB-8 summarizes the fecal coliform concentrations in samples collected during the offshore monitoring. The fecal coliform concentrations range from <2 to 18 FC/100 mL at the station within the ZID, from <2 to 8 FC/100 mL at the ZID boundary, to <2 to 13 FC/100 mL at the control stations located near Point MacKenzie. With the background influence of the discharges from Fish, Ship, and Chester Creeks, there is some uncertainty in discerning patterns to the bacteria levels in the offshore waters.

Effluent fecal coliform monitoring data are collected daily and included in the plant effluent database. These effluent fecal coliform monitoring data show that the discharge complies with the NPDES permit effluent limit of 850 fecal coliform bacteria colonies per 100 mL (monthly average based on geometric mean of at least 5 samples with no more than 10 percent of samples exceeding 2600 MPN/100mL).

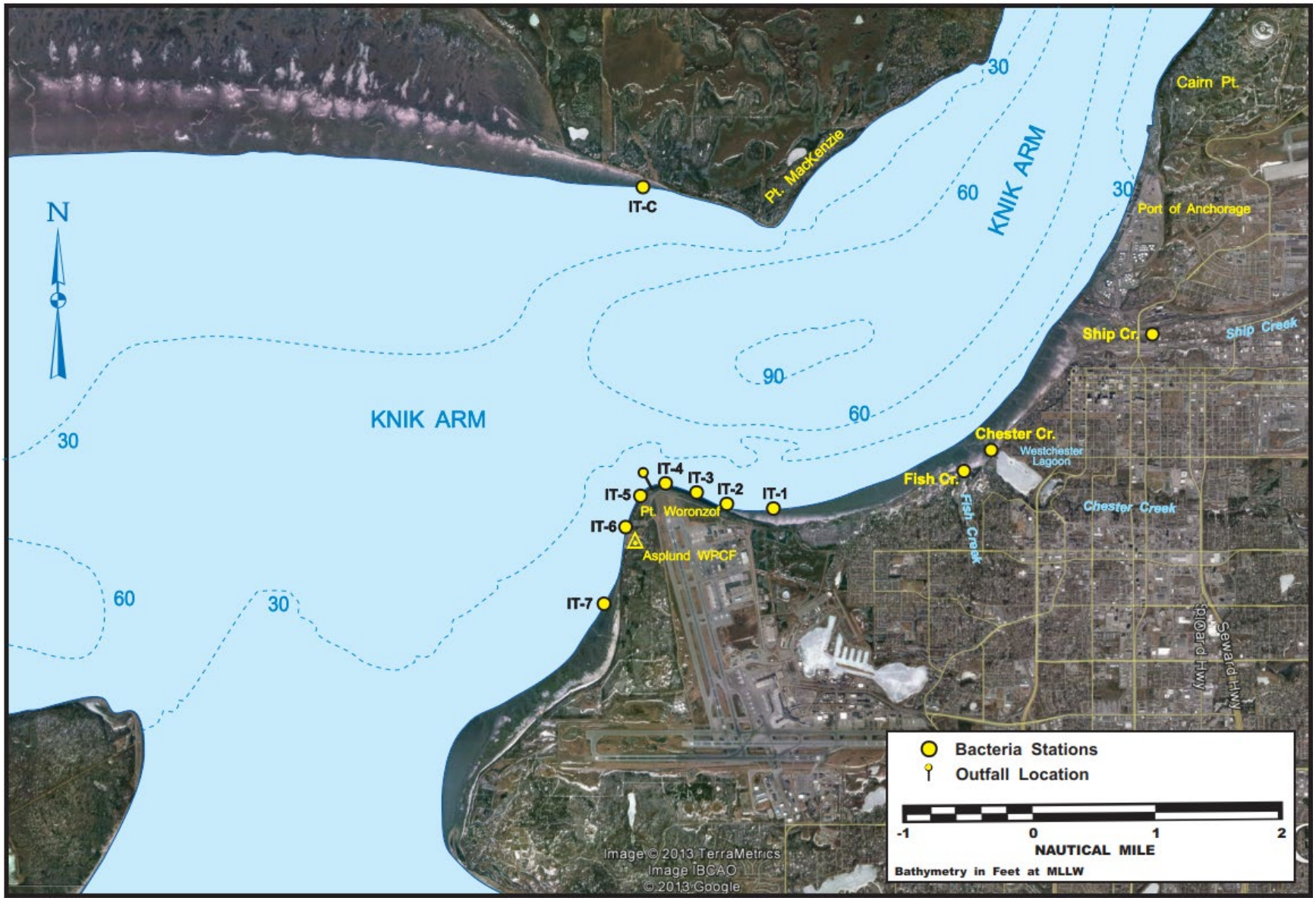


Figure IIB-26. Locations of Intertidal and Creek Fecal Coliform Bacteria Sampling Stations in Upper Cook Inlet.

Table IIB-7. NPDES Monitoring Data for Fecal Coliform Bacterial at Intertidal Stations, Creek Stations, and Control Stations

Date	Intertidal Stations (7)	Fish Creek	Chester Creek	Ship Creek	Control Stations
August 2000	2 – 30 MPN/100 mL	1600 MPN/100 mL	30 – 110 MPN/100 mL	4 – 30 MPN/100 mL	4 – 23 MPN/100 ml
June 2001	<2 – 50 MPN/100 mL	130-220 MPN/100 mL	2 MPN/100 mL	50 – 70 MPN/100 mL	<2 – 2 MPN/100 ml
July 2002	<2 – 170 MPN/100 mL	50 - 130 MPN/100 mL	2 – 17 MPN/100 mL	130 MPN/100 mL	2 - 4 MPN/100 ml
June 2003	<2 – 30 MPN/100 mL	70 MPN/100 mL	4 – 13 MPN/100 mL	11 – 13 MPN/100 mL	8 MPN/100 ml
June 2004	<2 – 7 MPN/100 mL	2 MPN/100 mL	2 MPN/100 mL	2 MPN/100 mL	2 - 4 MPN/100 ml
May 2005	<2 – 4 MPN/100 mL	2 MPN/100 mL	4 - 11 MPN/100 mL	17 - 23 MPN/100 mL	<2 - 4 MPN/100 ml
June 2006	<2 – 4 MPN/100 mL	110 - 240 MPN/100 mL	7 - 13 MPN/100 mL	<2 - 4 MPN/100 mL	<2 - 4 MPN/100 ml
June 2007	<2 – 2 MPN/100 mL	11 - 26 MPN/100 mL	2 - 4 MPN/100 mL	4 - 13 MPN/100 mL	<2 MPN/100 ml
June 2008	<2 – 2 MPN/100 mL	4 - 13 MPN/100 mL	<2 - 7 MPN/100 mL	9 - 23 MPN/100 mL	<2 MPN/100 ml
June 2009	<2 – 7 MPN/100 mL	900-1600 MPN/100 mL	22 - 80 MPN/100 mL	7 - 8 MPN/100 mL	<2 - 2 MPN/100 ml
June 2010	<2 – 240 MPN/100 mL	540 - >2400 MPN/100 mL	<1 - 49 MPN/100 mL	49 - 79 MPN/100 mL	2 - 8 MPN/100 ml
June 2011	<2 – 4.5 MPN/100 mL	79 - 220 MPN/100 mL	<2 - 2 MPN/100 mL	4.5 - 6.8 MPN/100 mL	<2 MPN/100 ml
June 2012	<2 – 4.5 MPN/100 mL	46 - 330 MPN/100 mL	49 MPN/100 mL	23 - 46 MPN/100 mL	<2 MPN/100 ml
June 2013	<2 – 2 MPN/100 mL	14 - 50 MPN/100 mL	13 - 30 MPN/100 mL	8 - 16 MPN/100 mL	<2 MPN/100 ml
June 2014	<2 – 4.5 MPN/100 mL	790 MPN/100 mL	33 MPN/100 mL	17 - 49 MPN/100 mL	<2 MPN/100 ml
June 2015	<2 – 23 MPN/100 mL	110 - 230 MPN/100 mL	79 - 110 MPN/100 mL	13 - 14 MPN/100 mL	<2 MPN/100 ml
June 2016	<2 – 7.8 MPN/100 mL	130 - 170 MPN/100 mL	13 - 23 MPN/100 mL	6.8 MPN/100 mL	<2 MPN/100 ml
June 2017	<2 – 33 MPN/100 mL	79 - 280 MPN/100 mL	33 - 49 MPN/100 mL	110 MPN/100 mL	<2 MPN/100 ml
June 2018	<2 – 49 MPN/100 mL	46 MPN/100 mL	13 - 17 MPN/100 mL	46 MPN/100 mL	<2 MPN/100 ml
June 2019	<2 – 46 MPN/100 mL	170 - 330 MPN/100 mL	23 - 33 MPN/100 mL	9 - 33 MPN/100 mL	<2 MPN/100 ml
June 2020	<2 – 7.8 MPN/100 mL	220 - 330 MPN/100 mL	23 - 49 MPN/100 mL	46 - 110 MPN/100 mL	2 - 7 MPN/100 ml
June 2021	<2 – 2 MPN/100 mL	11 - 23 MPN/100 mL	11 MPN/100 mL	130 - 170 MPN/100 mL	2 MPN/100 ml
June 2022	<2 – 7.8 MPN/100 mL	79 MPN/100 mL	79 - 170 MPN/100 mL	2 - 33 MPN/100 mL	<2 MPN/100 ml
June 2023	<2 – 2 MPN/100 mL	49 - 79 MPN/100 mL	49 - 31 MPN/100 mL	490 - 790 MPN/100 mL	<2 MPN/100 ml

Table IIB-8. Range of Receiving Water Fecal Coliform Concentrations Collected During Ebb Tides for the 301(h) Ambient Monitoring Program (2000 – 2023) in Background and at AWPCF Outfall ZID

Fecal Coliform Concentrations by (No./100 mL)			
Date	**Within ZID**	**ZID Boundary**	**Control**
August 2000	2-9	7-13	<2.0-7.0
June 2001	<2-2	<2-2	<2.0-4.0
July 2002	<2-8	<2-4	2-8
June 2003	17-130	50-80	<2-11
June 2004	<2	<2	<2-4
May 2005	<2-4	<2-8	<2-2
June 2006	<2-2	<2-2	<2-2
June 2007	<2	<2	<2
June 2008	<2-4	<2-2	<2-4
June 2009	<2-2	<2-2	<2-2
June 2010	<2-5	<2-8	<2-11
May 2011	<2-2	<2	<2-2
June 2012	<2	<2	<2
June 2013	<2	<2-2	<2-4
June 2014	<2-2	<2-2	<2
June 2015	<2	<2-2	<2
May 2016	<2-4.5	<2-4.5	<2-13
June 2017	<2	<2-4	<2-2
June 2018	<2-2	<2-4.5	<2-4.5
June 2019	<2-4.5	<2-2	<2-4.5
June 2020	<2-18	<2-7.8	<2-7.8
June 2021	<2-2	<2-2	<2-2
June 2022	<2-7.8	<2-6.8	<2-4.5
June 2023	<2-7.8	<2	<2-2

Toxic Pollutants and Pesticides

The NPDES monitoring program has included surface water sample collections and analysis for metals since 1986, although this was not a requirement of the NPDES permit until 2000. Surface water samples are collected within the ZID, at the ZID boundary, at a nearfield station, and at three control stations. The receiving water samples collected at the control stations have been used to represent the background metals concentration in upper Cook Inlet and Knik Arm. Table IIB-9 presents the dissolved metals concentration for receiving water samples collected in 2000 through 2024 and represent background concentrations. All dissolved metals concentrations (represented at 85th-percentile of data) are substantially below the site-specific criteria for upper Cook Inlet.

The NPDES monitoring program has also collected receiving water and effluent samples for supplemental hydrocarbon analyses since 1990, although this was not required in the NPDES permit until 2000. Surface water samples are collected within the ZID, at the ZID boundary, at a nearfield station, and at three control stations. The receiving water samples collected at the control stations can be used to represent the background hydrocarbon concentrations in upper Cook Inlet and Knik Arm. These supplemental receiving water and effluent hydrocarbon analyses are presented in the Monitoring Program Annual Reports, previously submitted to EPA.

In addition, supplemental receiving water samples were collected and analyzed for semi-volatile and volatile organic compounds and pesticides in 2022 and 2023 to expand the background receiving water database. These supplemental receiving water analytical results are provided in the 2022 and 2023 annual monitoring reports submitted to EPA. Data analyses for organics including pesticides are also routinely collected twice per year in influent, effluent, and sludge, and these results are included in the AWPCF database and the annual monitoring reports submitted to EPA.

Background receiving water hydrocarbon sample analyses results from 2023 are presented in Table IIB-10. TAH defined by the AWQS as BETX (EPA Method 624.1) was determined by summing benzene, ethylbenzene, toluene, and total xylenes. Benzene and ethylbenzene were not detected at any of the receiving water stations. All TAH concentrations were less than the AWQS of 10 µg/L.

All concentrations of individual PAHs were summed and reported as total PAHs (TPAH) in Table IIB-10. TPAH concentrations were low at both control and outfall stations. TPAH values ranged from 0.007 to 0.091 µg/L at the control stations. All receiving water concentrations of TAqH were below the AWQS of 15 µg/L. Overall, TAqH concentrations ranged from <0.32 to <1.99 µg/L.

No volatile organic compounds were detected at any of the other receiving water sample locations. Semi-volatile compounds that were reported at estimated levels below the method reporting limit (MRL) included: 2-chloronaphthalene, diethyl phthalate, naphthalene, phenanthrene, phenol, and 1,2,4-Trichlorobenzene that were seen as scattered hits amongst both the outfall and control stations. The source of these compounds (mostly found at the control site) is unknown. However, overall the concentrations were quite low and not a concern with respect to aquatic toxicity. It is relevant to note that the Port of Anchorage commercial shipping docks and fueling facilities are immediately northeast of the Point Woronzof area.

Other background receiving water analyses included PCBs, pesticides, and dioxins which were all reported below their respective detection limits for all samples and analytes.

Table IIB-9. Dissolved Metal Concentrations in Cook Inlet Background Receiving Waters (2000 – 2024)

	As (µg/L)	Cd (µg/L)	Cr (µg/L)	Cu (µg/L)	Pb (µg/L)	Hg (µg/L)	Ni (µg/L)	Se (µg/Ll)	Ag (µg/L)	Zn (µg/L)
No. of Detected Samples	70	67	54	70	52	60	67	0	36	59
Minimum	0.89	0.022	0.020	0.38	0.002	0.00019	0.28	ND	0.002	0.25
Average	1.45	0.062	0.183	1.13	0.056	0.00062	0.99	ND	0.029	1.14
Maximum	2.09	0.099	0.547	2.32	1.290	0.00739	2.16	ND	0.183	5.47
Background 85th Percentile	1.64	0.083	0.261	1.45	0.045	0.00080	1.30	ND	0.024	1.63
Site-Specific Water Quality Criteria (Acute/Chronic)	36/69	9.3/42	50/1100	3.1/4.8	8.1/210	0.025/1.8	8.2/74	71/290	1.9	81/90

Notes:
a. Alaska Water Quality Standards include site-specific criteria for metals in Cook Inlet (18 AAC 70.236.b), and only specifies an acute criterion for silver (Ag).

Table IIB-10. Background Receiving Water Organic Chemical Concentrations Data Collected in Upper Cook Inlet and Knik Arm in 2023.

Parameter	Control Flood Samples			ZID Flood Samples		
	CI-IS	Cl-2S	Cl-3S	Fl-IS	Fl-2S[c]	Fl-3S
Volatile Organics in (BETX plus other detected substances)						
Acetone	<2.0	<2.0	<2.0	19 BJ+	<2.0/<2.0	<2.0
Benzene	<0.06	<0.06	<0.06	<0.06	<0.06/<0.06	<0.06
Chloroform	<0.07	<0.07	<0.07	0.31 J	<0.07/ <0.07	<0.07
Chloromethane	<0.06	<0.06	<0.06	0.12 J	<0.06/ <0.06	<0.06
Ethylbenzene	<0.03	<0.03	<0.03	<0.5B	<0.03/<0.03	<0.03
Toluene	<0.07	<0.07	<0.5B	0.78	<0.5B/ <0.5B	<0.5B
m,p-Xylenes	<0.10	<0.10	<0.10	0.30 J	<0.10/<0.10	<0.10
0-Xylene	<0.05	<0.05	<0.05	<0.05B	<0.05 / <0.05	<0.05
Xylenes (Total)	<0.15	<0.15	<0.15	<0.8	.<0.15/<0.15	<0.15
TAH (as BETX)[a]	<0.31	<0.31	<0.31	<1.22	<0.31 /<<0.31	<0.31
Total Polycyclic Aromatic Hydrocarbons (PAH) by GC/MS in pg/L						
TPAH	0.007	0.042	0.091	0.771	0.046 / 0.043	0.034
Total Aqueous Hydrocarbons (TAqH) in pg/L						
TAqH[b]	<0.32	<0.35	<0.40	<1.99	<0.36/<0.35	<0.34
Semi-Volatile Organics - detected substances only						
Bis(2-ethylhexy1) Phthalate	<0.8B	<0.8B	<0.58	<0.8B	<0.58 / <0.58	1.2 BJ
2-Chloronaphthalene	0.11 J	<O.038	<O.038	<O.038	<0.038 / <0.038	<O.038
Diethyl Phthalate	0.11 J	<0.065	<0.065	<0.065	<0.065 / <0.065	0.40 J
Naphthalene	0.090 J	<0.039	0.044 J	<0.039	<0.039 / 0.10 J	<0.039
Phenanthrene	<0.034	<0.034	0.043 J	<0.034	<0.034<0.034	<0.034
Phenol	<0.022	0.19 J	<0.022	<0.022	<0.022 / <0.022	2.3
I ,4-TrichIorobenzene	0.17 J	<0.033	<0.033	<0.033	<0.033<0.033	<0.033
Cyanide, Pesticides, PCBs, & Dioxins in pg/L						
Cyanide	<0.5	<0.5	<0.5	7.9	<0.5 / <0.5	<0.5
Organochlorine Pesticides	ND	ND	ND	ND	ND/ND	ND
Organophosphorus Pesticides	ND	ND	ND	ND	ND/ND	ND
OP Pesticide Malathion	<0.0050	<0.0050	<0.0050*	0.0075 J	<0.0050 / <0.0052	<0.0052
Polychlorinated Biphenyls	ND	ND	ND	ND	ND/ND	ND
Dioxins	ND	ND	ND	ND	ND/ND	ND

[a] Defined by the State of Alaska as the summation of BETX analytes where the NIDI- was used for NT) values.

[b] TAqH defined as the summation of TAH plus PAH analytes from EPA Method 625 SINI analysis; these calculated values include the full suite of PAH analyte values measured by TDI Brooks.

[c] Duplicate sample analyses performed at F I -2S to assess field variability.

J Estimated value (below MRL but above MDL).

BJ+ Requalified, biased high due to estimated concentration seen in the method and/or field blank

ND Not detected. B Requalified due to estimated concentration seen in the method or field blank *

* Reanalysis performed past recommended holding time, see case narrative.

< Below MDL or MRL- for individual analytes or for summations where one or more analytes was ND.

b. Provide available data on the following in the vicinity of the current discharge location and for the modified discharge location, if different from the current discharge: [40 CFR 125.61(b)(1)]

- Dissolved oxygen (mg/L)
- Suspended solids (mg/L)
- pH
- Temperature (°C)
- Salinity (psu)
- Transparency (turbidity, percent light transmittance)
- Other significant variables (e.g., nutrients, 304(a)(1) criteria and toxic pollutants and pesticides, fecal coliform bacteria)

Responses to these topics are all provided in Section IIB.6.a.

c. Are there other periods when receiving water quality conditions may be more critical than the period(s) of maximum stratification? If so, describe these other critical periods(s) and the data requested in 5.a. for other critical period(s). [40 CFR 125.62(a)(1)].

Periods of maximum or peak biological use can be considered critical periods for receiving water conditions.

Peak biological activity occurs during salmon migration periods. Smolts out-migrate from May to August; adults migrate in from June to October. These same periods are critical for stratification and dissolved oxygen. Annual receiving water monitoring by AWWU document water quality conditions in upper Cook Inlet.

During April and May beluga concentrations correspond to eulachon migrations to rivers and streams in the northern portion of upper Cook Inlet. Cook Inlet beluga whales may occur near Point Woronzof from August through September, but densities are low because the whales may only transit through that area to reach the Susitna Delta, Eagle River or other rivers and streams where prey fish (i.e., salmon) are found. Sighting frequency in the vicinity of Point Woronzof declines after October and drops to zero during the winter months. From January into March, belugas move south of Kalgin Island into central Cook Inlet offshore waters (Rugh et al. 2010, NMFS 2016, McGuire et al. 2020, Goetz et al. 2023, Young et al. 2023). In general, the seasonal movements of Cook Inlet beluga whales are influenced by prey availability, ice coverage, and peak river discharge events (Hobbs et al. 2005, Rugh et al. 2010, Goetz et al. 2012).

There is no substantial recreational use of the Knik Arm near Point Woronzof because of the extensive mudflats, high turbidity, cool temperatures, winter ice floes, dangerous tidal ranges and velocities, and paucity of biota. Therefore, no period is critical with respect to recreational use.

Outfall discharge dilution and plume flushing are dominated by the extreme tidal regime in upper Cook Inlet and Knik Arm, which does not change significantly over an annual cycle. The dynamic and inertial forces created by the tides are of such magnitude that the hydraulic regime is not affected extensively by freshwater inflow. Thus, the summer period, when some minor and transient stratification may occur, is the potentially critical period because it is the period of minimum initial dilution and maximum biological activity.

7. ***Provide data on steady-state sediment dissolved oxygen demand and dissolved oxygen demand due to resuspension of sediments in the vicinity of your current and modified discharge(s) (mg/L/day).***

The discharge from the outfall has no significant impact on sediment dissolved oxygen demand. This is because no seabed accumulation of suspended sediments (either natural or from the discharge) occurs around the outfall as a result of the extremely fast tidal currents and coarse seabed. The seabed in the vicinity of the AWPCF outfall is composed of coarse gravel, cobble, and large rocks (see Section III.A.4). The seabed consists of large diameter materials that remain under the erosional forces of swift tidal currents.

The lack of sediment accumulation has been shown in numerous sediment investigations. The subtidal environment along a transect extending along the present outfall alignment was described by Rodney P. Kinney Associates (1983), based upon samples gathered with a 0.6 m^3 (3/4 yd^3) clamshell bucket. Sites nearest the present outfall site, approximately 250 m (820 ft) from the chlorination tower, were characterized as dominated by poorly graded sand and gravel to a maximum size of about 80 mm (3 in.). Gravel and sand dominated samples taken between 305 m (1,000 ft) and 365 m (1,200 ft) northwest of the tower. A boulder patch with boulders up to 450 mm (18 in.) in diameter was found 365 to 580 m (1,200 to1,900 ft) from the tower. Samples taken still farther out were dominated by gravel up to 50 mm (2 in.) in diameter, mixed with a sandy-gravel matrix. The locations of the sediment sample stations are shown in Figure IIB-26.

Sediment samples were collected in 1986 and 1988 as part of the annual monitoring program specified in the NPDES permit and again in 2022 and 2023. The stations from the eighties are shown in Figure IIB-27. Three intertidal benthic stations and two subtidal benthic stations were collected in 1988. In general, the subtidal station samples consisted of gravel, rocks, and cobbles. The intertidal stations consisted of mostly silt-sized particles. Dredge sampling was attempted in deeper water in order to obtain enough fine material for testing the subtidal sediments (Station S16). The sediment grain size variation among subtidal and intertidal stations for 1986 can be seen in Table IIB-11.

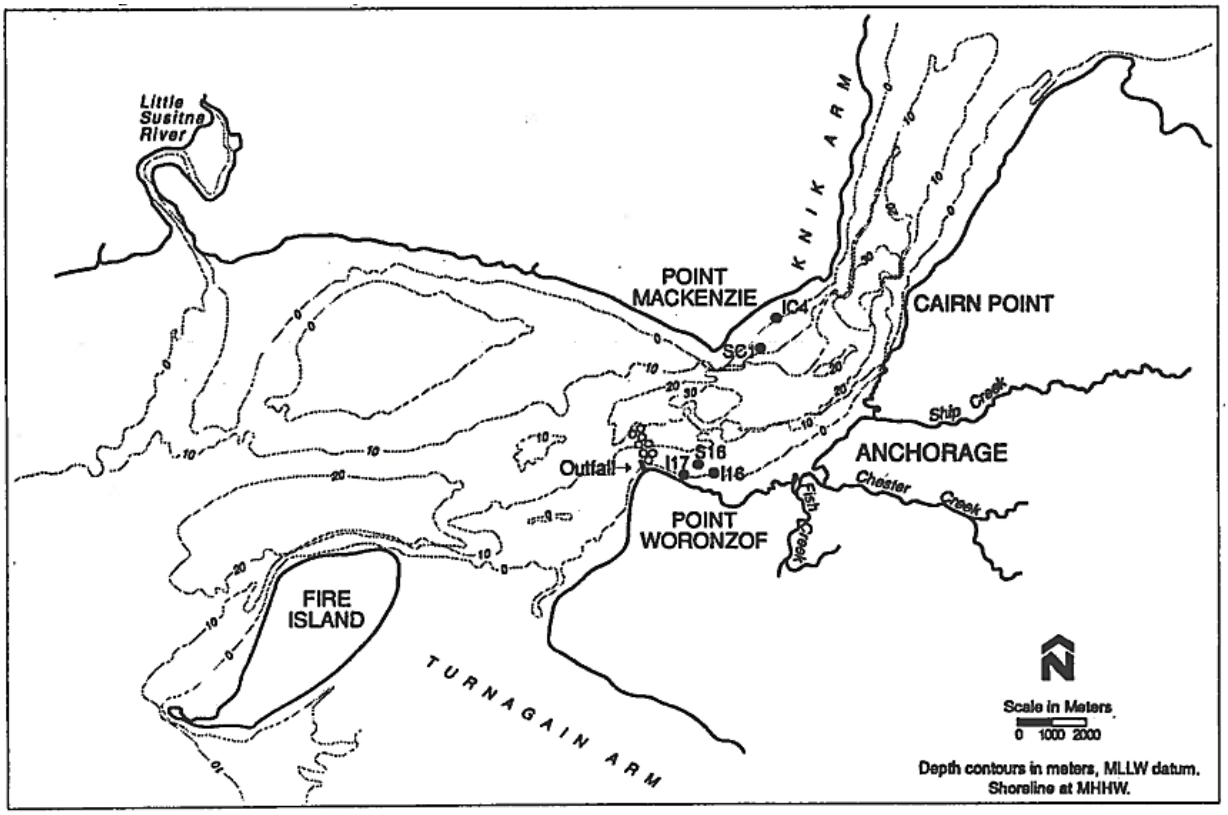


Figure IIB-27. Locations of Historic Sediment Stations in Upper Cook Inlet and Lower Knik Arm.

Table IIB-11. Sediment Grain Size Analysis (Sampled August 4 and 5, 1986)

Sediment Type	Size Class (mm)	Percent by Weight									
		Intertidal						Subtidal			
		Station I16		Station I17		Station IC4		Station S16		Station SC1	
		Replicate 1	Replicate 2	Replicate 1	Replicate 2	Replicate 1	Replicate 2	Replicate 1	Replicate 2	Replicate 1	Replicate 2
Gravel	Over 4.0	0.0	0.0	0.0	6.5	0.0	0.0	0.3	10.2	0.0	0.0
	4.0-2.0	0.0	0.0	3.3	0.9	0.0	0.0	2.0	4.3	0.0	0.1
Sand											
Very Coarse	2.0-1.0	0.0	0.1	1.2	0.9	0.0	0.0	3.8	3.8	0.0	0.0
Coarse	1.0-0.707	0.0	0.0	0.7	1.1	0.0	0.0	2.5	2.2	0.0	0.0
	0.707-0.500	0.1	0.0	0.9	3.1	0.1	0.0	4.0	3.5	0.0	0.2
Medium	0.500-0.350	0.1	0.1	1.3	2.0	0.1	0.1	2.7	2.4	0.1	0.2
	0.350-0.250	0.2	0.1	1.9	1.8	0.2	0.1	1.1	1.8	0.7	5.1
Fine	0.250-0.180	0.2	0.2	1.3	1.1	0.2	0.2	0.6	1.0	15.2	35.5
	0.180-0.125	0.2	0.2	1.6	1.1	0.2	0.3	0.7	1.2	36.8	38.7
Very Fine	0.125-0.088	0.1	0.2	1.6	1.1	0.3	0.4	1.1	4.9	16.0	9.7
	0.088-0.062	0.2	0.3	1.9	1.3	1.3	2.0	6.9	8.2	16.0	4.1
Silt	0.062-0.031	19.6	6.8	21.8	14.1	42.4	31.7	52.7	42.4	13.5	4.5
	0.031-0.016	49.1	51.0	40.9	47.0	41.5	46.8	15.3	10.2	1.2	1.0
	0.016-0.008	18.4	21.2	11.4	9.8	8.3	10.7	3.4	2.7	0.1	0.4
	0.008-0.004	4.9	9.8	6.4	4.3	2.8	4.8	1.7	0.6	0.2	0.2
Clay	0.004-0.002	2.9	5.9	1.6	2.1	1.2	1.4	0.6	0.5	0.1	0.0
	0.002-0.001	1.9	1.1	0.9	0.7	0.7	0.5	0.2	0.1	0.0	0.0
	Less than 0.001	2.0	3.1	1.5	1.0	0.9	0.9	0.4	0.3	0.1	0.0
Gravel	Over 2.000	0.0	0.0	3.3	7.4	0.0	0.0	2.3	14.5	0.0	0.1
Sand											
Very Coarse	2.000-1.000	0.0	0.1	1.2	0.9	0.0	0.0	3.8	3.8	0.0	0.0
Coarse	1.000-0.500	0.1	0.0	1.6	4.2	0.1	0.0	6.5	5.7	0.0	0.2
Medium	0.500-0.250	0.3	0.2	3.2	3.8	0.3	0.2	3.8	4.2	0.8	5.3

Sediment Type	Size Class (mm)	Percent by Weight									
		Intertidal						Subtidal			
		Station I16		Station I17		Station IC4		Station S16		Station SC1	
		Replicate 1	Replicate 2	Replicate 1	Replicate 2	Replicate 1	Replicate 2	Replicate 1	Replicate 2	Replicate 1	Replicate 2
Fine	0.260-0.125	0.4	0.4	2.9	2.2	0.4	0.5	1.3	2.2	52.0	74.2
Very Fine	0.125-0.063	0.3	0.5	3.5	2.4	1.6	2.4	8.0	13.1	32.0	13.8
Silt	0.063-0.004	92.0	88.8	80.5	75.2	95.0	94.0	73.1	55.9	15.0	6.1
Clay	Less than 0.004	6.8	10.1	4.0	3.8	2.8	2.9	1.2	0.9	0.2	0.0

Note: Subtidal stations were intentionally selected to obtain fine material for chemistry analyses. Station SC1 was located offshore of the subtidal biological sampling site**,** and Station S16 was located offshore of Intertidal Station I16 because fine material could not be found at the outfall location. Source: Kinnetic Laboratories, 1987a.

Sediment sample collections were also completed in 2022 and 2023, and Figure IIB-28 shows the locations of these sediment sampling stations. These sediment samples were analyzed for sediment physical and chemical parameters, as well as benthic infauna community. Results and conclusions from the monitoring effort are summarized as follows:

- Intertidal and subtidal sediments were both targeted for collection and analysis. Subtidal sediment samples were subject to chemical and particle grain size analyses, and intertidal sediments were subject to chemical, grain size, and benthic analysis. Due to the extremely coarse nature (i.e., sand, gravel, and cobble) of the subtidal sediments in the outfall area, undisturbed benthic infauna samples could not be collected. Figure IIB-29 shows photographs of subtidal sediments collected at Stations ST-1 and ST-W that were too course for physical and chemical analyses.
- Sediment analyses included physical and chemical analyses. The sediment characteristics were found to vary substantially between locations, with coarse-grained sediments and cobbles collected at the subtidal locations as well as at intertidal Stations IT-8 and IT-9 that were under the influence of high currents in the vicinity of Point Woronzof. Refer to Table IIB-12.
- Marine sediments physical characteristics were highly variable between stations, with less variability generally seen within stations, as shown in the replicate data (Table IIB-12)
- In general, total organic carbon (TOC), total volatiles solids (TVS), and particle grain size (PGS) at the six intertidal locations were found to be highly correlated with each other, with higher TOC and TVS seen in those samples that also had a higher silt + clay fraction.
- Based on this recent study, neither inorganic nor organic contaminants are accumulating in the sediments near Pt. Woronzof. Organic contaminants that were detected were found in one replicate from the IT-C control station near Pt. MacKenzie and in one replicate from the farfield Station IT-2.

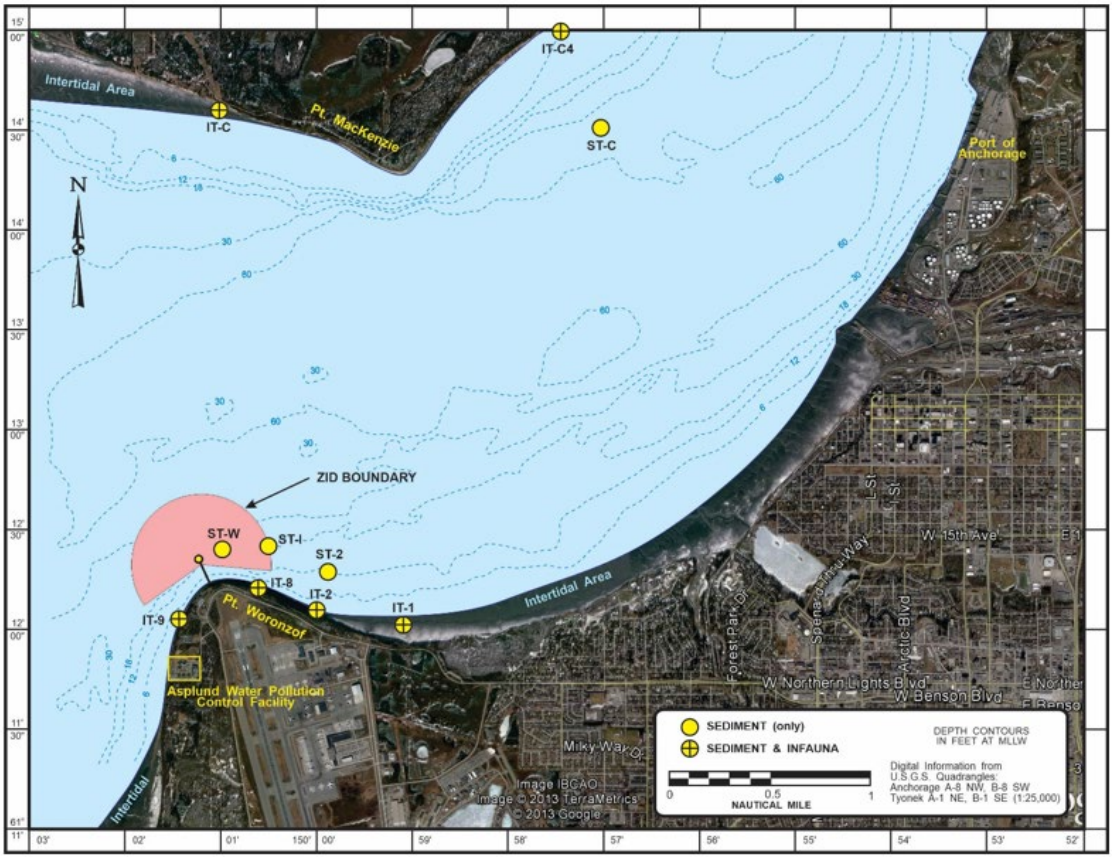


Figure IIB-28. Locations of Sediment Sampling Stations in Upper Cook Inlet in 2022 and 2023



Figure IIB-29. Photographs of Subtidal Seabed Sediments Collected from Stations ST-W and ST-1

Results from this study confirm historic measurements performed in 1986, 1989, and 2003 indicating that: 1) the AWPCF's discharge has not resulted in any accumulation of contaminants in the marine sediments in the vicinity of the outfall, 2) there is no evidence that the AWPCF's discharge is affecting sediments, and 3) differences that were noted for metals concentrations were attributed to differences

in sediment characteristics (i.e., grain size, total organic carbon [TOC], and total volatile solids [TVS]) between sampling sites (refer to Table IIB-12). The Technical Memorandum-Sediment and Benthic Infauna Sampling 2022 – 2023 (Kinnetic Environmental, November 2024) includes complete sediment and benthic infauna results.

Table IIB-11. Marine Sediment Physical Characteristics of Samples Collected in Upper Cook Inlet in 2022

Station			Farfield						Near-ZID Boundary					
			IT-1			IT-2			IT-8			IT-9		
Replicate			R1	R2	R3	R1	R2	R3	R1	R2	R3	R1	R2	R3
TVS (%)			3.2	2.6	2.5	1.7	3.1	1.7	1.2	1.1	1.1	1.0	1.0	0.9
TOC (%)			0.62	0.44	0.53	0.60	0.57	0.35	0.25	0.07 J	0.22	0.07 J	0.18	0.36
Total Solids (%)			66.5	67.3	66.8	63.8	89.1	87.5	92.7	90.0	89.6	90.4	89.9	92.5
Particle Grain Size	Sieve Size	Sieve #												
Gravel, Medium	4.75 mm	4	0.01	0.00	0.01	6.67	42.28	31.78	28.08	36.55	32.46	24.12	35.42	60.93
Gravel, Fine	2.00 mm	10	0.12	0.08	0.18	0.94	18.14	10.44	27.94	20.41	22.45	26.63	20.91	32.77
Sand, Very Coarse	0.85 mm	20	0.08	0.04	0.10	0.51	5.60	5.03	14.55	20.05	14.11	12.42	13.80	0.74
Sand, Coarse	0.425 mm	40	0.06	0.04	0.10	0.73	5.32	7.30	10.49	12.10	14.26	12.40	9.51	0.08
Sand, Medium	0.250 mm	60	0.02	0.01	0.14	0.14	8.38	1.19	3.36	0.65	5.73	1.96	8.68	0.03
Sand, Fine	0.106 mm	140	0.93	0.99	1.89	3.19	7.51	14.32	1.01	2.62	1.08	14.65	5.50	0.29
Sand, Very Fine	0.075 mm	200	0.37	0.23	0.72	0.79	0.86	0.87	0.09	0.03	0.07	0.47	0.40	0.05
Silt, 0.074 mm	< 0.075 mm	NA	68.76	68.47	82.60	62.26	9.42	20.67	11.66	7.09	5.75	7.08	4.70	4.23
Clay, 0.001 mm	< 0.001 mm	NA	29.66	30.14	14.28	24.79	2.49	8.40	2.84	0.50	4.09	0.27	1.08	0.88
% Fines (Silt+Clay)			98.4	98.6	96.9	87.0	11.9	29.1	14.5	7.6	9.8	7.4	5.8	5.1

Station			Control						Subtidal Farfield			Subtidal Control		
			IT-C			IT-C4			ST-2			ST-C		
Replicate			R1	R2	R3	R1	R2	R3	R1	R2	R3	R1	R2	R3
TVS (%)			3.2	2.5	2.8	2.6	2.3	2.3	2.5	1.7	0.9	3.0	1.1	1.0
TOC (%)			0.62	0.51	0.56	0.53	0.45	0.45	0.41	0.60	0.58	0.18	0.18	0.17
Total Solids (%)			69.3	74.5	69.0	73.3	72.7	71.8	85.3	86.2	86.6	75.1	75.4	79.4
Particle Grain Size	Sieve Size	Sieve #												
Gravel, Medium	4.75 mm	4	0.10	0.02	0.06	0.01	0.00	0.03	6.08	2.06	12.49	0.00	0.00	0.00
Gravel, Fine	2.00 mm	10	0.08	0.03	0.20	0.10	0.23	0.04	3.77	4.45	8.90	0.00	0.00	0.00
Sand, Very Coarse	0.85 mm	20	0.22	0.03	0.15	0.05	0.07	0.12	5.89	3.09	5.97	0.01	0.03	0.03
Sand, Coarse	0.425 mm	40	0.17	0.06	0.06	0.06	0.11	0.08	17.10	8.67	6.66	0.07	0.13	0.06
Sand, Medium	0.250 mm	60	0.15	0.01	0.05	0.01	1.75	0.01	25.10	33.85	3.55	2.00	2.06	1.77
Sand, Fine	0.106 mm	140	1.13	0.11	0.65	0.74	0.00	0.91	19.48	28.57	15.63	48.14	46.66	49.37
Sand, Very Fine	0.075 mm	200	1.27	0.15	0.95	3.12	5.45	3.62	3.23	3.29	13.70	28.31	28.26	28.76
Silt, 0.074 mm	< 0.075	NA	66.55	81.08	78.75	78.96	83.72	83.91	16.49	14.42	30.78	20.80	22.71	19.49
Clay, 0.001 mm	< 0.001	NA	30.34	18.51	19.12	16.94	8.67	11.28	2.87	1.59	2.33	0.66	0.15	0.52
% Fines (Silt+Clay)			96.9	99.6	97.9	95.9	92.4	95.2	19.4	16.0	33.1	21.5	22.9	20.0

The particle size distributions of natural suspended sediments off Point Woronzof are shown in Table IIB-13 (Kinnetic Laboratories, 1979). Very large particles are suspended by the high current turbulence, with 50 percent of the load being in the size range of 0.065 to 0.250 mm. Settling rate tests of

suspended material and corresponding tests on effluent and on mixtures with receiving waters are shown in Table IIB-14. About 93 percent of the solids in the ambient samples (10.8/11.6 mL/L) settled in about 20 minutes versus about 50 percent of the solids in the effluent (0.2/0.4 mL/L) settled in about 20 minutes. The larger settleable solids loads present in the receiving water compared to the effluent (11.6 mL/L compared to 0.4 mL/L) are obvious from Table IIB-14.

Table IIB-13. Particle Size Distribution of Suspended Solids Off Point Woronzof

Particle Size (mm)	Percent of Material Finer
0.250	84.5
0.125	69.6
0.0794	57.8
0.0648	49.7
0.0548	40.4
0.0458	32.6
0.0324	20.4
0.0265	15.9
0.0229	12.6
0.0187	10.0
0.0132	7.8
0.0108	6.0
0.0094	4.8
0.0084	3.5
0.0076	2.7
Less than 0.0060	1.6

Notes:

[1] Bulk density of material: 2.7 g/cm^3.

[2] Sample August 1979 at outfall site off Point Woronzof.

Table IIB-14. Settling Rates of Particulates in Anchorage Effluent Receiving Waters, and Mixtures (August 1979 Samples at Outfall Site and Grab Effluent Sample)

	mL/L of Settled Solids				
	10 Minutes	20 Minutes	30 Minutes	1 Hour	2 Hours
100 percent effluent	0.1	0.2	0.4	0.4	0.4
100 percent receiving water	5.1	10.8	11.5	11.6	11.6
90 percent receiving water and 10 percent effluent	5.0	10.2	10.5	10.5	10.5
50 percent receiving water and 50 percent effluent	2.6	5.2	5.6	5.7	5.7
25 percent receiving water and 75 percent effluent	1.2	1.9	2.4	2.6	2.6

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II.C. Biological Conditions

1. ***Provide a detailed description of representative biological communities (e.g., plankton, macrobenthos, demersal fish, etc.) in the vicinity of your current and modified areas of potential discharge(s): within the ZID, at the ZID boundary, at other areas of potential discharge-related impact, and at reference (control) sites. Community characteristics to be described shall include (but not be limited to) species composition; abundance; dominance and diversity; spatial/temporal distribution; growth and reproduction; disease frequency; trophic structure and productivity patterns; presence of opportunistic species; bioaccumulation of toxic materials; and the occurrence of mass mortalities.***

a. Benthic Infauna

The intertidal community around Pt. Woronzof and Pt. MacKenzie is very limited, with only ten taxa identified from six intertidal benthic stations sampled in September 2022 (KEI 2024). The limited benthic infauna population has been documented to be due to the physical environment in upper Cook Inlet and Knik Arm – with strong tidal currents, high suspended sediment loads, and areas of coarse sediments. The stations include the following sites: 1) near-ZID boundary stations at an average of about 570 m from the diffuser, 2) farfield stations at an average of about 1,500 m from the diffuser, and control stations that are completely removed from any influence by the AWPCF outfall at an average distance of 5,000 m (near Pt. MacKenzie).

A complete list of the collected taxa is presented in Table IIC-1 and photographic plates of representative benthic organisms in Figure IIC-1. The total number of taxa recorded is an estimate of the species diversity, as some taxa were classified at higher taxonomic levels, such as unidentified Nemertea and the oligochaete families Enchytraeidae and Naididae.The polychaete *Hediste limnicola* was found at all six stations, although not in every replicate taken within those stations. It was the second most abundant taxon found overall and occurred in 71% of the samples taken at all sites. This species was more prevalent at the farfield stations than at the near-ZID boundary and control sites. The farfield sites contained about 85% of all the individuals found for that species overall. The density or numbers per meter squared (#/m^2) for *H. limnicola* ranged from 30/m^2 to 1038/m^2.

Although not documented in benthic sampling performed for the AWPCF monitoring in the past, the polychaete *H. limnicola* (previously *Neanthes limnicola*) was found in intertidal beach seines that were collected in Knik Arm in reference to the Knik Arm Bridge studies during 2004 and 2005 (Pentec 2005). *H. limnicola* occurred in all 11 of the beach sites that were sampled from lower to upper Knik Arm (Pt. Woronzof to offshore of the Beach Lake area). These sites represented about a 20- to 22-mile stretch of Knik Arm, and these data suggest that this species may have been well established in this area 20 years ago. However, this represents a range extension for this species, which heretofore had not been documented this far north but is more commonly found in reduced salinity areas (freshwater and brackish) in California, including in Lake Merced and the Salinas River and north to Vancouver Island, Canada (Hiebert 2015). Project taxonomists also noted that this species has now been documented in freshwater lake environments in Idaho (Matt Hill, personal communication), also representing a range extension for this organism.

The oligochaete family Naididae was the most abundant taxon encountered, but it only occurred at three stations: the near-ZID boundary sites and the farfield site. The near-ZID boundary area stations contained 98% of all Naididae individuals found, with the majority (77%) found at the station closest to the outfall diffuser. The density of the Naididae ranged from 120/m^2 to 4401/ m^2. The oligochaete family Enchytraeidae was the third most abundant taxon and only occurred at the same three stations as the Naididae. The farfield station contained 81% of all Enchytraeidae collected, while the two near-ZID boundary sites contained the remaining 19%. The density of Enchytraeidae among the three stations ranged from 90/m^2 to 1,118/ m^2. Combined, these two oligochaete families, Enchytraeidae and

Naididae, made up roughly 74% of all identified organisms, despite being found in only half of the samples collected.

Among all stations, control stations exhibited the fewest taxa with only four, along with the least number of individuals, totaling just 23. The most common taxon at the control sites was *H. limnicola,* followed by *Macoma balthica*, and *Macoma sp*. (likely *M. balthica* juv.); in addition, two specimens of the infaunal mysid *Neomysis mercedis* were collected at this station. The abundance of these taxa at both control sites accounts for 2.4% of all individuals found in all samples.

Total abundance and density among stations and areas was highest closest to the outfall at the near-ZID boundary sites; densities reached 4,651/m^2 and 1,587/m^2 at these stations. The farfield sites were intermediate and reached densities of 2,305/m^2 and 898/m^2, while the control stations only showed densities of 180/ m^2 and 50/ m^2. A total of 969 individuals from nine taxa and 36 samples was found, with an average number of individuals per station of 161.5 and an average number of individuals per replicate of 26.9.

Table IIC-1. List of Taxa and Species of Benthic Infauna Community

Annelida
Clitellata
Oligochaeta
Enchytraeida
Enchytraeidae
Enchytraeidae, unidentified
Tubificida
Naididae
Naididae, unidentified
Aclitellata
Polychaeta
Palpata
Aciculata
Phyllodocida
Nereididae
Hediste limnicola
Arthropoda
Crustacea
Malacostraca
Eumalacostraca
Peracarida
Amphipoda
Gammaridea
Gammaridae
Gammarus setosus
Mysida
Mysidae
Neomysis mercedis
Mollusca
Bivalvia

	Bivalvia, unidentified
Heterodonta	
Veneroida	
Tellinoidea	
Tellinidae	
	Macoma balthica
	***Macoma* sp.**
Nemertea	
	Nemertea, unidentified
Nematoda (excluded from analysis but retained and enumerated)	
	Nematoda, unidentified

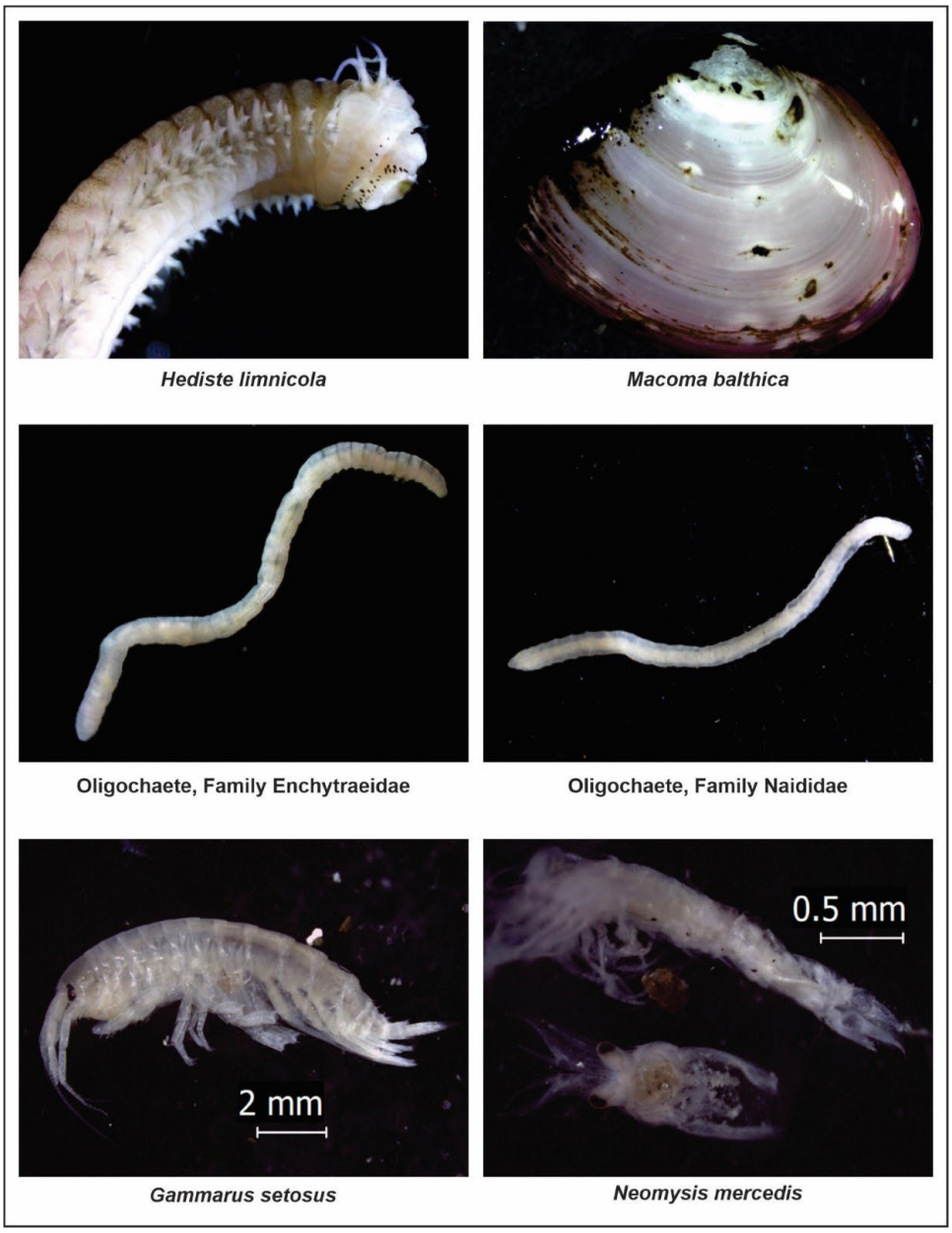


Figure IIC-1. Benthic Organism Photographs

In 2008 a study was conducted that included examination of the subtidal benthic infaunal community in Cook Inlet that found the community to be comprised of a diverse group of animals from all major taxonomic groups, especially in lower Cook Inlet and Kachemak Bay (Saupe et al. 2010). The Upper Cook Inlet and the area north of the Forelands were found to have much lower numbers of individuals and taxa which was attributed to the extreme physical conditions that the area is subjected to. The extreme tides and currents along with the low salinity and high turbidity regimes result in an environment with low total organic carbon and coarse-grained sediment which created a suboptimal environment for the establishment of a diverse and productive infaunal community. Saupe et al. (2010) found that species richness and abundance in the upper Cook Inlet north of the Forelands were low and reflect the general overall upper Cook Inlet community conditions of low diversity. The rigorous physical conditions of the upper Cook Inlet were found to create a stressed biological environment with the infaunal community reflecting this fact.

1a. Marine Fish

This section focuses on marine fish (Pacific salmon; eulachon and longfin smelt; saffron and Pacific cod; starry flounder; staghorn sculpin and three spine stickleback) that may occur in the action area and have either been identified as important prey species for Cook Inlet beluga whales or were targeted for tissue analyses as part of the 2022 – 2024 field sampling effort for this proposed action.

1.a.1 Pacific Salmon

Distribution in Cook Inlet

Cook Inlet is a migratory corridor and early life rearing area for all 5 species of Pacific salmon: Chinook (*Oncorhynchus tshawytscha*); sockeye (*O. nerka*), coho (*O. kisutch*), chum (*O. keta*), and pink (*O. gorbuscha*). Many freshwater streams that drain into upper Cook Inlet are important spawning habitat for these species (NMFS 2009, BOEM 2016, 2021). All Pacific salmon die after spawning once. Table IIC-2 describes salmon use of selected upper Cook Inlet drainages and Knik Arm, the location and timing of their presence in these areas, and their prey while in upper Cook Inlet. The subsections following the table discuss abundance and trends of Pacific salmon in upper Cook Inlet and the status of and risks to the species.

Table IIC-2. Pacific Salmon Use of Cook Inlet Drainages Near the Action Area, Migration and Spawning Time Frames, and Prey

Salmon Species	Use of Cook Inlet Drainages Near Action Area[1]				Cook Inlet Migration and Spawning Time Frame	Prey
	Ship Creek[2]	Susitna River and Delta[3]	Deshka River[4]	Knik Arm[5]		
Chinook	MC SH JRH	SH JRH	SH JRH	MC SH JRH	• Adults in-migrate through Cook Inlet to spawn in these drainages from May to July. • Juvenile out-migration can occur from April to September but peaks in spring and early summer.	• Adult Chinook do not feed while migrating through upper Cook Inlet to spawn or while spawning in Cook Inlet drainages. At sea adults feed on fish, pelagic amphipods, and krill. • While in Knik Arm and upper Cook Inlet, juveniles feed primarily on terrestrial insects.
Coho	MC SH JRH	SH JRH	SH JRH	MC SH JRH	• Adults in-migrate through Cook Inlet to spawn in these drainages from June to August. • Juvenile out-migration can occur from April to September but peaks in spring and early summer.	
Sockeye	MC	SH JRH	SH JRH	MC SH JRH	• Adults in-migrate through Cook Inlet to spawn in these drainages from late June to August. • Juvenile out-migration can occur from April to September but peaks in spring and early summer.	
Pink	MC	SH JRH	SH JRH	MC SH JRH	• Adults in-migrate through Cook Inlet to spawn in these drainages from June to August. • Juvenile out-migration can occur from April to September but peaks in spring and early summer.	
Chum	MC	SH JRH	SH JRH	MC SH JRH	• Adults in-migrate through Cook Inlet to spawn in these drainages from mid-July to mid-August. • Juvenile out-migration can occur from April to September but peaks in spring and early summer.	

Sources: Funk *et al.* (2005), AWWU (2011), BOEM (2016), Frothingham and Willette (2018), Glick and Willette (2018), AKLNG (2019), BOEM (2021), Courtney *et al.* (2021), Giefer and Graziano (2023), Mauger *et al.* (2023), Lipka and Stumpf (2024) and https://www.adfg.alaska.gov/sf/FishCounts/; Accessed February 19, 2024.

[1]Key: MC – migratory corridor; SH – spawning habitat; JRH - juvenile rearing habitat.

[2]Ship Creek runs though the city of Anchorage and empties into Lower Knik Arm near the Port of Alaska.

[3]The Susitna River and Delta include the Yentna, Skwentna, Chulitna, Kashwitna, and Talkeetna Rivers and the Willow, Little Willow, Caswell, Sheep, Goose, Montana, Sunshine, Birch, Rabideaux, Fish, and Clear Creek.

[4]The Deshka River is a tributary of the Susitna River.

[5]Knik Arm includes the Knik, Eagle, Little Susitna, and Matanuska Rivers, the Cottonwood, Five Mile, and Six Mile creeks, and Goose and Eagle bays.

Abundance

Spawning abundance of Pacific salmon in Cook Inlet is monitored using two methods: surveys and fish weirs. Many populations are monitored by conducting single aerial or foot surveys near the peak of the spawning run; these surveys provide an annual index of spawning abundance. For a smaller number of populations, fish weir and sonar projects provide an approximate census of spawning abundance by recording escapement (Jones *et al.* 2020).

Chinook: According to Reimer and Decovich (2020), the Susitna River Chinook salmon run is the largest Chinook run within the upper Cook Inlet management area. It is the fourth largest Chinook run in Alaska, and is only smaller than Chinook runs into the Yukon, Kuskokwim, and Nushagak rivers (Reimer and Decovich 2020). From 2014 to 2019, Susitna River Chinook salmon mark/recapture studies estimated an in-river run of Susitna River Chinook salmon between 63,340 and 136,995 fish annually. Figure IIC-2 depicts the spawning abundance of Chinook salmon in Cook Inlet over the historic period 1980-2015. This figure provides a general overview of relative numbers between various river drainages, but these numbers have substantially decreased in recent years as more fully described below under Trends. One Chinook salmon was captured and released during beach seining as part of the 2022 field sampling in support of this permit renewal application (Kinnetic Environmental Inc. 2023).

Not all Chinook salmon found in Cook Inlet waters are natal to drainages of Cook Inlet. Recent genetic analyses of Chinook salmon caught in recreational fisheries in Cook Inlet over the period 2014–2017 indicate that almost all Chinook salmon harvested in Cook Inlet are "feeders" from populations outside of the inlet, especially during the fall and winter months (Courtney *et al.* 2021). Lower Cook Inlet is known to be a common winter feeding ground for Chinook that likely feed there for several months during the winter before moving to other areas for continued feeding or beginning their spawning migration (Courtney *et al.* 2021). Courtney *et al.* (2021) documented that large Chinook salmon that are natal to areas outside of Cook Inlet but occupy inlet waters in the winter may remain there for least 1 to 2 months and use a variety of offshore and nearshore habitats within Lower Cook Inlet.

Sockeye: According to the *Run Forecasts and Harvest Projections for 2023 Alaska Salmon Fisheries and Review of the 2022 Season*, the 2022 upper Cook Inlet area sockeye salmon estimated total run of 5.2 million fish was 300,000 fish larger than the preseason forecast of 4.9 million fish. As of March 2024, the upper Cook Inlet sockeye salmon total run was forecasted to be 5.72 million fish, which is now considered an average sized sockeye run. Forecasts of salmon fisheries are inherently uncertain and are primarily used to gauge the general magnitude of expected runs and guide early-season management strategies (ADF&G 2024a). Note that ADF&G considers upper Cook Inlet in terms of their management area to extend south to Anchor Point, so these fish numbers include the salmon returns to the Kasilof and Kenai River systems whereas NMFS considers upper Cook Inlet to be the region north of the Forelands in terms of marine mammal management.

Coho: There are four coho salmon systems in upper Cook Inlet that have established coho escapement goals: Fish Creek; Little Susitna River; Deshka River; and McRoberts Creek, a small spawning tributary within the Jim Creek system. The 2022, 2023, and 2024 counts from the Little Susitna River were 3162, 3726, and 964, respectively, well below the sustainable escapement goal (SEG) range of 9,200–17,700 fish. In 2022, only 3,168 coho salmon were counted at the Deshka River weir though August 8 but this was considered to be an incomplete count because of flooding (Donnellan and Munro 2023). However, counts were also low in 2024 (642), 2023 (1817), and 2021 (5368) compared to the SEG of 10,200-24,100 fish (ADG&G website 2025). For Fish Creek, ADF&G recorded 36, 1534, and 235 coho salmon in 2022, 2023, and 2024, respectively compared to the SEG of 1200-2400 fish (ADF&G website 2025). In a survey conducted in 2022 of McRoberts Creek, an estimate of 1,899 coho salmon was found (Donnellan and Munro 2023), compared to the SEG of 450 to 1,400 which was met for this stream (McKinley *et al.* 2020). Anchor River was also below its SEG of 3,200 to 6,400 coho in 2023 and 2024.

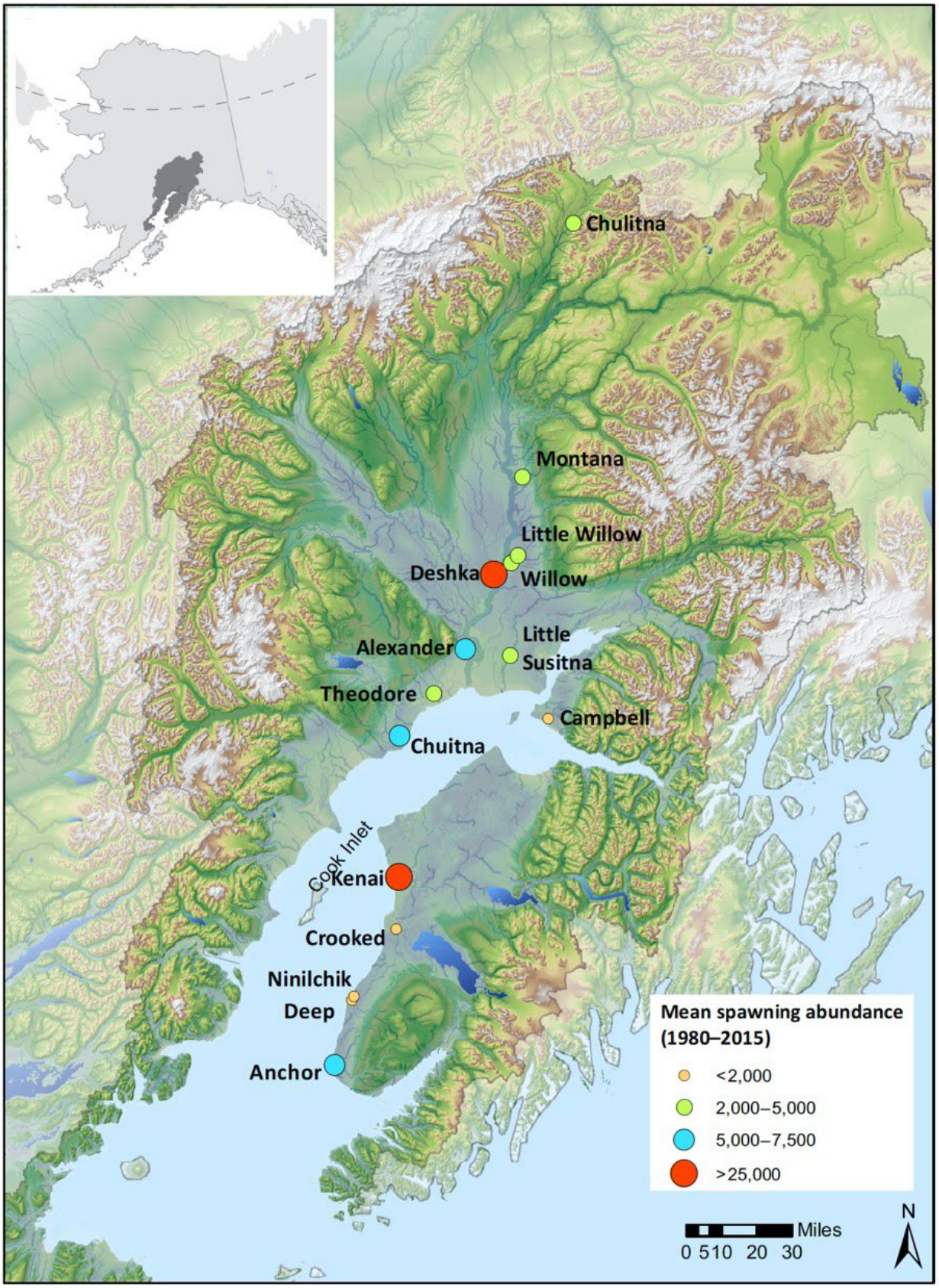


Figure IIC-2. Mean Chinook Spawning Abundance in Cook Inlet Drainages 1980-2015

Source: Jones et al. (2020)

In August 2024 ADF&G issued an emergency order closing Ship Creek to sport fishing for all species (ADF&G 2024b). A partial survey of Ship Creek conducted on August 19, 2024, counted only 181 coho salmon in the section of the creek near William Jack Hernandez Sport Fish Hatchery and only 79 coho salmon had entered the hatchery raceway by that date. The hatchery needs at least 1,000 adult coho salmon to return to meet in-river and brood stock needs. Given the low coho counts in the hatchery raceway and results of the partial survey, ADF&G found it necessary to close Ship Creek to all sport fishing so any remining coho can return to the hatchery (ADF&G 2024b).

Pink: Pink salmon runs in upper Cook Inlet are even-year dominant, with odd-year average harvests typically less than one-sixth of even-year harvests. The 2022 upper Cook Inlet commercial pink salmon harvest was estimated to be 100,998 fish (Donnellan and Munro 2023). In 2023, four pink salmon were captured and released as part of the multi-year biological sampling effort in support of this permit renewal (Kinnetic Environmental Inc. 2024).

Chum: Peak season aerial fixed-wing surveys are used to determine escapement of chum salmon in Clearwater Creek, the only chum salmon stock in upper Cook Inlet that has an SEG (McKinley *et al.* 2020). An aerial survey of Chinitna River/Clearwater Creek was conducted on August 3, 2022. This survey produced an estimate of approximately 4,681 chum salmon within these streams, which was within the SEG range of 3,500–8,000 fish (Donnellan and Munro 2023). This SEG was set for Clearwater Creek in 2017, and no change was recommended (McKinley *et al.* 2020). The 2022 commercial harvest of chum salmon was 99,294 fish in upper Cook Inlet (Donnellan and Munro 2023).

Trends

Pacific salmon returns in Alaskan waters have been declining, which has led to restrictions in both directed fisheries, bycatch in fisheries directed at other species, and recreational fisheries (Courtney *et al.* 2019, ADF&G 2020, 2021, Courtney *et al.* 2021, Harrison 2021, ADF&G 2023). Trends in salmon abundance in upper Cook Inlet drainages can be estimated based on commercial harvest estimates and escapement data.

The 2022 commercial harvest estimate of 102,630 coho salmon in upper Cook Inlet was 44% less than the previous 10-year average of 185,532 fish and the 2022 drift gillnet harvest of 51,306 coho salmon was 52% less than the 10-year average of 107,614 fish (Donnellan and Munro 2023). The 2022 upper Cook Inlet commercial pink salmon harvest estimate of 100,998 fish was 72% lower than the average annual harvest of 363,813 fish from the previous 10 years of even-year harvests (Donnellan and Munro 2023). The 2022 upper Cook Inlet chum commercial harvest of 99,294 fish was 34% lower than the 10-year average annual harvest of 151,247 fish (Donnellan and Munro 2023). As shown in Table IIC-3, the trend of declining commercial harvest for upper Cook Inlet fisheries as summarized from ADF&G (2023) continued; the 2023 harvest of all five pacific salmon species was lower that than the average of the 20 previous years. The 2024 king salmon harvest of 169 fish and the coho salmon harvest of 24,750 fish are the lowest on record for each species respectively. Low commercial harvest of king and coho salmon corresponds to low abundance trends and restricted fishing effort observed this season (ADF&G 2024 – website).

Table IIC-3. 2023 Upper Cook Inlet Commercial Harvest of Pacific Salmon Compared to 2003-2022 Average Harvest

Species	2023 Upper Cook Inlet Commercial Harvest	2003-2022 Upper Cook Inlet Average Harvest	Percent Difference
Chinook	723	10,443	-93%
Sockeye	1,600,000	2,600,000	-40%
Coho	83,912	178,919	-53%
Pink[1]	66,236	82,486	-20%
Chum	127,150	129,201	-2%

Source: ADF&G (2023)

[1]Pink salmon runs in upper Cook Inlet are even-year dominant, with odd-year average harvests typically less than even-year harvests so Average of odd year harvests only is shown.

ADF&G collects salmon escapement data from weirs within selected streams and rivers that empty into upper Cook Inlet waters. Escapement data were obtained from the ADF&G fish counts website to produce 20-year escapement trend graphs for the Deshka River and for the Little Susitna River. Data from these two rivers comprise the most applicable and complete escapement dataset available for upper Cook Inlet and this analysis. The following subsections describe specific escapement trends in salmon abundance for the specific rivers located in upper Cook Inlet.

Deshka River: The Deshka River (Figure IIC-3) provides important habitat for migrating and spawning Chinook and coho salmon (Mauger *et al.* 2023). A weir located at river mile 7 has been used to count returning adults on the Deshka River since 1995 (Reimer and Decovich 2020). As shown on Figure IIC-4, coho and Chinook escapement numbers in the Deshka River peaked in 2004 and have been declining ever since. The 2024 end of run cumulative escapement of Chinook salmon in the Deshka River was 3,445 fish[1]. The current SEG in the Deshka River for Chinook is 9,000 to 18,000 fish and the SEG for coho is 10,200 to 24,100 fish[1]. Based on weir fish counts, the SEG for Chinook was not met in 2022, 2023, or 2024 as only 5,436, 3,741, and 3,445 Chinook passed the weir through August of each year, respectively. However, the Chinook SEG in the Deshka River was met in 2019 (9,639 fish), 2020 (10,638 fish) and 2021 (18,583 fish). The SEG for coho has not been met in the Deshka River for the last five years, with only 5,368 (2020), 3,338 (2021), 3,168 (2022), 1,817 (2023), and 642 (2024) fish counted though September 8 of those years. In 2023, the coho salmon weir count on the Deshka River was considered to be incomplete due to flooding; however, based on the rate of returns, it is unlikely that the SEG for coho was achieved (ADF&G 2023). In 2019 the coho count of 10,445 barely exceeded the lower SEG for that species. The 2024 end of run cumulative escapement of coho salmon in the Deshka River was 642 fish[1].

[1] https://www.adfg.alaska.gov/sf/FishCounts/index.cfm?ADFG=main.displayResults Accessed February 21, 2024 and July 10, 2025

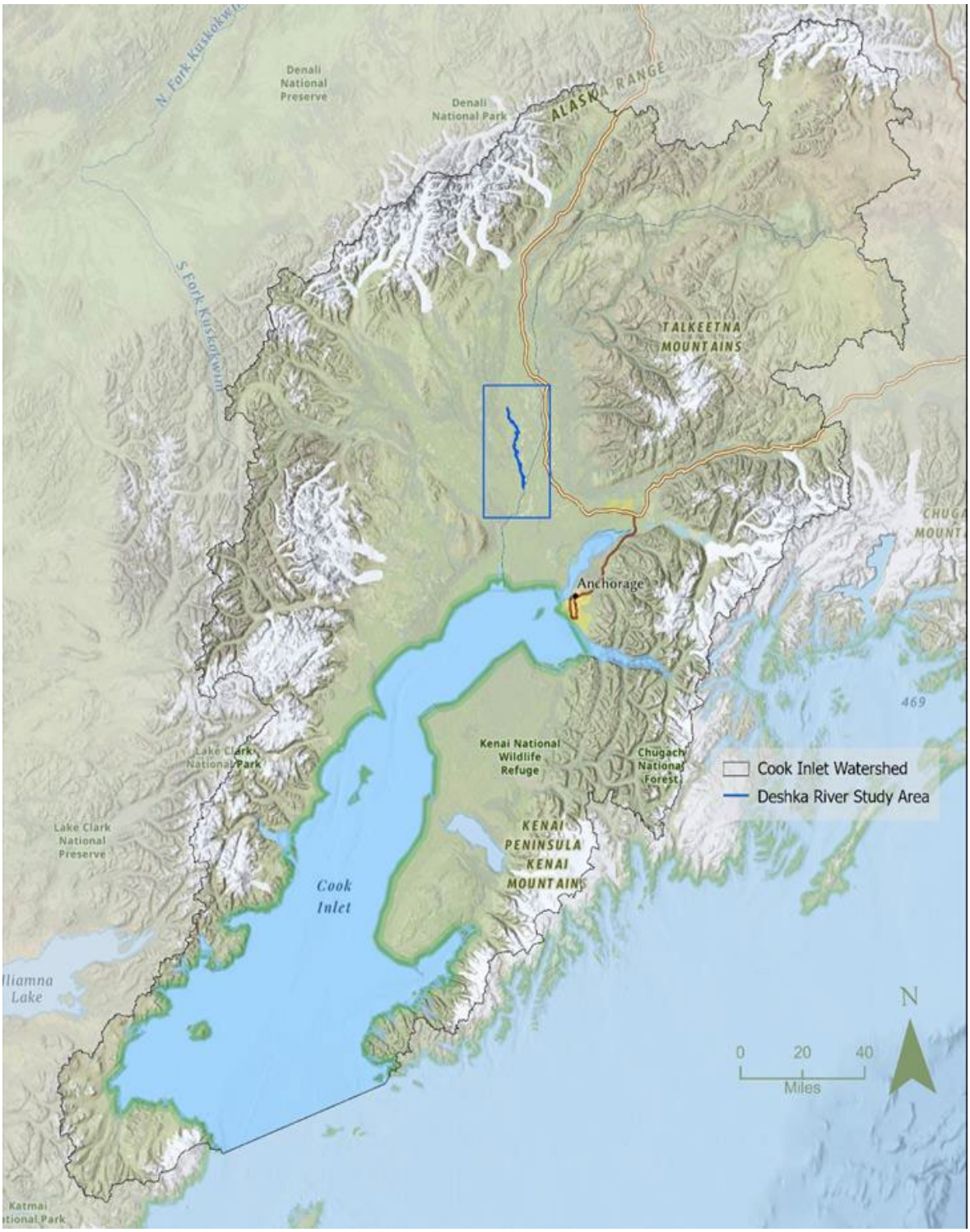


Figure IIC-3. Deshka River Location

Source: Mauger et al. (2023)

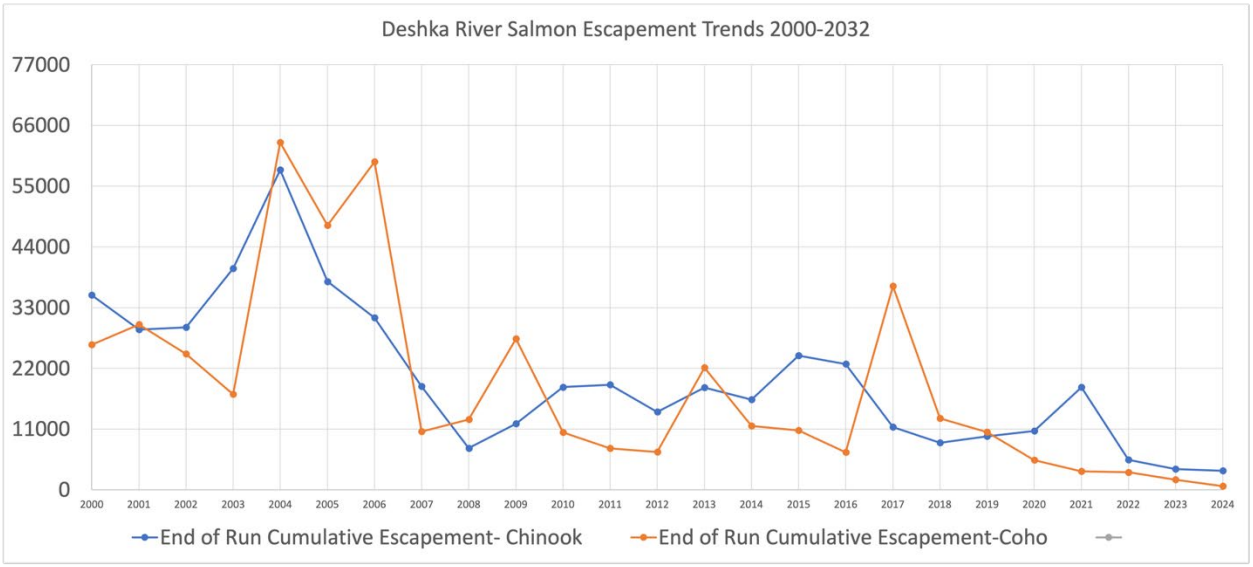


Figure IIC-4. Deshka River Salmon Escapement Trends 2000-2024

Source: https://www.adfg.alaska.gov/sf/FishCounts/ Accessed February 13, 2024 and July 10, 2025

Sockeye and chum runs on the Deshka are small, with fewer than 100 fish per year. Pink runs are very variable, ranging from nearly 1,000,000 fish to fewer than 10,000 fish.

Little Susitna River: The Little Susitna River flows out of the Talkeetna Mountains and empties into Cook Inlet across from and to the west of Point Woronzof (Figure IIC-5). Historically it supported strong runs of coho, chum, and pink salmon and moderate runs of Chinook salmon[2]. Figure IIC-6 shows that since about 2012, chum has been the most abundant Pacific salmon species counted with runs of coho, Chinook, and sockeye decreasing since about 2016-2017. The SEG in the Little Susitna River for Chinook is 2,100 - 4,300 fish and the SEG for Coho is 9,200 - 17,700. Based on weir fish counts, the SEG for Chinook was not met in 2023 or 2024 as only 796, and 1005 fish respectively, passed the weir through August of each year. However, the Chinook SEG was met in 2022 (2,237 fish), 2021 (3,121 fish) and 2020 (2,424 fish). The SEG for coho has not been met for the last three years, with only 964 fish counted through August 31, 2024, 3,726 fish counted in 2023, 2023, and 3,162 fish counted in 2022. In 2023, the coho salmon weir count on the Little Susitna River was considered to be incomplete due to flooding; however, based on the rate of returns, it is unlikely that the SEG for coho was achieved (ADF&G 2023). Counts of 10,923 and 10,765 coho in 2021 and 2020, respectively, exceeded the lower SEG for that species.

[2] https://www.adfg.alaska.gov/sf/FishCounts/index.cfm?ADFG=main.displayResults&COUNTLOCATIONID=16&SpeciesID=410 Accessed February 21, 2024 and July 10, 2025

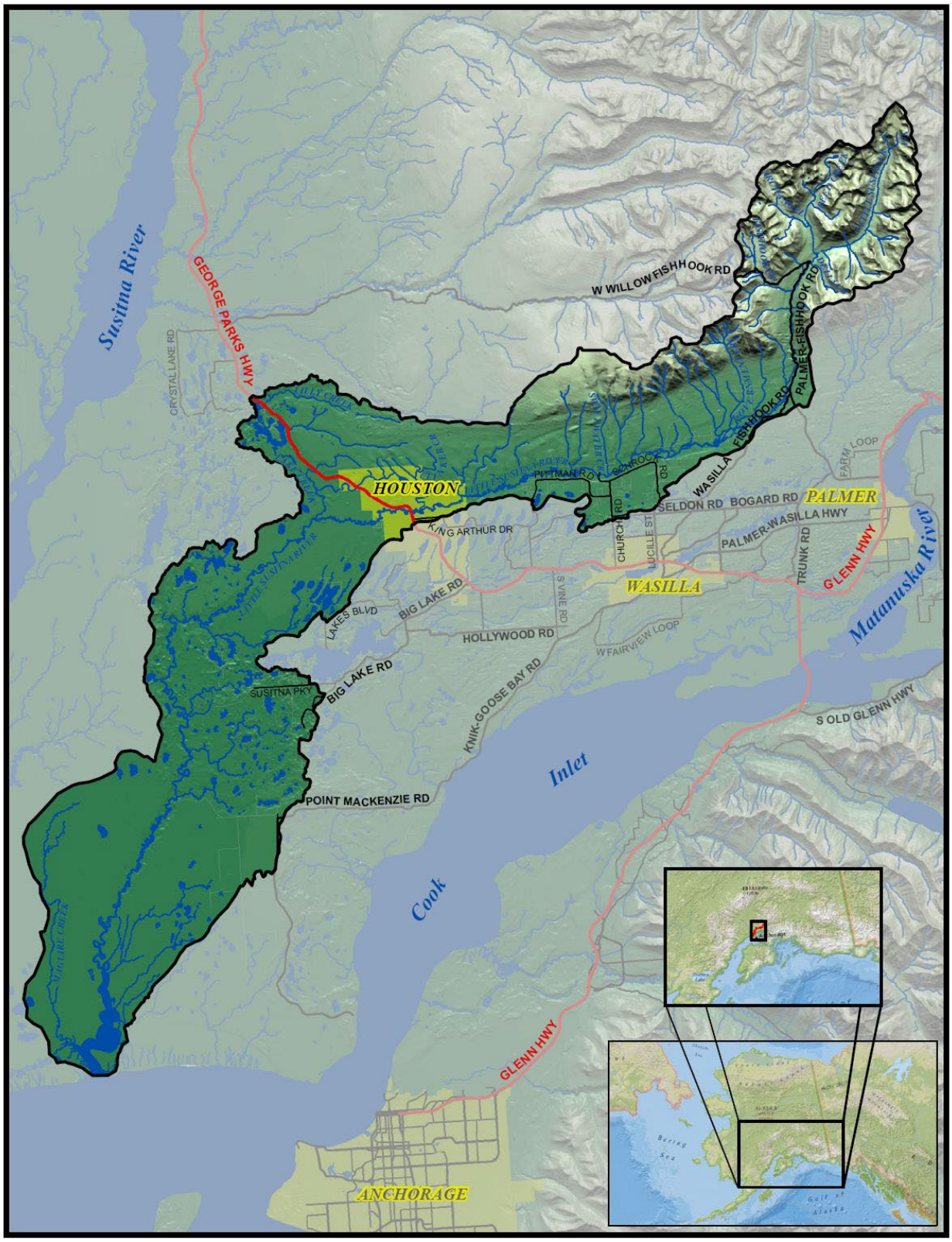


Figure IIC-5. Little Susitna Drainage Map

Source: Maw and Salmon (2013).

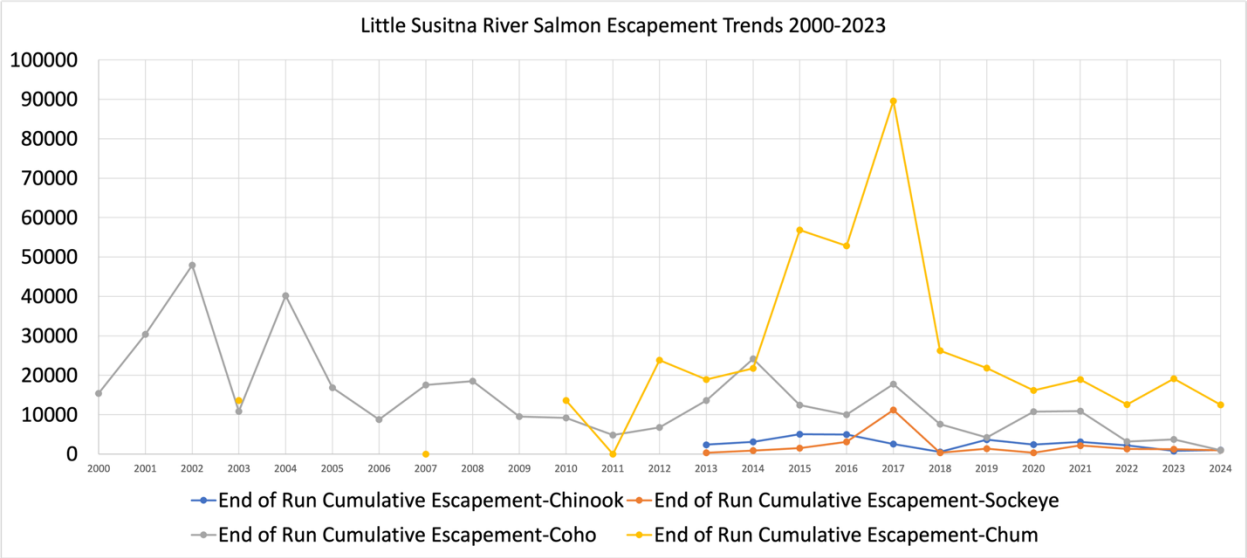


Figure IIC-6. Little Susitna River Salmon Escapement Trends 2000-2024

Source: Source: https://www.adfg.alaska.gov/sf/FishCounts/ Accessed February 13, 2024 and July 10, 2025
Chinook and sockeye: no data 2000-2012; chum no data 2000-2002, 2004-2006, and 2008-2009.

Status and Risks

No stocks of Pacific salmonids that originate from freshwater habitat in Alaska are listed under the Endangered Species Act (ESA). However, the Wild Fish Conservancy, a Washington state-based nongovernmental organization, filed a petition on January 11, 2024, requesting NMFS to list Gulf of Alaska (GOA) Chinook salmon or any evolutionary significant unit (ESU) that uses the area as threatened or endangered under the ESA (Wild Fish Conservancy 2024). The petition identifies Chinook populations that use the Gulf of Alaska, including fish that spawn in the rivers of Cook Inlet. The National Marine Fisheries Service (NMFS) published a positive 90-day finding in response to the petition on May 24, 2024 announcing that one or more ESUs of GOA Chinook salmon may warrant listing (NMFS 2024a). NMFS determined that missed escapement goals and evidence of decreasing fish size and age at maturity may indicate that listing GOA Chinook is warranted (NMFS 2024a). Therefore, the agency will conduct a status review to determine if GOA Chinook salmon are in danger of extinction (Endangered) throughout all or a significant portion of the range or are likely to become so within the foreseeable future (Threatened). NMFS has one year from the date of the petition to publish a status review considering whether the ESA listing is warranted. On June 28, 2024, NMFS extended the comment period and request for information regarding the 90-Day finding to September 6, 2024 (NMFS 2024b). As of late October 2024, the status review was not available[3]. If the status review determines that listing is warranted, NMFS will publish a proposed rule for public comment before making a final decision on the listing status of any GOA Chinook salmon.

Changes in Water Temperature: Researchers have attributed recent declines in Cook Inlet Chinook salmon populations in part to climate-driven changes in temperature and streamflow in freshwater habitats (Jones *et al.* 2020, Mauger *et al.* 2023). Declines in Cook Inlet salmon populations have been linked to large-scale climate drivers, but uncertainty remains about the role of local conditions (e.g., precipitation, streamflow, stream temperature) that vary among the watersheds where salmon spawn and rear (Jones *et al.* 2020). Jones *et al.* (2020) also identified a strong negative association between increases in maximum monthly precipitation and Chinook salmon population productivity. Water

[3] https://www.fisheries.noaa.gov/action/petition-list-gulf-alaska-chinook-salmon-threatened-or-endangered-under-endangered-species Accessed October 28, 2024

temperature affects all phases of the salmon lifecycle: egg/embryo survival; juvenile growth; timing of seaward migration; and migration rate of returning adults. Warm water temperature induces stress in salmon and makes them more vulnerable to contaminants, predation, and disease.

The Deshka River is among the warmest salmon system in the Susitna River drainage, with summer water temperatures regularly exceeding thresholds considered stressful for rearing juveniles and spawning adult salmon[4]. In recent years, water temperatures measured in the Deshka River have been as high as 27°C, with an average increase of 1.5°C since 1980 (Jones *et al.* 2020). Weekly water temperature averages are projected to exceed 26.0°C by 2060 (Mauger *et al.* 2023) and are already exceeding weekly averages projected for 2030 (Mauger *et al.* 2017, Mauger *et al.* 2023). In addition, Maw and Salmon (2013) theorize that decreased Pacific salmon runs in the Little Susitna River are the result of public access allowing strong recreational fishing pressure, hook and release mortality, parasites, diseases, invasive northern pike, warm water temperatures, blocked culverts, beaver dam blockages, urbanization, and impaired water quality.

Poor Marine Survival: Other studies have linked Pacific salmon population declines in Cook Inlet to poor marine stage survival (Courtney *et al.* 2019). Recent research suggests that mortality of Chinook salmon in older marine life stages has increased in recent years due to predation by killer whales (*Orcinus orca*), Steller sea lions (*Eumetopias jubatus*), harbor seals (*Phoca vitulna*) and salmon sharks (*Lamna ditropis*) (Chasco *et al.* 2017, Courtney *et al.* 2021) and may explain declines in abundance and demographic changes of adult returns (Ohlberger *et al.* 2019, Seitz *et al.* 2019). All of these apex predators are known to occupy Cook Inlet. There also has been concern, particularly with chinook salmon, of mortality due to bycatch from offshore trawling in the GOA that affects the marine stage of survival. Poor salmon recruitment may also affect apex predators including Cook Inlet beluga whales

Commercial and Recreational Fishing Pressure: Of the five species of Pacific salmon commercially harvested in upper Cook Inlet, sockeye salmon accounted for 92% of the total ex-vessel value over the past 20 years. Historically, personal use salmon fisheries in Cook Inlet resulted in the harvest of an average of over 465,000 salmon per year from 2005-2015 (NMFS 2017). In 2023, personal use fisheries employing dip nets in the Kenai and Kasilof rivers and Fish Creek removed a total of over 530,000 Pacific salmon, of which over 97% were sockeye salmon[5]. Tribal members throughout Cook Inlet participate in all Cook Inlet salmon fisheries, including the drift gillnet and other commercial, recreational, subsistence, tribal, ceremonial, educational, and personal use salmon fisheries (NMFS 2023). However, for subsistence alone, the most recent ADF&G subsistence report documents the historical average subsistence harvest of salmon in Cook Inlet area of less than 5,400 fish (Fall *et al.* 2014).

The effects of these removals on the salmon populations and on marine mammals using Cook Inlet, such as Cook Inlet beluga whales, remains undetermined (NMFS 2017). On April 29, 2024, NMFS published a final rule to implement Amendment 16 to the Fishery Management Plan (FMP) for the Salmon Fisheries in the Exclusive Economic Zone off Alaska (NMFS 2024d), which was later corrected on May 29, 2024, to include the correct length for drift gillnet gear of 200 fathoms (365.76 m) (NMFS 2024e). Within the action area for the AWPCF NPDES permit, no additional drift gillnet harvest is expected in the Northern District of State waters as this area is closed to that gear group. So, while shifts in harvest from the Exclusive Economic Zone (EEZ) to State waters may disperse an unknown amount of fishing pressure on some salmon runs, changes in State escapement goals are not expected (NMFS 2024c).

1.a.2. Eulachon and Longfin Smelt

Eulachon (*Thaleichthys pacificus*) are small anadromous smelts (Family Osmeridae) found only along the Northwest Pacific Coast of the United States[6]. Eulachon, along with longfin smelt (*Spirinchus*

[4] https://www.fishhabitat.org/waters-to-watch/detail/deshka-river-alaska Accessed February 20, 2024

[5] https://www.adfg.alaska.gov/index.cfm?adfg=PersonalUsebyAreaSouthcentralfishCreekSalmon.harvest Accessed February 21, 2024.

[6] https://www.fisheries.noaa.gov/species/eulachon accessed February 15, 2024

thaleichthys), are important prey species for marine and freshwater fish, marine mammals, and sea birds; they are lipid-rich and good sources of energy-rich food during the periods when other food sources may be less abundant (Moody and Pitcher 2010).

Distribution in Cook Inlet

Upper Cook Inlet waters support a large eulachon run from the Susitna River and a smaller run that returns to the Twentymile River in Turnagain Arm (Moody and Pitcher 2010). From mid-April to mid-June, eulachon migrate through Cook Inlet waters returning to spawn in these drainages (Shields 2005). Mid-May is considered when the peak run begins. The upstream migration is keyed closely to stream water temperature (BOEM 2016). After spawning, most eulachon die.

Longfin smelt (Figure IIC-7) are also seasonally abundant in Cook Inlet, where they return each year in the fall (Shields and Dupuis 2013). Like eulachon, longfin smelt gather in large schools off the mouths of freshwater spawning streams and rivers (BOEM 2016). Abookire and Piatt (2005) note that longfin smelt tend to be associated with warm, less saline, shallow mid-water habitats. During 2022 and 2023, 78 and 16 (respectively) longfin smelt were captured and released as part of the biological field sampling to support this permit renewal application (Kinnetic Environmental Inc. 2023).

Abundance and Trends

Few quantitative data have been collected on the abundance of eulachon returns (Bechtol 2023). The most recent estimates for upper Cook Inlet were based on larval densities and stream discharge data collected from May 12 to July 6, 2016 (ADF&G 2017). Model results indicated that the estimated total eulachon biomass in the drainage was 48,000 metric tons (mt) (ADF&G 2017).



Figure IIC-7. Longfin Smelt

Source: Kinnetic Environmental Inc. (2024)

Patterns of genetic structure, diversity, and gene flow are poorly understood for this species. It is not clear why run strength remains strong in some areas while weak in other areas[7]. No longfin smelt were collected during a near-shore fish distribution sampling effort conducted in the late 1990s in lower Cook Inlet waters at the mouth of Kachemak Bay (Abookire *et al.* 2000). Overall strength of longfin smelt returns vary across the state by year and location. Sixteen longfin smelt were captured and released during the 2023 field studies for this proposed action (Kinnetic Environmental Inc. 2024).

[7] https://www.adfg.alaska.gov/index.cfm?adfg=longfinsmelt.main Accessed February 16, 2024

Status and Risks

Eulachon and longfin smelt in Alaska waters are not listed under the ESA. According to the Alaska Department of Fish and Game (ADF&G), the main threat to eulachon[8] and longfin smelt[9] populations in Alaska is the potential overharvest from personal use, subsistence, and commercial fisheries. Longfin smelt are not commercially targeted in upper Cook Inlet due to the small run size (Shields and Dupuis 2013, Marston and Frothingham 2020, Lipka and Stumpf 2024). However, eulachon return in sufficient quantities to support a limited early spring commercial fishery (Lipka and Stumpf 2024). Legal gear for the commercial fishery is limited to hand-operated dip nets and the total allowed harvest level is 181.5 mt tons or less (Lipka and Stumpf 2024).

1.a.3. Saffron and Pacific Cod

Both saffron (*Eleginus gracilis*) and Pacific cod (*Gadus microcephalus*) (Figure IIC-8) are bottom-dwelling fast-growing demersal fish that mature quickly (BOEM 2016). Adults and juveniles feed on pollock, herring, smelt, mollusks, crabs, shrimp, and other similar-sized marine organisms (BOEM 2016). Saffron cod larvae are pelagic and feed on plankton; juveniles and adults are epibenthic feeders whose preferred prey is amphipods (Wolotira Jr. 1985).

Distribution in Cook Inlet

Saffron cod are common in upper Cook Inlet waters except in winter (Houghton *et al.* 2005). There are limited data from ADF&G concerning Pacific cod distribution in Cook Inlet in the spring. However, studies from other areas suggest that beginning in the fall, Pacific cod migrate to major spawning areas where they overwinter and then disperse to summer feeding grounds after spawning (Shimada and Kimura 1995). Increases in Pacific cod catch rates generally peak in February and March and decline by late April (Rumble *et al.* 2019). Both saffron and Pacific cod have been identified as potential Cook Inlet beluga prey resources during late winter and early spring (Houghton *et al.* 2005, Castellote *et al.* 2020).



Figure IIC-8. Pacific Cod

Source: KEI 2023 AWWU Field Study

[8] https://www.adfg.alaska.gov/index.cfm?adfg=eulachon.main Accessed February 16, 2024

[9] https://www.adfg.alaska.gov/index.cfm?adfg=longfinsmelt.main Accessed February 16, 2024

Abundance and Trends

According to Hulson *et al.* (2023), the Gulf of Alaska Pacific cod stock remains at low levels but is above the unfished spawning biomass ($B_{20\%}$) for 2024. The Alaska Fishery Science Center (AFSC) estimates Gulf of Alaska Pacific cod biomass and abundance from biennial bottom trawl surveys (Hulson *et al.* 2023). Table IIC-4 shows the estimated Gulf of Alaska Pacific cod biomass and abundance estimates for 2011-2023. Biomass and abundance estimates for saffron cod in the Gulf of Alaska are not available.

Table IIC-4. Gulf of Alaska Pacific Cod Biomass and Abundance Estimated from AFSC Bottom Trawl Surveys

Year[1]	Estimated Biomass (mt)[2]	Abundance (count)
2011	455,000	348,060
2013	459,000	337,992
2015	230,000	196,334
2017	97,000	56,199
2019	165,000	127,188
2021	158,000	90,914
2023	210,000	138,683

Source: Hulson *et al.* (2023).
[1]Surveys are conducted every other year.
[2]Rounded to nearest 1,000 mt

As shown in Table 3, Pacific cod abundance in the Gulf of Alaska and surrounding areas experienced a decline in 2016-2018, which resulted in a 77% reduction in harvest levels in the Cook Inlet Area from 1,600 mt in 2017 to 304 mt in 2018. As shown in Table IIC-4, biomass and abundance of Pacific cod increased in 2023 but it is not known if this trend will continue. During the 2022 field sampling effort to support this permit renewal application, 15 Pacific cod were captured using a beach seine near Point Woronzof and then released (Kinnetic Environmental Inc. 2023).

Status and Risks

Water temperature directly affects Pacific cod metabolism; higher temperatures increase metabolic demands (Barbeaux *et al.* 2018). Cold sea surface temperatures have been linked to higher cod larval abundance and survival (Doyle and Mier 2016). The reduction in Alaska Pacific cod biomass observed beginning in 2016 (refer to Table IIC-4) has been attributed to an ocean condition called the "warm blob," a marine heat wave that negatively affected some marine species including Pacific cod (Hulson *et al.* 2023).

Saffron and pacific cod are taken in commercial and subsistence fisheries. The total harvest for the 2019 Pacific cod season in Alaska state waters comprised 260 mt of the 287.5 mt allowable harvest level (Rumble *et al.* 2019). The Pacific cod fishery in Alaska waters is dominated by vessels using pot gear; pot vessels harvested 99% of the total harvest and seven vessels made 54 landings. Saffron cod are also a subsistence species for Alaska Natives (Wolotira Jr. 1985).

1.a.4. Starry Flounder

Starry founder (*Platichthys stellatus*) (Figure IIC-9) inhabit Cook Inlet coastal waters with sandy or muddy bottoms from shallow intertidal zones to depths of 600 m[10]. They spawn from November to February and are most active in December and January. In the Gulf of Alaska, starry flounder are managed as part of the shallow-water flatfish complex.

[10] https://www.alaskahandbook.com/nature/starry-flounder/ Accessed February 23, 2024



Figure IIC-9. Starry Flounder

Source: https://www.alaskahandbook.com/nature/starry-flounder/ Accessed February 23, 2024

Bryan (2023) estimated the biomass of Gulf of Alaska starry flounder to be 23,072 mt in 2023 and projected a similar biomass for 2024. This species is a prey item for larger fish such as ling cod, halibut, and rockfish as well as Cook Inlet beluga whales (Houghton *et al.* 2005, Castellote *et al.* 2020). Because they thrive in cold water, warm water temperatures could pose a significant threat to starry flounder survival[11].

1.a.5. Pacific Staghorn Sculpin and Threespine Stickleback

Sticklebacks (Gasterosteidae) and sculpins (Cottidae) are ubiquitous in the upper portions of Cook Inlet (BOEM 2016). The threespine stickleback (*Gasterosteus aculeatus*) is a small, torpedo-shaped benthic species that typically occurs in quiet vegetated areas with sand and mud (Figure IIC-11) (ADF&G 2006). As generalist carnivores, threespine sticklebacks feed on benthic invertebrates, zooplankton, fish eggs, and fry (ADF&G 2006). As the threespine stickleback is small, abundant, and a slow swimmer, it is suitable prey for a wide variety of species[12]. During 2023, 453 three-spine sticklebacks were captured near Point Woronzof using a beach seine as part of the biological field sampling to support this permit renewal application. A similar sampling effort in 2022 only caught one stickleback (Kinnetic Environmental Inc. 2023).

Staghorn sculpins (*Leptocottus armatus*) can grow up to 46 centimeters (cm) (Kachemak Bay Research Reserve 2012). They are smooth skinned, greenish brown with some yellow, and have 2 to 6 prongs along their spines (Figure IIC-10). They spend the majority of their lives in saline and brackish waters. They are commonly found in nearshore areas of bays and estuaries; most often on sandy substrates. Adults are common in sheltered marine estuaries, while juveniles are more often found in freshwater streams and upper estuarine, lower salinity, environments[13]. Female sculpins lay masses of eggs on various substrates. Male sculpins guard the eggs from predators. The eggs eventually hatch, and planktonic larvae emerge to feed on other planktonic life near the surface (Kachemak Bay Research Reserve 2012). Adults feed on shrimp, crabs, and other fish[14]. Seventeen species of sculpin have been

11 https://www.americanoceans.org/species/starry-flounder/ Accessed February 23, 2024

12 https://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=702 Accessed February 26, 2024

13 https://inaturalist.ca/taxa/49163-Leptocottus-armatus Accessed February 26, 2024

14 https://inaturalist.ca/taxa/49163-Leptocottus-armatus Accessed February 26, 2024

found in Kachemak Bay (Kachemak Bay Research Reserve 2012). In 2022, as part of the biological field sampling to support this permit renewal application, four staghorn sculpin were captured near Point Woronzof using a beach seine (Kinnetic Environmental Inc. 2023).



Figure IIC-10. Pacific Staghorn Sculpin

Source: KEI 2023 AWWU Field Study



Figure IIC-11. Male Threespine Stickleback

Source: https://www.adfg.alaska.gov/static/species/speciesinfo/_aknhp/Threespine_Stickleback.pdf Accessed February 26, 2004

1.b. Marine Mammals

Nineteen NMFS-managed marine mammal species occur in the Cook Inlet region (Allen and Angliss 2014, Allen and Angliss 2015, BOEM 2016, Muto et al. 2016, Young et al. 2023) but the majority of these species do not range north of the Forelands into upper Cook Inlet waters. As described in Young et al. (2023) and shown on Table IIC-5, three marine mammal species are common in upper Cook Inlet: ESA-listed Cook Inlet beluga whales (*Delphinapterus leucas*), harbor seals (*Phoca vitulina*), and harbor porpoises (*Phocoena phocoena*) (Rugh *et al.* 2010, Hobbs *et al.* 2011, Lomac-MacNair *et al.* 2014, Shelden *et al.* 2014, Shelden *et al.* 2022). Three additional species occur rarely to infrequently in upper Cook Inlet; these include: Steller sea lions (*Eumetopiaa jubatus*) from the ESA-listed western Distinct

Population Segment (DPS); resident and transient killer whales (*Orcinus orca*) from the eastern north Pacific stock; and humpback whales (*Megaptera novaenagliae*) from the Hawaii DPS (Young et al. 2023).

Other species that have been observed in lower Cook Inlet but are considered rare or extralimital in upper Cook Inlet are the minke whale (*Balaenoptera acutorostrata*), eastern north Pacific gray whale (*Eschrichtius robustus*) (Carretta et al. 2023) and the ESA-listed fin whale (*B. physalus*) (Young et al. 2023). Generally, fin, gray, and minke whales migrate through the Gulf of Alaska past Cook Inlet, although small numbers have been noted near Kachemak Bay and north of Anchor Point (BOEM 2016). In addition, northern sea otters (*Enhydra lutris nereis*) from the southcentral and southwest (ESA-threatened) DPSs occupy near shore marine habitats in lower Cook Inlet (USFWS 2023a). The northern sea otter does not typically occur in upper Cook Inlet (USFWS 2023b).

Table IIC-5. Marine Mammal Species Potentially Present in Upper Cook Inlet North of the Forelands

Common Name	Scientific Name	Stock Abundance Estimate[1]	ESA Status	MMPA Status	Frequency of Occurrence in Project Area
Beluga whale Cook Inlet DPS	*Delphinapterus leucas*	331	Endangered	Depleted	Likely
Harbor porpoise Gulf of Alaska Stock	*Phocoena phocoena*	31,046	Not listed	Strategic, Non-depleted	Likely
Harbor seal Cook Inlet/Shelikof	*Phoca vitulina*	28,411	Not listed	Not Strategic, Non-depleted	Likely
Steller sea lion Western DPS	*Eumetopias jubatus*	52,932	Endangered	Endangered, Strategic, Depleted	Infrequent
Humpback whale Hawaii DPS	*Megaptera novaeangliae*	11,287	Not Listed	Not Strategic, Non-depleted	Infrequent
Killer whale Eastern North Pacific Gulf of Alaska	*Orcinus orca*	1,920 resident 587 transient	Not listed	Strategic, Non-depleted	Infrequent

[1]Source: Young *et al.* (2023), Goetz *et al.* (2023)

Harbor seals were observed on 91 out of 93 days during a remote monitoring pilot study conducted in 2011 approximately 1.5 river miles upstream from the confluence of the Little Susitna River and the waters of Cook Inlet Polasek *et al.* (2015). The authors recorded observations of 40 seals hauled out at the river mouth but did not observe any other marine mammals known to inhabit the lower reaches of Cook Inlet such as killer whales, Steller sea lions, or harbor porpoise (Polasek *et al.* 2015). In a summary of studies reporting harbor porpoise observations throughout Cook Inlet, Shelden *et al.* (2014) noted that harbor porpoise sightings between 1993 and 2012 were highly variable and ranged from 0 to 66 sightings per year.

Humpback whales (*Megaptera novaeangliae*) have been observed at the mouth of Cook Inlet and within lower Cook Inlet (Fairweather Science 2020). In 2022, NMFS refined humpback whale stock structure based on feeding area and migratory routes and recognized 4 DPSs in the North Pacific: the Western North Pacific DPS (endangered); the Mexico DPS (threatened;) the Central America DPS (endangered); and the Hawaii DPS (not listed under the ESA) (Young et al. 2023). According to NMFS (2021), humpback whales that use summer feeding areas in the Gulf of Alaska and may travel to Cook Inlet waters have an 89% probability of belonging to the non-listed Hawaii DPS. Therefore, humpback whales that occur infrequently in upper Cook Inlet are likely from the unlisted Hawaii DPS.

Beluga whales from the ESA-listed Cook Inlet DPS are commonly encountered in upper Cook Inlet waters. (Rugh *et al.* 2010, Hobbs *et al.* 2011, Shelden *et al.* 2013, Lomac-MacNair *et al.* 2014, Polasek *et al.* 2015, Shelden *et al.* 2017, Shelden *et al.* 2019, Shelden *et al.* 2020). Cook Inlet beluga whales are geographically and genetically isolated from other beluga whale stocks in Alaska (Young et al. 2023), and the stock is recognized as a DPS under the ESA. The degree of genetic difference between the Cook Inlet beluga DPS and other beluga whale stocks indicates that they have been isolated and genetically distinct for several thousand years (O'Corry-Crowe et al. 1997). During surveys conducted in 2022, compete coverage of upper Cook Inlet was obtained on three days; daily overall observer count medians ranged from 186 to 224 whales (Shelden et al. 2022). This annual median index count of 224 whales in upper Cook Inlet fell within the range of median counts collected to date. The most recent abundance estimate for the DPS was calculated by Goetz et al. (2023) based on video and counting passes conducted during late June 2021 and early June 2022. Goetz et al. (2023) recommend that 331 be considered the official best estimate for this Cook Inlet population and note that there is 65.1% probability that the population is now increasing at 0.9% per year.

Norman et al. (2020) assessed the relationship between per capita births of Cook Inlet belugas and summer salmon runs. As described in Section 3.4, Pacific salmon runs in upper Cook Inlet have been steadily declining. The authors developed an age-structured matrix model, to evaluate the sensitivity of population size and growth of Cook Inlet belugas, to variations in estimated Chinook and coho salmon abundance in the Deshka River, a major tributary of the Susitna River. Model simulations showed that if salmon runs remain at their current levels, the Cook Inlet beluga population is likely to continue to slowly decline and the per capita birth rate would remain low. The results from this study suggest reproductive success of Cook Inlet beluga whales is tied to Chinook salmon abundance in the Deshka River (Norman et al. 2020).

However, total salmon escapement numbers, as described in Section 3.4, may not be appropriate estimators of the number of salmon available as prey for Cook Inlet beluga whales because escapement in a particular river does not necessarily equate to fish available as beluga prey (Citta et al. 2016, Moore et al. 2000). Decreases in shrimp, crab, and some fish including herring and salmon (Chinook, chum, and pink) have been documented in Cook Inlet during the last few decades but determining whether declines in prey abundance directly correspond to declining Cook Inlet beluga foraging opportunities is difficult to measure (Moore et al. 2000, Shields and Dupuis 2013).

Historically, beluga whales have been distributed throughout Cook Inlet, with occasional sightings in the Gulf of Alaska (Huntington 2000, Laidre et al. 2000, Moore et al. 2000, Rugh et al. 2000). However, in the 2000's the range of the Cook Inlet beluga whale contracted to mostly the upper and middle waters of Cook Inlet (Shelden et al. 2018). Cook Inlet beluga whales remain in the inlet year-round but show seasonal shifts in distribution (Hobbs *et al.* 2005, Goetz *et al.* 2012, Shelden *et al.* 2013, Shelden *et al.* 2017). During the ice-free months they are concentrated near upper Cook Inlet river mouths, dispersing and moving into middle and lower Inlet waters during the winter (Shelden et al. 2015). The seasonal movements of beluga whales in Cook Inlet appear to be generally influenced by prey availability, ice coverage, and peak river discharge events (Hobbs *et al.* 2005, Rugh *et al.* 2010, Goetz *et al.* 2012). During April and May beluga concentrations correspond to eulachon migrations to rivers and streams in the northern portion of upper Cook Inlet. Belugas are most common from August through September near Point Woronzof, but densities are low. Sighting frequency in the vicinity of Point Woronzof declines after October and drops to 0 during the winter months, increasing again during the spring and summer months. From January into March, belugas move south of Kalgin Island in central Cook Inlet offshore waters (Rugh *et al.* 2010, NMFS 2016, McGuire *et al.* 2020, Goetz *et al.* 2023, Young *et al.* 2023).

McGuire *et al.* (2020) compiled the locations of beluga whale groups observed with or without calves using observation data from 2005 to 2017. As shown in Figure IIC-12, beluga calves were observed to

the east of Point Woronzof near the Fish Creek estuary, and to the southwest of the action area near Fire Island and between the mainland and Fire Island (McGuire *et al.* 2020).

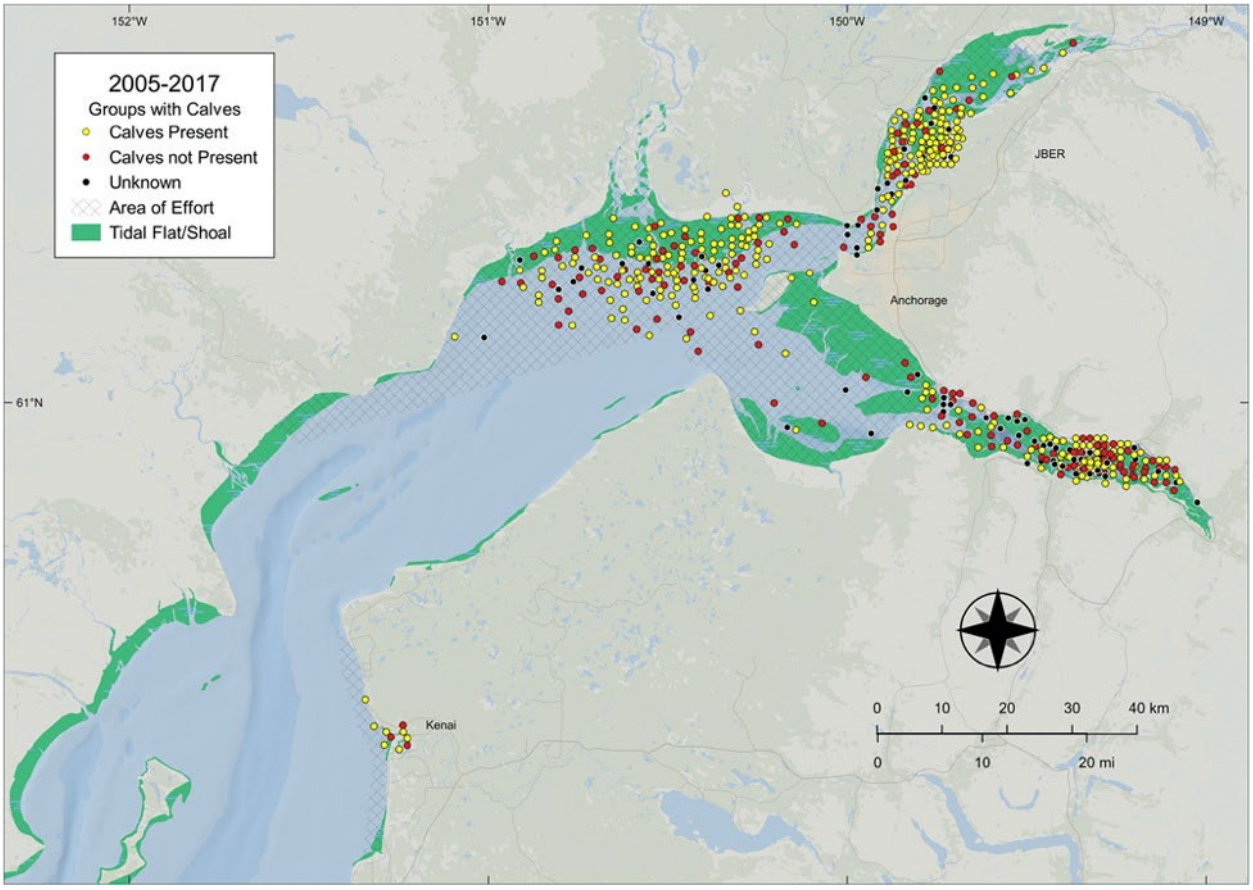


Figure IIC-12. Locations of Beluga Whale Groups Observed with Calves, Without Calves, or Unknown 2005-2017

Source: McGuire *et al.* (2020)

Individuals from the ESA-listed western DPS of Steller sea lions (*Eumetopias jubatus*) are rarely observed in upper Cook Inlet; historically only occasional sightings of Steller sea lions have been documented north of the Forelands (Lomac-MacNair *et al.* 2014). However, during monitoring for Anchorage port construction in upper Cook Inlet, Steller sea lions were observed near the Port of Alaska in May and June of 2020; four groups of four individuals were observed in May (61 North Environmental 2020b), and two groups of two individuals were observed in June (61 North Environmental 2020a). The port is approximately 6.5 km to the northeast of the action area. An estimated 25 Steller sea lions were observed in the Lewis River in 2022, on the west side of Cook Inlet at a location about 40 km to the east of the action area (K. Lindberg, personal communication, August 13, 2022). No observations of Steller sea lions were recorded during a seismic program in eastern Cook Inlet near Trading Bay in 2012 (SAExploration 2012); Trading Bay is approximately 90 km to the southwest of Point Woronzof.

Farther from the action area, in 2014 two individual Steller sea lions were observed during seismic surveys in Cook Inlet. Both sightings were below Kalgin Island, well south of the Forelands and the action area (Lomac-MacNair et al. 2014). During a 2018 pipeline replacement project in middle Cook Inlet, one group of two Steller sea lions was observed near Ladd landing (Sitkiewicz et al. 2018) about 50 km east of the action area, and during a lower Cook Inlet seismic survey (at a location about 250 km or more south of the action area), five Steller sea lions were observed from project vessels and seven during aerial monitoring; all sightings were of solitary animals, one of which was a subadult female (Fairweather Science 2020).

1.c. Marine Birds

No ESA-listed marine birds are expected to be encountered in upper Cook Inlet. The ESA-threatened Alaska breeding population of Steller's eiders (*Polysticta stelleri*) breed in the Arctic but some individuals winter in lower Cook Inlet waters off Ninilchik, Kachemak Bay, and northern Kamishak Bay (Larned 2006, Martin *et al.* 2015, USFWS 2020, BOEM 2021). These areas are 250 km or more south of the action area. Based on range maps from USFWS[15] and information from the USFWS Information for Planning and Consultation (IPaC) website[16], the range of the ESA-endangered short-tailed albatross (*Phoebastria albatrus*) extends to upper Cook Inlet. However, the IPaC does not document any probability of encountering short-tailed albatross in the vicinity of the action area and as described below, marine bird surveys in upper Cook Inlet have not encountered any albatross. Therefore, it is very unlikely that any would be encountered in the action area. Critical habitat has not been designated for short-tailed albatross.

In addition to those species already listed as threatened or endangered under the ESA, the U.S. Fish and Wildlife Service (USFWS) has identified certain migratory species as *Birds of Conservation Concern* (BCC) (USFWS 2021). Migrating birds are also protected under the Migratory Bird Treaty Act of 1918[17]. The BCC 2021 list includes nongame birds, gamebirds without hunting seasons or where harvest is minimal, and nongame birds taken during subsistence hunting in Alaska (USFWS 2021). Migratory BCC potentially found seasonally in or near the action area include[18]:

- Aleutian tern (*Onychoprion aleuticus*) – breeds from May to August in Alaskan waters. There is a very slight chance Aleutian terns may be encountered in the vicinity of the project area in May.
- American golden plover (*Pluvialis dominica*) – breeds from May to August on Alaskan shorelines. There is a slight chance that American golden plovers could be encountered on shorelines near the project area in May and August.
- Bull's shearwater (*Ardenna bulleri*) – is a seabird that does not breed in Alaska but may be very rarely encountered in July in upper Cook Inlet.
- Hudsonian godwit (*Limosa haemastica*) – breeds on Alaskan shorelines from May to August and may be encountered from April to September near the project area.
- Lesser yellowlegs (*Tringa flavipes*) – breeds in North American boreal forests but may be encountered in project vicinity from late April to mid-September. As described below this species has been documented during surveys in upper Cook Inlet coastal marshes.
- Short-billed dowitcher (*Limnodromus griseus*) – is a shorebird that breeds in the project vicinity from June to mid-August. It may be encountered in the project vicinity from late April to mid-September.
- Wandering tattler (*Tringa incana*) – is a wading bird that breeds in Alaskan waters from May to August. There is a slight probability that these birds could be encountered in May and early June in the project area, with a lesser probability in early Aust and early September.
- Yellow-billed loon (*Gavia adamsii*) – does not breed in the project area but there is a slight chance they may be encountered in upper Cook Inlet waters in mid-July or late October.

Although bald eagles (*Haliaeetus leucocephalus*) in Alaska are no longer listed under the ESA and are not considered to be a BCC species, they are protected under the Bald and Golden Eagle Protection Act of

[15] https://ecos.fws.gov/ecp/species/433 Accessed October 22, 2024.

[16] https://ipac.ecosphere.fws.gov/location/5VIBYC36N5E6LH5B57PENBV7Y4/resources#endangered-species Accessed October 22, 2024.

[17] https://www.fws.gov/law/migratory-bird-treaty-act-1918 Accessed October 22, 2024.

[18] https://ipac.ecosphere.fws.gov/location/ZEEGVCERXBARFANBSWUM4ONU6I/resources#migratory-birds Accessed October 22, 2024.

1940[19]. Bald eagles breed in the region from March to August and according to the IPaC, are likely to be encountered in upper Cook Inlet coastal waters and shorelines during all months of the year[20]. Also according to IPaC, there is a very low probability that golden eagles (*Aquila chrysaetos*) could be encountered near Pt. Woronzof and the project area in May, June, and August.

Marine bird surveys are not typically conducted in the immediate vicinity of Point Woronzof. However, bird surveys are regularly conducted in the Eagle River Flats area, an 870 hectare (ha) salt marsh complex located near confluence of Eagle River and Knik Arm about 20 km northeast of Pt. Woronzof (McDuffie 2018). Bird surveys have also been conducted in the Susitna Flats Game Refuge area located across the inlet about 17 kilometers (km) northwest of Pt. Woronzof. The refuge encompasses over 12,000 ha of saltmarsh habitat and was created to ensure the protection of fish and wildlife populations, particularly waterfowl nesting, feeding, and migration (ADF&G 1988).

Marine birds seasonally use upper Cook Inlet marshes and shorelines. Coastal salt marshes like Eagle River Flats and Susitna Flats provide important feeding habitat for migrating waterfowl during the spring and fall (McDuffie 2018). As summarized in McDuffie (2018), upper Cook Inlet tidal marshes are most extensively used by dabbling ducks, particularly northern pintails (*Anas acuta*) and green-winged teal (*Anas carolinensis*). During spring and fall migration, tundra swans (*Cygnus columbianus*), brant (*Branta bernicla*), lesser snow geese (*Anser caerulescens*), and greater white-fronted geese (*Anser albifrons*) prefer these tidal marsh habitats to other areas in southcentral Alaska (McDuffie 2018).

In the Susitna Flats, waterfowl such as ducks, geese, and swans are the most encountered bird group; they occur in large numbers during spring (ADF&G 1988). Sandhill cranes (*Grus canadensis*) and many species of shorebirds migrate through the Susitna Flats Game Refuge between the months of April and October and birds of prey are observed in the refuge each year (ADF&G 1988). The Eagle River Flats also support migrating waterfowl during the spring and fall months (McDuffie 2018). Breeding populations of birds use the Eagle River Flats during the summer season but there is minimal specific information on summer bird use or abundances in the area (McDuffie 2018).

Marks and Fischer (2013) summarize the results of aerial surveys conducted to estimate waterfowl abundance and movement on Eagle River Flats during late fall 2012 and early spring 2013. During the fall 2012 surveys, 11 species of large-bodied birds were counted, including: six species of ducks; lesser snow, greater white-fronted, and Canada geese (Branta canadensis); red-necked grebes (*Podiceps grisegena*); swans (potentially two species); and bald eagles and ravens (*Corvus corax*). During spring 2013 surveys, 20 species of large birds were observed, including large shorebirds. Figure IIC-13 depicts the relative abundances (number of birds counted per survey) of all species or species groups observed during the fall and spring surveys (Marks and Fischer 2013). Surveys with 100% ice cover were not included in averages and as shown on the figure, for better resolution bars depicting abundance of less common species were multiplied by 10 (noted on axis).

19 https://www.fws.gov/law/bald-and-golden-eagle-protection-act Accessed October 22, 2024

20 https://ipac.ecosphere.fws.gov/location/ZEEGVCERXBARFANBSWUM4ONU6I/resources#bald-golden-eagles Accessed October 22, 2024.

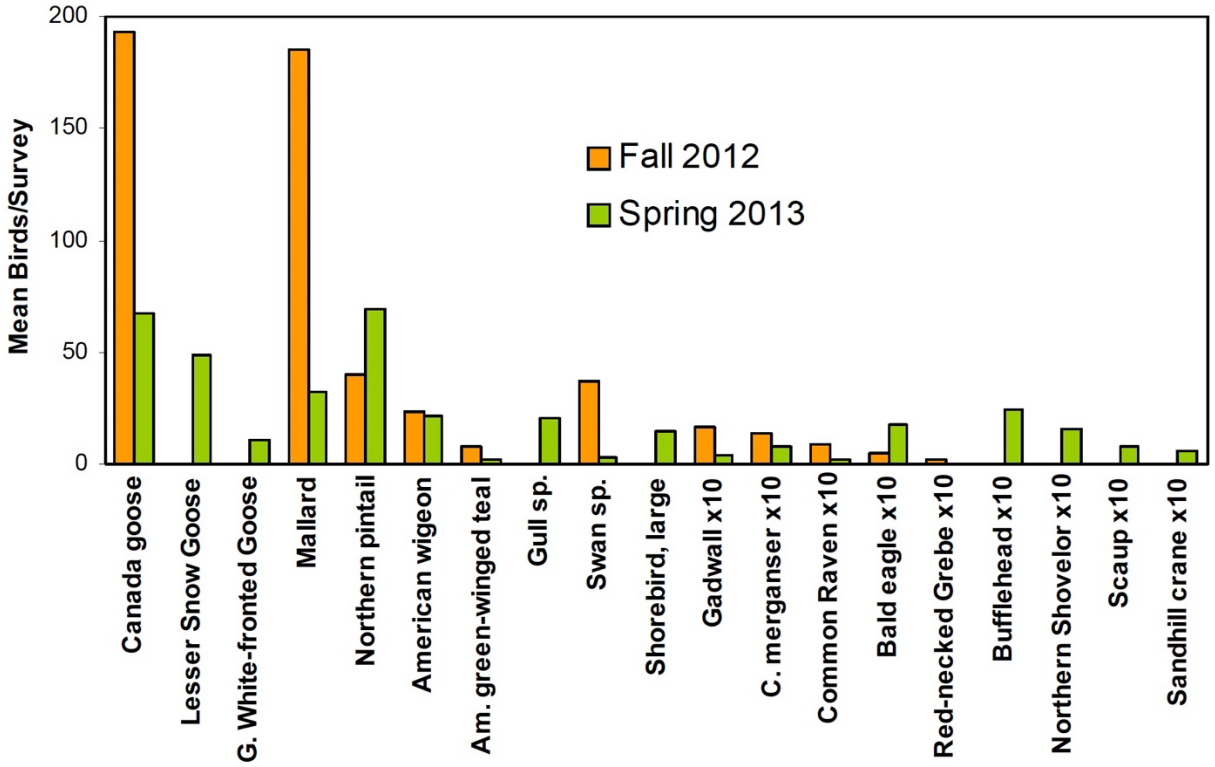


Figure IIC-13. Results of Spring and Fall Bird Abundance Surveys in Eagle River Flats

The authors conclude that while waterfowl and other birds continued to use the area in a similar manner as previous surveyed years, weather in south-central Alaska during these periods influenced the timing and observed abundances during the fall and spring migrations of 2012 and 2013 (Marks and Fischer 2013).

During a survey conducted on May 10, 2018, and summarized by McDuffie (2018), 26 species of birds were observed including eight waterfowl species, three raptors, seven waders/shorebird species, three gull species, and five species of passerines. The most abundant species were green-winged teal (n = 52), lesser yellowlegs (n = 23), and northern pintail (n = 22). During a subsequent survey conducted on May 22, 2018, the authors observed 37 species (10 waterfowl, three raptors, 10 waders/shorebirds, four gulls, and 10 passerines). The most abundant species were pectoral sandpipers (*Calidris melanotos*) (*n* = 59), lesser yellowlegs (*n* = 30), and sandhill cranes (*n* = 17). During a third and final survey conducted on June 5, 2018, 28 species were observed including nine waterfowl, three raptors, five waders/shorebirds, one gull species, and 9 passerines. The most abundant species observed during the third survey were lesser yellowlegs (*n* = 32), Lincoln's sparrow (*Melospiza lincolnii*) (*n* = 14) and gadwall ducks (*Mareca strepera*) (*n* = 11) (McDuffie 2018).

2. [no question, see a and b]

a. Are distinctive habitats of limited distribution (such as kelp beds or coral reefs) located in areas potentially affected by the modified discharge? [40 CFR 125.62(c)

Yes.

b. If yes, provide information on type, extent, and location of habitats.

On April 11, 2011, NMFS designated two areas covering 7,800 square kilometers (km^2) of the Cook Inlet marine environment as critical habitat for beluga whales (Figure 13). Area 1 encompasses the area from the mouth of Three Mile Creek north and east to include waters of the Susitna, Little Susitna, and

Chickaloon rivers below the mean higher high water (MHHW) level. High concentrations of beluga whales are often observed in these areas from spring through fall. Drainages in Area 1 support large eulachon and salmon runs, providing important foraging habitat for Cook Inlet beluga whales during ice-free months; Area 1 is used extensively by these whales between April and November (NMFS 2008). The Susitna River Delta region within Area 1 is a region of high importance to Cook Inlet beluga whales, especially from mid-April to mid-October. During this period, large congregations of belugas may use this area for foraging and reproduction/calving. Critical Habitat Area 1 also encompasses shallow tidal flats or mudflats that provide beluga additional areas for foraging, calving, molting, and escape from predators.

There is also a beluga whale critical habitat Exclusion Area located in the lower Knik Arm as shown by the triangular shape in Figure IIC-14. This limited area is north of the AWPCF action area and it includes the nearshore region occupied by the Port of Anchorage and associated commercial vessel traffic. The Exclusion Area has specific activity restrictions that apply to vessels or other activities that may produce underwater noise, neither of which apply to the AWPCF NPDES permit application.

Critical Habitat Area 2 lies south of Area 1 and encompasses all marine waters of Cook Inlet south of a line connecting Point Possession and the mouth of Three Mile Creek, and north of 60.25°N, including waters within 3.7 km of MHHW along the western shoreline of Cook Inlet between 60.25°N and the mouth of the Douglas River; all waters of Kachemak Bay east of 40.00°W; and waters of the Kenai River below the Warren Ames Bridge at Kenai. Area 2 includes nearshore areas along western Cook Inlet and Kachemak Bay and is known as fall and winter foraging and transit habitat for beluga whales, as well as spring and summer habitat for smaller concentrations of beluga whales.

Specifically, critical habitat for Cook Inlet beluga whales is defined by primary biological features (PBFs) (NMFS 2011) including:

- PBF #1: Intertidal Waters of Cook Inlet with depths less than 30 feet ft (9.1 m) MLLW and within 5 miles (8 km) of high and medium flow anadromous fish streams;
- PBF # 2 Primary prey species consisting of four species of Pacific salmon (Chinook, sockeye, chum, and coho), Pacific eulachon, Pacific cod, walleye pollock, saffron cod, and yellowfin sole;
- PBF # 3 Waters free of toxins or other agents of a type and amount harmful to Cook Inlet beluga whales;
- PBF # 4 Unrestricted passage within or between the critical habitat areas; and
- PBF # 5 Waters with in-water sound below levels resulting in the abandonment of critical habitat areas by Cook Inlet beluga whales.

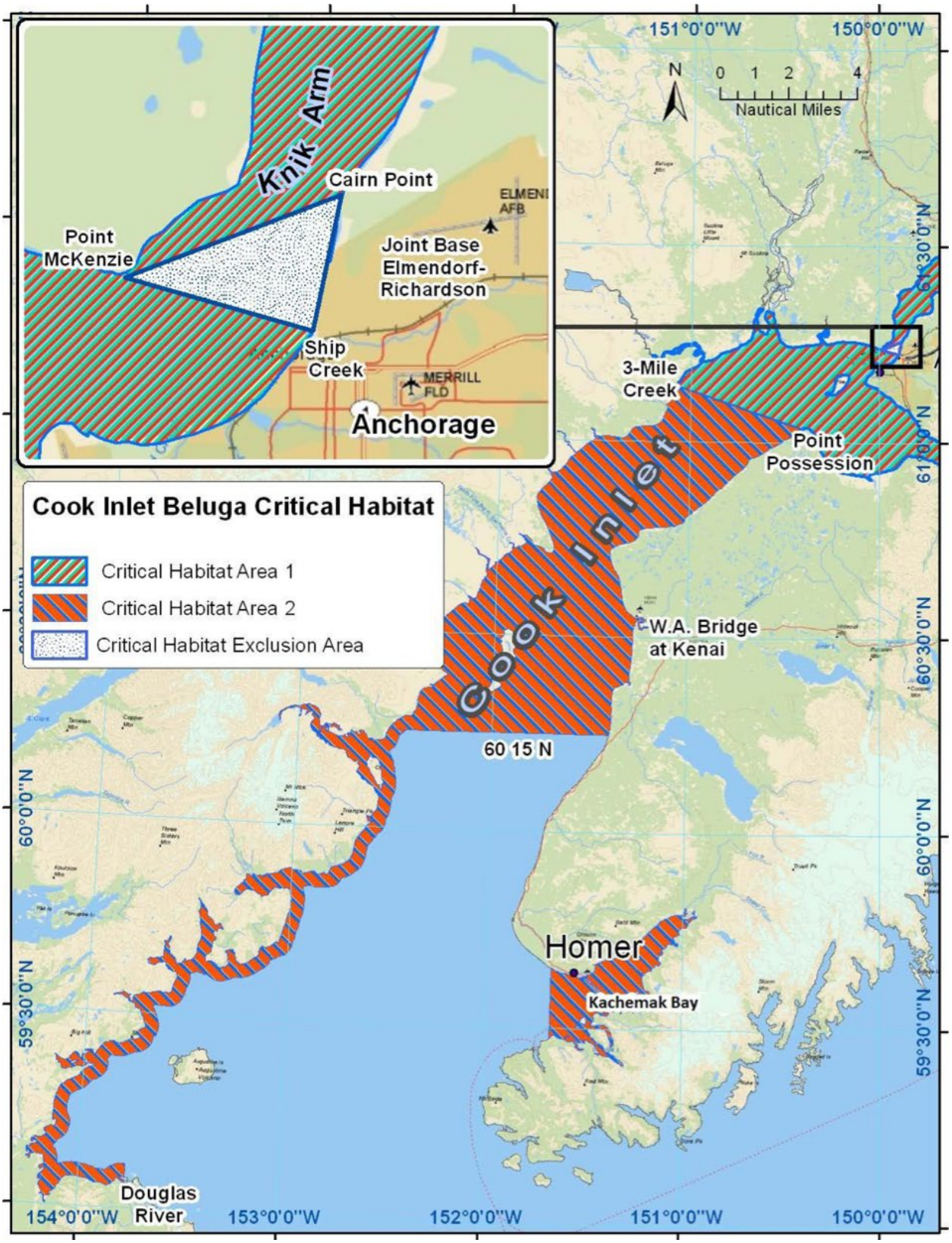


Figure IIC-14. Cook Inlet Beluga Designated Critical Habitat

Source: https://media.fisheries.noaa.gov/dam-migration/belugawhale_cookinletch.pdf Accessed January 9, 2024

3. [no question, see a and b]

a. Are commercial or recreational fisheries located in areas potentially affected by the discharge? [40 CFR 125.62(c) and (d)]

Yes.

b. If yes, provide information on types, location, and value of fisheries.

There are eight commercially harvested species in the Upper Cook Inlet Management Area north of Anchor Point. The management area is divided into the Northern and Central Districts. The Northern District, located north of Boulder Point north of the Forelands, is the only area considered to be close to the AWPCF action area for the NPDES permit (see Figure IIC-15).

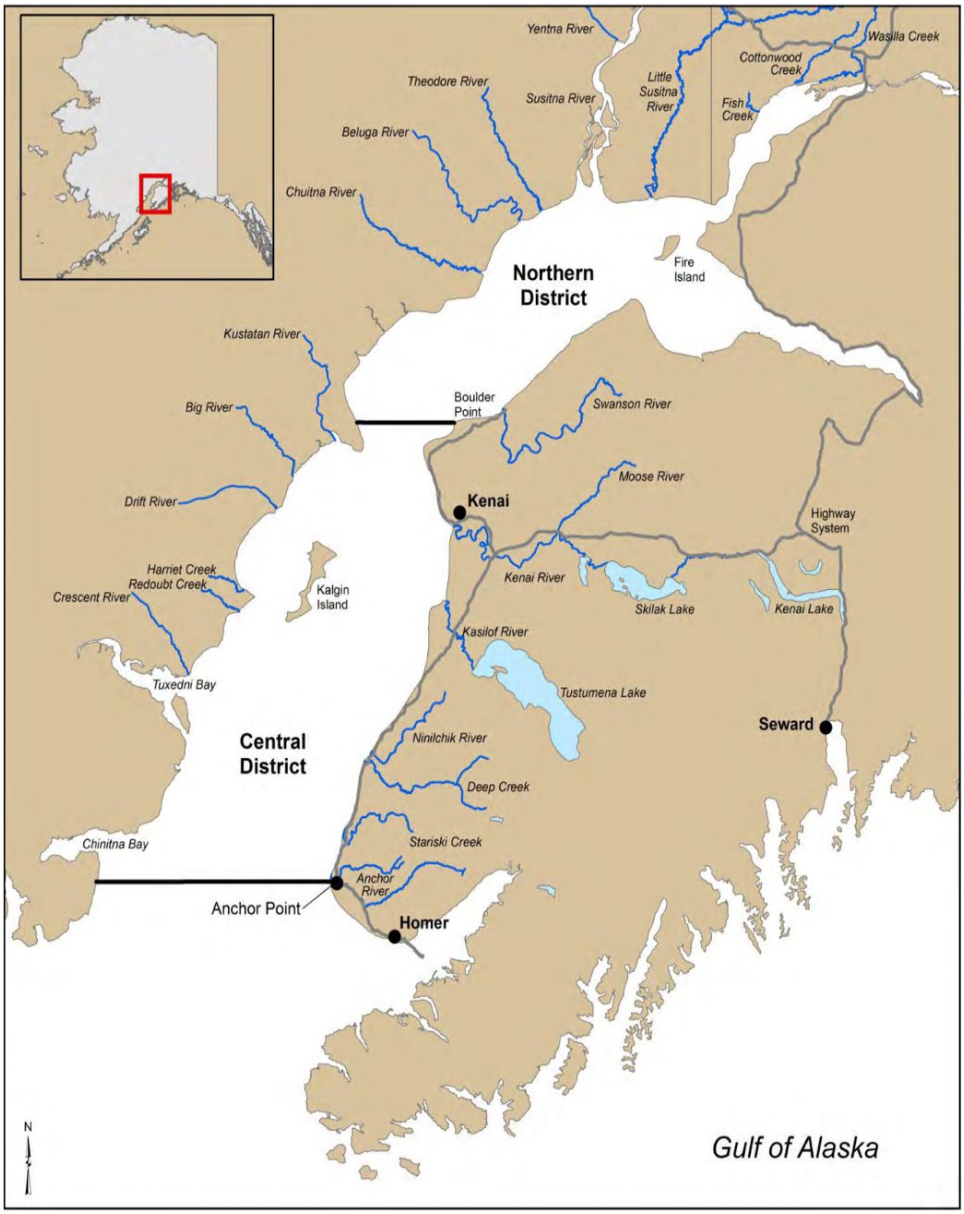


Figure IIC-15. Upper Cook Inlet Fishery Management Area District Boundaries and Major Tributaries

Source: Lipka and Stumpf (2024)

All five species of Pacific salmon (*Oncorhynchus* species) and smelt or eulachon (*Thaleichthys pacificus*) are commercially harvested in the Northern District of the Upper Cook Inlet Management Area. Salmon

occur in most drainages throughout upper Cook Inlet, with the timing of runs for each species overlapping to some degree. Thus, commercial salmon fisheries are generally mixed stocks and species. Set gillnets are currently the only gear type allowed in the Northern District. In terms of economic value, sockeye salmon is the most valuable species in the upper Cook Inlet fishery management area, followed by chum, coho, pink, and Chinook (Lipka and Stumpf 2024). In 2022, approximately 1.4 million salmon were harvested, approximately 44% less than the 2012–2021 average of 2.5 million fish. Harvests for individual species and fishery district were variable. Sockeye represented 91% of the ex-vessel value and was $13.1 million in 2022, approximately 43% less than the average of $23.1 million for the period 2012 – 2021. In 2022, for all upper Cook Inlet, ex-vessel value for coho was $368,771, ex-vessel value for pink salmon was $110,691, and chum salmon was $461,507. Chinook salmon ex-vessel value was $93,632 in 2022. All salmon species' ex-vessel values were below the 10-year averages (Lipka and Stumpf 2024).

In 2022, sockeye salmon escapement was monitored with weir counts in the Susitna River drainage at Judd Lake (in the Yentna River) and at Larson Lake in the mainstem Susitna River. In addition, the Division of Sport Fish also monitored sockeye salmon escapement in 2022 at Fish Creek, Deshka River and Little Susitna River as well as coho escapement in the Deshka and Little Susitna rivers in the Northern District. Sockeye counts fell within the goal ranges for three out of six sites and exceeded escapement goals at two sites. Approximately 51,831 sockeye salmon were harvested by 84 permit holders in the Northern District set gillnet fishery in 2022 (Lipka and Stumpf 2024).

The Alaska Board of Fisheries (BOF) created the *Northern District King Salmon Management Plan* (5 AAC 21.366) in 1986. This plan now includes certain paired restrictions for the Deshka River sport Chinook fishery and the commercial Chinook fishery in the Northern District. In 2022, due to a closure of the sport Chinook salmon fishery in the Chinitna River, the commercial Chinook fishery was closed from the wood chip dock to the Susitna River, and the remainder of the Northern District Chinook salmon fishery was restricted to 6 hours per open period due to catch-and-release restrictions in the Deshka sport fishery. The 2023 commercial salmon fishing season in the Northern District of Upper Cook Inlet closed on September 14 that year. As of September 17, 2024, the period of this report, similar closures have occurred in 2024. For example, Emergency Order 2-KS-2-05-24 closed the Deshka River to king salmon sport fishing, with the area management biologist stating the 2023 escapements did "not improve this prolonged period of poor productivity"[21].

II. Smelt (*Thaleichthys pacificus)*, an anadromous species also known as hooligan or eulachon, are harvested under the *Cook Inlet Smelt Fishery Management Plan* (5 AAC 21.505) from May 1 to June 30 in the marine waters of Cook Inlet, northeast of the Chuitna River to the Little Susitna River and in the Susitna River south of 61°21.41" N latitude. The smelt fishery is the first anadromous fishery each year in this region. Hand-operated dip nets are the permitted gear for smelt, which has a total guideline harvest level of 200 tons or less. While longfin smelt (*Spirinchus thaleichthys*) return to Cook Inlet in the fall, due to the small run size and lack of demand, there is no harvest at that time (Lipka and Stumpf 2024).

In addition to commercial fisheries, there is a Tyonek subsistence fishery as well as personal use fishery for salmon. The Tyonek subsistence fishery was mandated by an Anchorage Superior Court order in May 1980. According to 5 AAC 01.560, *Fishing Seasons and Daily Fishing Periods*, there are two distinct periods for subsistence fishing in the Tyonek Subdistrict; the early season period is May 15 – June 15 and allows fishing every Tuesday, Thursday, and Friday, while the late-season period after June 15 allows fishing each Saturday. Both permits allow for 25 salmon per permit holder and 10 salmon for each additional household member. Salmon must be harvested using a single 10-fathom gillnet with mesh size no greater than 6 inches (254 millimeters).

Personal use fishing allows for the same catch limits as the Tyonek subsistence fishery. Operating under the *Upper Cook Inlet Personal Use Salmon Fishery Management Plan* (5 AAC 77.540), dip net fisheries

[21] https://alaska-native-news.com/sport-fishing-for-king-salmon-closed-in-cook-inlet-salt-waters/73006/; Accessed September 17, 2024.

occur in the Beluga and Susitna rivers, and in Fish Creek within the Northern District (Lipka and Stumpf 2024). In 2022, for the entire Upper Cook Inlet personal use fisheries, 54 Chinook, 485,005 sockeye, 3,581 coho, 5,871 pink, and 1,827 chum salmon were harvested. The majority of these fish were harvested outside of the Northern District in the Kenai River (Lipka and Stumpf 2024).

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II.D. State and Federal Laws [40 CFR 125.61] and 125.62(a)(1)

1. Are there water quality standards applicable to the following pollutants for which a modification is required?

- *Biochemical oxygen demand or dissolved oxygen?*

  Yes.

- *Suspended solids, turbidity, light transmission, light scattering, or maintenance of the euphotic zone.*

  Yes.

- *pH of the receiving water?*

  No.

2. If yes, what is the water use classification for your discharge area? What are the applicable standards for your discharge area for each of the parameters for which a modification is requested? Provide a copy of all applicable water quality standards or a citation to where they can be found.

Alaska's Water Quality Standards (AWQS), established in Title 18, Chapter 70, of the Alaska Administrative Code, designate the use of the state's waters and set criteria on human-induced pollution to protect these water uses. The most recent revision of the AWQS occurred in January 2025.

Cook Inlet is protected for all marine water uses and hence the most stringent criterion for each water quality constituent is controlling. AWPCF is not requesting modifications to the applicable water quality standards.

3. Will the modified discharge: [40 CFR 125.59(b)(3)]

a. Be consistent with applicable State coastal zone management program(s) approved under the Coastal Zone Management Act amended, 16 U.S.C. 1451 of seq? [See 16 U.S.C. 1456 (c)(3)(A)]

The Alaska Coastal Management Program expired on July 1, 2011, resulting in a withdrawal from participation in the National Coastal Management Program Under the Coastal Zone Management Act (CZMA). As a result, the CZMA's federal consistency provisions no longer apply in Alaska.

b. Be located in a marine sanctuary designated under Title III of the Marine Protection, Research, and Sanctuaries Act (MPRSA) as amended, 16 U.S.C. 1431 et seq., or in an estuarine sanctuary designated under the Coastal Zone Management Act as amended, 16 U.S.C. 1461? If located in a marine sanctuary designated under Title III of the MPRSA, attach a copy of any certification or permit required under regulations governing such marine sanctuary. {See 16 U.S.C. 1432(f)(2)]

The existing discharge is not located within a marine or estuarine sanctuary designated under Title III of the Marine Protection, Research and Sanctuaries Act of 1972, as amended, or under the CZMA of 1972. Included at the end of this section is a letter sent to the National Oceanic and Atmospheric Administration requesting confirmation of the absence of sanctuaries in the discharge area.

c. Be consistent with the Endangered Species Act as amended, 16 U.S.C. 1531 of seq? Provide the names of any threatened or endangered species that inhabit or obtain nutrients from waters that may be affected by the modified discharge. Identify any critical habitat that may be affected by the modified discharge and evaluate whether the modified discharge will affect threatened or endangered species or modify a critical habitat. [See 16 U.S.C. 1536 (a)(2)]

Yes. Anchorage Water & Wastewater Utility (AWWU) has prepared a Biological Evaluation (BE) pursuant to Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended (16 *United States Code* [U.S.C.] Section 1531 et seq.), to analyze potential effects of the continued operation of the AWPCF on ESA-listed and candidate species and designated critical habitats within the action area that are under the jurisdiction of the National Marine Fisheries Service (NMFS). Federally listed species within the action area include Cook Inlet beluga whales and Steller sea lions. Federally listed humpback whales and fin whales, and sunflower sea stars, a candidate species, occur in lower Cook Inlet outside of the action area.

The risk evaluation presented in the BE determined that no effects to ESA-listed Cook Inlet beluga whales from contaminants in AWPCF effluent are likely based on the fact that expected concentrations of contaminants were either not detected or did not indicate risk to prey species (i.e., fish) or marine mammals through food chain uptake when compared to aquatic toxicity benchmarks (BMs). No risk to Cook Inlet beluga whales or Steller sea lions was estimated from the consumption of contaminants measured in Cook Inlet fish tissues.

4. Therefore, biologically significant factors that Cook Inlet beluga whales and the Western DPS of Steller sea lions require for survival (i.e., reproduction, feeding, or habitat) are not expected to be adversely affected by the discharge within or outside of the ZID.Are you aware of any State or Federal laws or regulations (other than the Clean Water Act of the three statuses identified in item 3 above) or an Executive Order which is applicable to your discharge? If yes, provide sufficient information to demonstrate that your modified discharge will comply with such law(s), regulation(s), or order(s). [40 CFR 125.59(b)(3)]

Two additional federal laws are applicable to the proposed discharge: the Federal Toxic Substances Control Act and the Federal Resource Conservation and Recovery Act. These laws refer to toxic and hazardous waste control, which is discussed in Section III.H.

III. Technical Evaluation

III.A. Physical Characteristics of Discharge

1. What is the critical initial dilution for your current modified discharge(s) during 1) the period(s) of maximum stratification? And 2) any other critical period(s) of discharge volume/composition, water quality, biological seasons, or oceanographic conditions?

a. Background Information

Introduction

As described in Section II.B, Upper Cook Inlet in the vicinity of Point Woronzof is a unique estuarine body of water. The tidal fluctuations of up to 12 meters (40 feet) are some of the highest in the world. These tidal exchanges produce extreme ranges of tidal currents that are frequently above 2.3 meters/second (7.5 feet/second), and intense vertical mixing in the water column in Upper Cook Inlet. The receiving waters in Upper Cook Inlet are characterized as a sediment slurry because of the very high suspended-sediment concentrations that range from 100 to over 2,000 milligrams/liter (mg/L), based on annual National Pollutant Discharge Elimination System (NPDES) permit receiving water monitoring conducted for the AWPCF. The source of the suspended sediments in the water column are glacial melt waters discharged by rivers and creeks, and tidal current velocities resuspending seabed sediments. It is noted that winter ice cover in Knik Arm during November to April can range from 0.5 meter to 2 meters in thickness.

The critical season of discharge for the AWPCF outfall is the summer season when peak freshwater runoff from streams can affect the water column salinities and densities. During the summer season biological activity is at its peak, as a result of increased daylight and water temperatures, and peak juvenile salmon outmigration and adult salmon returns. The summer season also has higher rainfall events and peak wet weather discharges. During the winter season, freshwater runoff decreases due to low ambient temperatures and freezing in river watersheds; as a result, the ambient water column density increases. Turbulent mixing, driven by large tidal elevation exchanges, results in a well-mixed water column without persistent stratification in Upper Cook Inlet.

Definitions

Initial Dilution - Initial dilution is the rapid, turbulent mixing of the effluent discharged from outfall ports into flowing ambient receiving waters. The U.S. Environmental Protection Agency (EPA) Amended Section 301(h) Technical Support Document (EPA 1994) states:

“the low-density (nonsaline) discharged effluent creates a buoyant plume that rises rapidly toward the water surface, entraining significant amounts of ambient saline water. The momentum and buoyancy of the discharge effluent are primarily responsible for the entrainment of dilution water (i.e., mixing of ambient saline water with effluent). As the plume rises and entrains ambient saline water, its density increases and its momentum and buoyancy decrease accordingly. If a sufficient ambient vertical density gradient or zone of stratification is present, the plume will spread horizontally at the level of neutral buoyancy (i.e., where the plume density equals ambient water density). If a sufficient density gradient is not present, the diluted effluent will reach the water surface and flow horizontally … The dilution achieved at the completion of this process is called the ‘initial dilution.’”

This definition of the process of initial dilution does not explicitly include the effect of ambient current velocities on the discharge plume development, such as encountered by the AWPCF outfall discharge. Ambient tidal current velocities at the AWPCF outfall range from 0.7 to over 2.3 meters per second (2.3 to 7.5 feet per second). These currents reduce the rate of plume rise and increase turbulent mixing of the plume in the water column. Initial dilution is normally completed within several minutes after discharge, depending on the water depth and tidal current velocity.

Critical Initial Dilution (CID) – The CID is defined in the EPA Amended Section 301(h) Technical Support Document (EPA 1994) as the lowest (critical) dilution calculated based on the peak 2- to 3-hour effluent flow and a current speed no higher than the lowest 10th-percentile ambient current speed, and the CID must be calculated for critical seasonal receiving water conditions.

Zone of Initial Dilution (ZID) - The ZID is the region of initial mixing surrounding the outfall and includes the water column and seabed. The EPA Amended Section 301(h) Technical Support Document (EPA 1994) specifies that EPA-supported dilution models are to be applied to calculate initial dilutions and to define the ZID. The ZID for the AWPCF outfall has been redeveloped based on a 2-day extensive field dye-tracer study, site-specific ambient current measurements near the outfall, dilution modeling to select the best-fit model compared to field-measured dilutions, and dilution modeling of critical discharge conditions specified in the EPA Amended Section 301(h) Technical Support Document (EPA 1994). Refer to the *Outfall Mixing Zone Study Update for the Asplund Water Pollution Control Facility* (Jacobs 2024) for additional discussion of the field studies and modeling, as well as appended data records. Figure IIIA-1 illustrates the existing 650-meter ZID for the AWPCF outfall as defined in the NPDES permit, and the revised 350-meter ZID presented in the *Outfall Mixing Zone Study Update for the Asplund Water Pollution Control Facility* (Jacobs 2024) and summarized in this section.

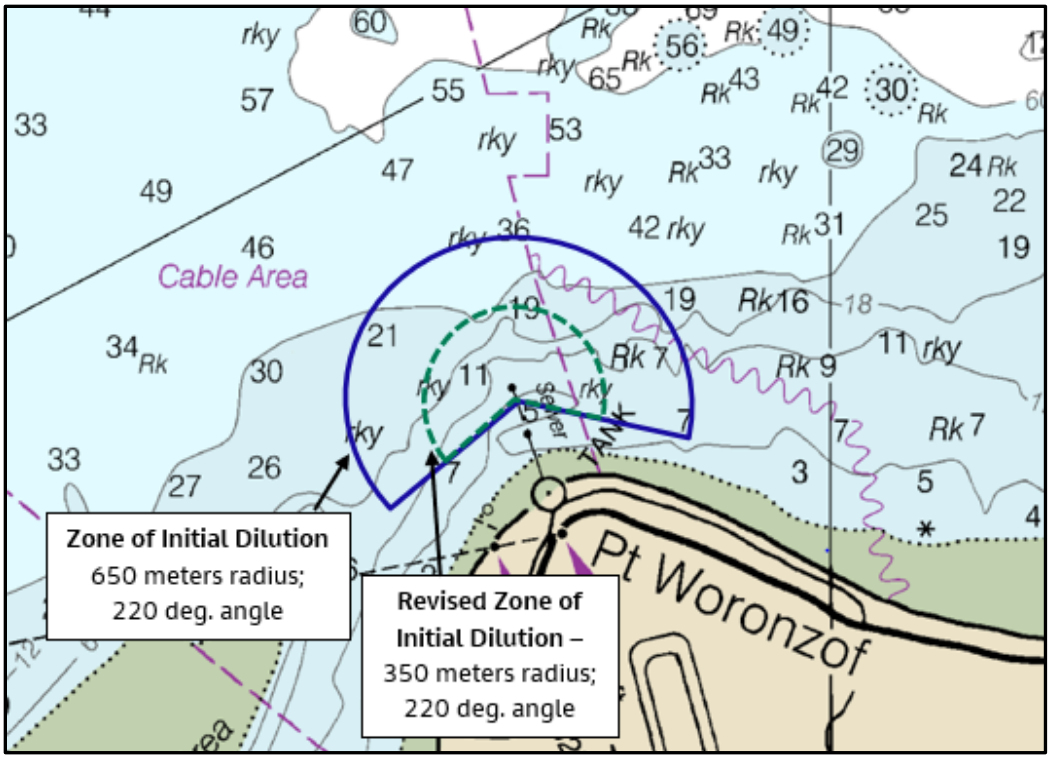


Figure IIIA-1. Illustration of Existing (650-meter) and Revised (350-meter) ZID for the AWPCF Outfall Offshore of Point Woronzof (image excerpted from NOAA Nautical Chart 16665)

2. Effluent Flows

As part of this waiver renewal, updated population forecasts and recent measurements of effluent flows were used to represent existing and future flows from the AWPCF. The development of the effluent data for modeling in 2022 applied a5-year record period (2017 to 2021) for dry (November to June) and wet (July to October) seasons were applied in modeling. These AWPCF effluent flow data have been applied to calculate the highest 2-3-hour average flow, maximum day (dry and wet seasons) flow, maximum month average flow, and annual average effluent flows to apply in dilution modeling. Figure IIIA-2 illustrates the consistency of AWPCF effluent flows and temperatures over the 5-year period.

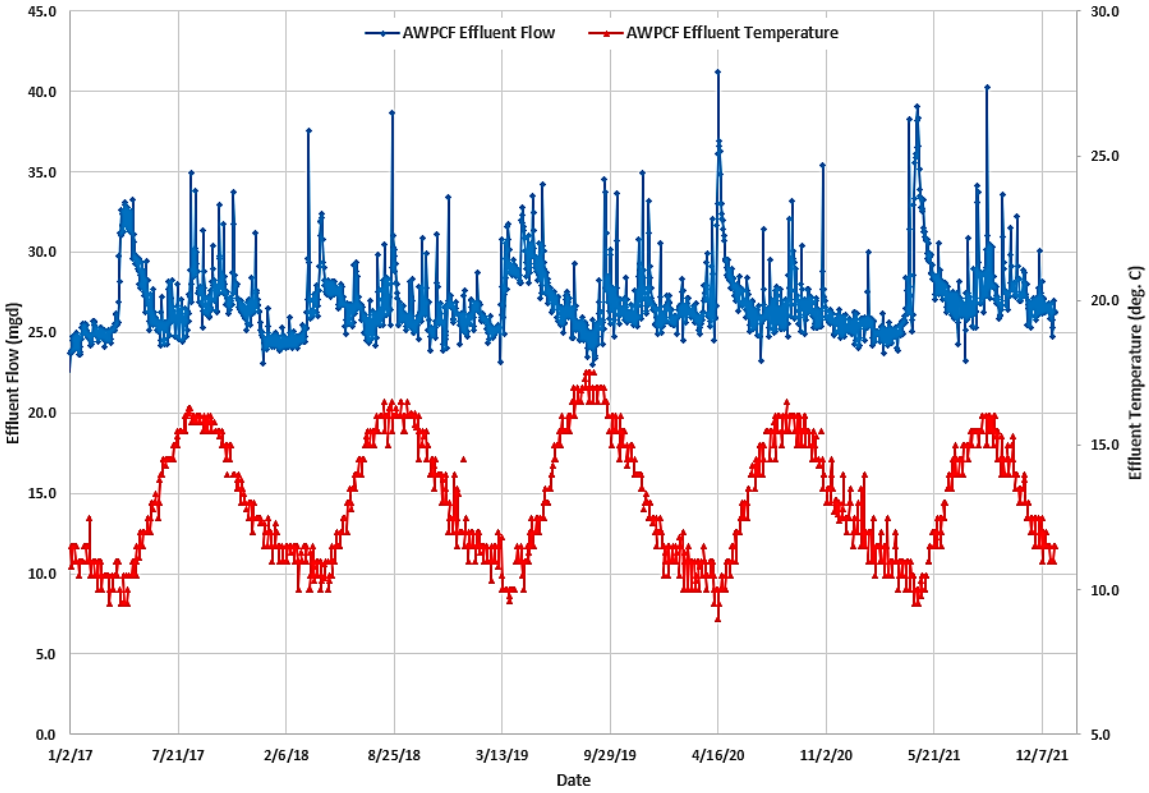


Figure IIIA-2. AWPCF Effluent Flows and Temperatures Plot for 2017 through 2021

The peak 2- to 3-hour dry and wet season effluent flows of 2.52 m^3/sec (57.6 mgd) and 2.48 m^3/sec (56.7 mgd), respectively, were used in the dilution modeling to represent critical discharge conditions, in accordance with the EPA Amended Section 301(h) Technical Support Document (EPA 1994). The maximum monthly dry and wet season effluent flows of 1.42 m^3/sec (32.3 mgd) and 1.56 m^3/sec (35.7 mgd), respectively, were also used in modeling to represent chronic aquatic life criteria conditions for the existing AWPCF outfall discharge. The annual average effluent flow of 1.21 m^3/sec (27.58 mgd) was used in modeling of human health criteria conditions. Additional information on effluent flows is discussed in Section II.A.2.

3. Outfall and Environmental Characteristics

The outfall and environmental characteristics are summarized in the following sections.

Discharge Hydraulic Gradient. Effluent flow exiting the Parshall Flume and Drop Box at the AWPCF is conveyed by gravity through the 2,706 foot-long, 10-foot diameter outfall tunnel to the Chlorination Control Tower on the shoreline at Point Woronzof. Effluent flow in the 42-foot-tall Chlorination Control Tower flows upward and over a weir at elevation 9.1 m (29.63

feet) (based on mean sea level). The estimated highest water level in Upper Cook Inlet at the outfall site is 5.9 m (19.3 feet). Therefore, a minimum of 3.2 m (10.5 feet) of head is available for effluent discharge and port velocities for dilution of wastewater.

The offshore base of the Chlorination Tower connects to the buried 84-inch-diameter outfall pipe that extends approximately 245 meters (804 feet) north (offshore) of the Chlorination Tower and the Point Woronzof shoreline. The 2.1-meter (84-inch) outfall terminates with a vertical turret structure extended 2.7 meters (9 feet) above the outfall pipe crown with three 0.58-meter (23-inch) round discharge ports open on the north side of the turret. Refer to Figures IIA-2 through IIA-4 in Section II.A for excerpts of drawings of the AWPCF outfall structure.

The water depth at the top of the AWPCF outfall turret off Point Woronzof is -3.96 meters (-13 feet) at mean lower low water (MLLW), as confirmed by the bathymetry survey sonar recordings in 2022. The AWPCF outfall turret ports centerlines are situated 0.61 meters (2 feet) below the top of the concrete turret. The ports discharge at a depth of -4.6 meters (-15 feet) MLLW under lower low tide elevation conditions. The mean tide level (MTL) at Point Woronzof is +4.7 meters (+15.34 feet) MLLW; therefore, the AWPCF outfall turret ports discharge at a water depth of -9.2 meters (-30.3 feet) MLLW under MTL.

Tidal Fluctuations. The mean and diurnal tide ranges at Anchorage are 8.0 m (26.2 feet) and 8.9 m (29.2 feet), respectively. Tidal elevations data based on the National Oceanic and Atmospheric Administration (NOAA) Tides & Currents website for Station 9455920 in Anchorage (NOAA 2001). Additional information on receiving water tidal fluctuations is provided in Section II.B. The mixed semidiurnal tides at Point Woronzof have an average diurnal range of 8.9 m (29.2 feet) and an extreme range of 10.7 m (35 feet).

Ambient Currents. These large tidal elevation changes produce strong currents with high ebb and flood current velocities (up to approximately 2.5 meters per second [m/sec] [8 feet/second]). These high current speeds result in vigorous turbulent mixing off Point Woronzof. Information on currents in the vicinity of the AWPCF outfall discharge site is based on existing data sources, including the 2005 Section 301(h) Waiver and NPDES Permit Renewal Application for the AWPCF (CH2M 2005), as well as annual ambient currents monitoring (using drogues) conducted as part of the annual monitoring for the NPDES permit (AWWU and Kinnetic Environmental, 2000 through 2023). In addition, site-specific current measurements were recorded near the AWPCF outfall in September-October 2022 to coincide with the outfall field dye-tracer study (KEI 2022, referenced in Jacobs 2024).

The existing NPDES permit and Section 301(h) waiver were based on a combination of mid-tide depth and the lowest 10th-percentile current speeds. Because of the large fluctuations in tidal elevations, mid-depth always occurs with highest currents; thus, the mid-depth and 10th-percentile current condition never exist concurrently.

Ambient currents in the vicinity of the AWPCF outfall were measured during installation of the outfall turret in 1987. These hourly current measurements were recorded over a 24-hour period and used to represent ambient currents during a typical summer 24-hour tidal cycle, and they were applied in the dilution modeling developed for NPDES permit renewal (KEI 2022, referenced in Jacobs 2024).

More recent site-specific current measurements were recorded near the AWPCF outfall during an 11-day period in September and October 2022 to coincide with neap and spring tides and the field dye-tracer study of the AWPCF outfall (KEI 2023). Currents were measured at two locations near the AWPCF outfall using bottom-mounted acoustic doppler current profilers (ADCPs). Currents were recorded in 1-meter vertical bins above the ADCP instruments to near

the water surface. Current measurements were recorded at 6-minute intervals to be consistent with the water level measurements from the National Oceanic Survey water level gauge at the Port of Anchorage to correlate measured currents with water levels.

Based on current measurements recorded in 2022, tidal current velocities during the spring tide period recorded maximum flood tide velocities of 200 centimeters per second (cm/sec) and maximum ebb tide velocities of 250 cm/sec. For the neap tide period, tidal current velocities recorded flood tide velocities that average 125 to 150 cm/sec and ebb tide velocities averaged 160 to 190 cm/sec. Current directions were very consistent for ebb and flood currents, with ebb tide flows directed to the west (275 degrees true) and flood tide flows directed to the east-northeast (65 degrees true).

Summary statistics of the 2022 current measurements are provided in Table IIIA-1 and correspond to the 10th, 50th, and 90th-percentile current speeds. These are the critical current percentages that are necessary for the discharge modeling. The average 10th, 50th, and 90th-percentile current speeds were selected as representative for application in the dilution modeling and these values are shown in bold text in Table IIIA-1. Results of these current meter records were focused on the three lowest vertical bins directly above the sensor heads that corresponded to a depth range of 2.1 to 5.1 m above the seabed, with each bin being 1.0 m in vertical distance.

Table IIIA-1. Summary Statistics of Current Speeds (cm/s) for Northeast ADCP Mooring near AWPCF Outfall

Distance from Bottom (percentile)	Bin 1 (2–3 m)	Bin 2 (3–4 m)	Bin 3 (4–5 m)	Average Bins 1–2 (2–4 m)	Average Bins 1–3 (2–5 m)
10th – Flood	54	61	62	57	**59**
50th – Flood	137	148	156	142	**147**
90th – Flood	176	190	202	183	**189**
10th – Ebb	69	69	68	70	**69**
50th – Ebb	142	154	163	148	**153**
90th – Ebb	210	226	238	218	**225**
10th – Combined	62	65	65	64	64
50th – Combined	139	151	161	145	150
90th – Combined	193	208	218	200	207

Discharge Depth. The water depth at the top of the AWPCF outfall turret is -3.96 meters (-13 feet) MLLW, as confirmed by bathymetry survey sonar recordings in 2022. The AWPCF outfall turret ports centerlines are situated 0.61 meters (2 feet) below the top of the concrete turret. The ports discharge at a depth of -4.6 meters (-15 feet) MLLW. The MTL at Point Woronzof is +4.7 meters (+15.3 feet), MLLW; therefore, the AWPCF outfall turret ports discharge at a water depth of -9.2 meters (-30.3 feet) MLLW at MTL. The mean higher high water (MHHW) at Point Woronzof is +8.9 meters (+29.2 feet) MLLW; therefore, the AWPCF outfall turret ports discharge at a water depth of -13.5 meters (-44.2 feet) MLLW under MHHW conditions.

Receiving Water Density. The receiving water temperature and salinity (density) are important inputs for dilution modeling. In addition to ambient current velocities and discharge depth, the receiving water temperature and salinity, relative to those of the effluent, influences the discharge plume behavior and mixing process in the nearfield.

Ambient Cook Inlet temperatures and salinities were compiled from annual NPDES monitoring data, and other studies in Upper Cook Inlet and Knik Arm. Receiving water temperatures and salinities for dry season (November to June) and wet season (July to October) are based on Cook Inlet water quality monitoring data collected by Kinnetic Environmental, Inc., for Anchorage Water and Wastewater Utility (AWWU). These annual monitoring data are presented in the Annual NPDES Permit Monitoring Program Report for the AWPCF (KEI and AWWU). The average seasonal temperature, salinity, and density data are summarized as follows: dry season: 5.0°C and 21.0 practical salinity units (psu), which result in a density of 1,016.5 kilograms per cubic meter (kg/m^3); and wet season: 12.0°C and 13.0 psu, which result in a density of 1009.4 kg/m^3.

AWPCF effluent is freshwater with a zero salinity (psu). Regarding seasonal effluent temperatures, effluent temperatures (and density) vary seasonally from 15.0° to 18°C (998 to 999.3 kg/m^3) in the wet season to 14.0° to 15.5°C (999 to 1,003 kg/m^3) in the dry season. These values are based on AWPCF final effluent data from Discharge Monitoring Reports (DMRs) for a recent 5-year period (2018 to 2022).

4. Updated Outfall Mixing Zone Study for NPDES Permit Renewal

Field Dye-Tracer Study and Dilution Measurements. Two field dye-tracer studies have been performed to measure dilutions at distances from the AWPCF outfall. In July 1988, a field dye-tracer study was conducted to measure the dilutions provided by the outfall turret with three open ports that was installed in 1987. The study used fluorescent dye (Rhodamine WT) injected continuously into the AWPCF effluent to allow measurements of wastewater dilutions in the receiving water using field fluorometers. This study was conducted on July 21 and July 22, 1988. The results of the 1988 dye study were used to evaluate and select dilution models for predicting initial dilution performance for the AWPCF outfall in the 1990 NPDES Permit Renewal Application (AWWU 1990) and subsequent permit renewals.

In preparation for the current NPDES permit renewal, a comprehensive field tracer dilution study of the AWPCF outfall discharge was performed in 2022. The field tracer dilution study was followed by the evaluation of field-measured dilutions and selection of a dilution model that provided the best-fit to field-measured dilution. Then the selected model was applied in dilution modeling of critical AWPCF effluent discharge conditions and critical ambient discharge conditions in Upper Cook Inlet to redefine the ZID distance and identify the CID.

Detailed field tracer study measurements of the AWPCF outfall discharge dilutions were conducted over 2 consecutive days (October 1 and 2, 2022) during neap tidal conditions. The critical condition for the outfall mixing zone field tracer study of the AWPCF outfall discharge to Cook Inlet is neap tidal conditions. The EPA's Technical Support Document for Water Quality-based Toxics Controls (EPA 1991) states the following on page 75 in Section 4.4.3, General Recommendations for Tracer Studies:

> "The dye study recommended for obtaining a quick saltwater dilution assessment is one in which Rhodamine WT dye is administered to a discharge and monitored in the receiving waters for not less than 24 hours. The basic goal of this study is to determine the nearfield nature of the effluent dilution, not the steady-state or farfield dilution. The environmental and discharge conditions selected for the study should be those that would elicit "worst-case" conditions (i.e., highest ambient concentrations in the receiving water). These include low wind, neap tide (tide of minimum range occurring during the 1st and 3rd quarters of the moon), plume trapping by density stratification, low rainfall and low riverine input, and, if possible, high effluent discharge."

The tracer study measurements were conducted with flow-paced dye-tracer injection, continuous flow and initial dye concentration monitoring, real-time ambient measurements of dye tracer in the water column at distances from the AWPCF outfall discharge, and real-time differential global positioning system (DGPS) tracking of field measurement locations. Complete field data sets and data plots for the 2022 study are provided in the *Outfall Mixing Zone Study Update for the Asplund Water Pollution Control Facility* (Jacobs 2024).

More than 40,000 dye concentration measurements were recorded during drifting profiles over the 2 days of tracer studies to characterize the discharge dilutions at distances from the AWPCF outfall turret. Tracer study measurements were recorded as drifting profiles (referred to as DPROs) of water column measurements of tracer dye concentration and receiving water temperature, salinity, and turbidity. Water column measurements were recorded on drift profiles because anchoring near the AWPCF outfall was unsafe and infeasible due to the high tidal current velocities and course seabed sediments. During the 2-day field tracer study, 41 DPROs were recorded. On October 1, 8 DPROs were recorded during flood tide and 15 DPROs were recorded during ebb tide; and on October 2, 6 DPROs were recorded during flood tide and 12 DPROs were recorded during ebb tide.

Real-time field dye-tracer measurements were obtained by pumping receiving water via an intake hose secured to a Sea-Bird CTD (Conductivity, Temperature, and Depth) instrument (at a fixed depth for each DPRO) and into a Turner Designs 10AU flow-through field fluorometer to measure dye concentrations at the same depth and time as other measurements recorded by the Sea-Bird instrument. Before the initiation of sampling, the coordinates of the AWPCF outfall turret were input into the DGPS navigation system based on the bathymetric survey chart record of coordinates (recorded in August 2022), and the DPRO sampling locations of the work vessel were calculated and displayed on the real-time navigation screen onboard the work vessel to provide accurate measurement of locations relative to the outfall turret and the existing outfall ZID boundary (650 meters).

Drifting profiles were originated up-current from the outfall turret and proceeded down current with the tidal flow, over the outfall and beyond within the measurable discharge plume. These DPRO measurements extended from 600 to 850 meters distance from the outfall turret. These tracer data collections were intended to define the minimum to average dilutions at the discharge plume centerline.

Through detailed reviews of the results of the 41 drifting profiles and considering the critical tidal current velocities (10th-, 50th-, and 90th-percentile), 17 DPROs were selected for further evaluation to assess duration and spatial extent of these tracer measurements inside the discharge plume and their applicability to represent discharge plume dilutions under ebb and flood tide conditions. Some DPROs appeared to have captured the plume centerline dilutions, and the average detected plume dilutions in the DPROs are considered to be representative of the flux-average dilutions that are predicted by dilution models for marine discharges.

Figure IIIA-3 is a combined plot of all instantaneous field-measured dilutions recorded during all 41 DPROs and during the full range of ebb and flood tide conditions on October 1 and 2, 2022. This combined plot of field-measured dilutions is focused on dilutions proximate to the AWPCF outfall and dilutions up to 500. Three DPROs recorded during late ebb tide on October 1 and 2 (DPRO-19, -20, and -41) yielded the lowest field-measured dilutions in proximity to the AWPCF outfall. These field-measured dilutions illustrate consistent increasing dilutions over distance from the AWPCF outfall.

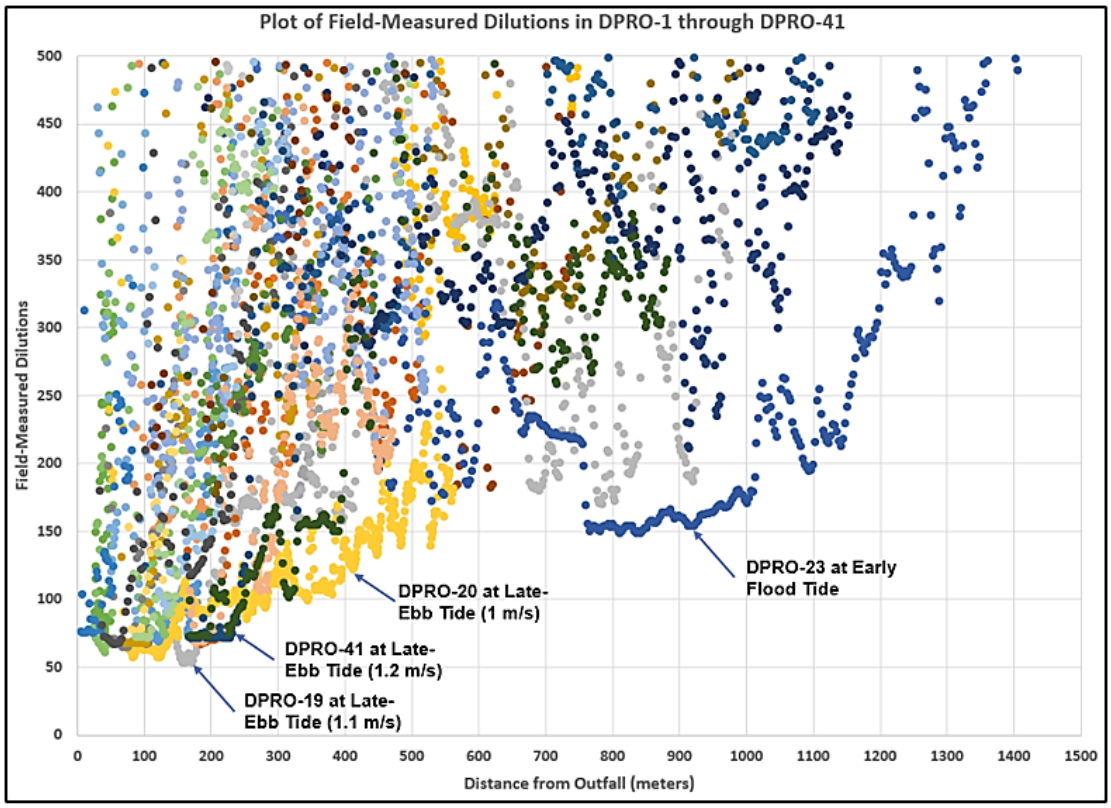


Figure IIIA-3. Plot of Instantaneous Field-Measured Dilutions Recorded in DPRO-1 through DPRO-41 during the AWPCF Outfall Mixing Zone Study

Source: Outfall Mixing Zone Study Update for the Asplund Water Pollution Control Facility (Jacobs 2024)

The 17 DPROs selected for further evaluation were reviewed and evaluated in more detail to select those that had the longest duration and greatest extent of field tracer measurements within the outfall plume. Once this limited set of DPROs was selected, each DPRO was then simulated with dilution models to evaluate and select the most representative dilution model for the AWPCF outfall.

A total of six DPROs representing a range of field conditions during the field tracer study of the AWPCF outfall were selected for use to compare to dilution modeling predictions to select the most representative dilution model and modeling configuration to fit the field-measured dilutions. The six DPROs selected based on the duration and extent of field tracer measurements within the outfall plume were as follows: DPRO-15, DPRO-20, DPRO-29, DPRO-30, DPRO-35, and DPRO-41. These six profiles were specifically selected for the comparisons of field-measured dilutions to model-predicted dilutions, and they represented a wide range of ambient current speeds and profile water depths. Several of these profiles represent current speeds that correspond to the calculated critical percentile current speeds, as listed in Table IIIA-1.

Dilution Modeling Approach. Dilution modeling was developed to provide predictions of the dilution performance of the AWPCF outfall under a range of critical discharge conditions. The dilution modeling evaluation was based on the existing outfall diffuser configuration, AWPCF effluent characteristics, and site-specific field measurements of ambient receiving water currents and density. Field-measured dilutions over a wide range of tidal conditions recorded during the field tracer study were used to compare and evaluate models during the model selection phase. The receiving water and effluent conditions measured during the field tracer study conducted in October 2022 (refer to the previous section) were used to test, evaluate, and select a dilution model and outfall configuration that best represents the field-measured

dilutions. The selected model was then applied to develop model predictions for critical discharge conditions applicable in the NPDES permit renewal.

Modeling was used to predict plume behavior and wastewater dilutions for critical receiving water conditions using existing effluent flows and temperatures. The modeling approach used was consistent with guidelines presented in the following documents: (1) critical discharge conditions specified in the EPA Amended Section 301(h) Technical Support Document (EPA 1994), (2) Implementation Guidance: 2006 Mixing Zone Regulation Revisions (ADEC 2006), (3) Alaska Water Quality Standards 18 Alaska Administrative Code (AAC) 70 (ADEC 2025), and (4) Technical Support Document for Water Quality-based Toxics Control (EPA 1991). The dilution modeling used appropriate models and assumptions of receiving water characteristics (for example, current velocity, ambient density profiles, and discharge depth) and effluent flows and temperatures for the dilution modeling, as specified in these documents.

The first step in the modeling approach involved a review of the available and applicable dilution models and selection of the models that can represent the AWPCF outfall over a range of ambient conditions. The next step in the modeling approach was to evaluate outfall port configurations to apply in the modeling that are representative of the unique turret-style design of the AWPCF outfall diffuser. Dilution models assume that multi-port diffusers are linear structures and none of the available dilution models have the capability to simulate the AWPCF outfall three-port turret as configured. As a result, modeling required development and evaluation of various port configurations and modeling approaches to apply and compare to field-measured dilutions to identify the most representative configurations and model to apply for critical conditions.

Following selection of the most representative dilution model and outfall port configurations, model input parameters were developed to represent critical ambient conditions and the range of effluent flows and temperatures. The modeling assumptions of receiving water and effluent characteristics were based on those described in the previous section. The modeling approach was conducted applying critical discharge conditions at the outfall site to provide conservative dilution predictions for these conditions. The modeling results were also used to determine the appropriate ZID and CID for permit renewal.

Two EPA-supported modeling systems are generally used to perform dilution modeling, Visual Plumes (VP) and CORMIX. Both of these modeling systems were used to evaluate the dilution performance of the AWPCF outfall. Models within these two modeling systems may perform differently under certain sets of conditions, the model that best matched the site-specific field measurements was selected to evaluate the critical design discharge conditions.

The turret-style configuration of the AWPCF outfall diffuser required that non-standard modeling approaches be developed and applied to allow for proper execution of the dilution models. The dilution models within systems such as VP and CORMIX generally assume that multi-port diffusers are linear structures. None of the available dilution models have the capability to simulate the AWPCF outfall structure and discharge as it is configured.

Several modeling approaches were evaluated for modeling the AWPCF outfall diffuser and which were developed in consultation with modeling experts (Dr. Lorin Davis and Dr. Steven Costa), and these include modeling:

- Multi-port diffuser assuming actual port spacings
- Multi-port diffuser assuming variable port spacings
- Multi-port diffuser as a single port using the image (reflection) technique

- Three-port outfall as a single port using a flow-weighted percentage of the total effluent flow (to provide Froude number similarity)
- Three-port outfall as a single large (surrogate) port having an equivalent port area and with the actual effluent flow (to provide Froude number similarity)

Each of the five modeling approaches are discussed in Section 4 of the *Outfall Mixing Zone Study Update for the Asplund Water Pollution Control Facility* (Jacobs 2024).

Model Selection. Model selection depends upon three primary factors: (1) the outfall diffuser configuration, (2) the discharge distance from shore and water depth, and (3) receiving water conditions (for example, currents and tide elevation/depth). The effluent and receiving water conditions measured during the field dye-tracer study conducted in October 2022 were used to determine which dilution model and modeling approach provided the most accurate and consistent representation of the dilution performance of the AWPCF outfall diffuser.

Verification modeling scenarios were used to compare the field-measured dilutions with model-predicted dilutions from each of the viable modeling approaches listed. As previously mentioned, six different sets of field conditions (that is, DPROs) during the field tracer study were selected for use in comparing dilution model predictions to the field-measured dilutions. These six selected field study profiles represented a wide range of ambient current speeds and water depths and provided consistent tracer measurements in the discharge plume over long drift distances for each profile.

Both DKHW and CORMIX 1 models were selected to compare model-predicted dilutions to field-measured dilutions (DKHW is an acronym for the Davis, Kannberg, Hirst model for Windows). The modeling approaches used with these two models included a 3-port diffuser with variable port spacing, a single port (actual port size) with flow-weighting, and as a single, large surrogate port (with equivalent port area) using the actual effluent flow. In addition, modeling using DKHW with the image/reflection method was tested. The CORMIX-1 and DKHW models with 1-port and 1/3 effluent flow provided the most accurate predictions when compared to the field-measured dilutions.

Graphical and tabular comparisons of model-predicted to field-measured dilutions were used to identify the most representative modeling approach for ambient and effluent conditions. Using comparisons of model predictions to the field-measured dilutions during the field tracer study, either the DKHW model or the CORMIX 1 model could be selected to represent the AWPCF outfall diffuser. Both DKHW and CORMIX 1 models accurately represent the dilutions measured during the outfall mixing zone study and both DKHW and CORMIX 1 provide conservative results (that is, predicted dilutions lower than measured dilutions). The CORMIX 1 model was selected over DKHW to evaluate the outfall performance under the critical design flow conditions because this model generally provided the most conservative results.

a. Modeling of Critical Discharge Conditions.

The critical effluent and ambient discharge conditions to represent the AWPCF outfall discharge to Cook Inlet in the NPDES permit renewal and Section 301(h) modification were developed to align with the following guidance: (1) EPA's Amended Section 301(h) Technical Support Document (EPA 1994), (2) EPA's Technical Support Document for Water Quality-based Toxics Control (EPA 1991), and (3) the ADEC Application Form 2M - Request for a Mixing Zone (ADEC 2010).

Based on the model review and selection discussed previously, the CORMIX 1 model (with a configuration of one 23-inch outfall diffuser port and one-third of total effluent flow) was selected for application to the critical discharge cases. This model configuration provides

Froude number equivalency for the outfall turret with three 0.58-meter (23-inch) round discharge ports open. Model predictions were used to determine minimum predicted dilutions achieved by the discharge at distances from the outfall, and to recommend a revised ZID boundary for the AWPCF outfall.

Sixteen modeling scenarios were developed to represent the range of critical AWPCF effluent flows and temperatures, and receiving water current speeds, depths, temperatures, and salinities for ebb and flood tidal conditions under dry and wet season discharge conditions. Acute, chronic, and human health water quality criteria were evaluated under each of the seasonal conditions. In addition, Section III.A - Physical Characteristics of Discharge in EPA's Amended Section 301(h) Technical Support Document (EPA 1994) specifies that "the lowest (i.e. critical) initial dilution (CID) must be computed for each of the critical environmental seasons. The predicted peak 2-3-hour effluent flow for the new end-of-permit year and current speed no higher than the lowest 10th percentile current speed must be used." Sixteen modeling scenarios developed to represent AWPCF effluent and receiving water conditions in dry and wet seasons incorporate these discharge conditions specified in the EPA's Amended Section 301(h) Technical Support Document (EPA 1994).

The inputs and dilution results for worst-case wet and dry season model cases that align with the EPA's Technical Support Document apply peak 2- to 3-hour effluent flow and 10th-percentile current speed to determine the CID are summarized as follows:

- Dry season Model Case 33 yields a dilution of **136 at the ZID** based on 2- to 3-hour peak effluent flow (57.63 mgd), 10th-percentile ebb current speed (0.69 m/sec), and MLLW tidal elevation (4.6 meters).

1. Dry season Model Case 35 yields a dilution of **109 at the ZID** based on 2- to 3-hour peak effluent flow (57.63 mgd), 10th-percentile flood current speed (0.59 m/sec), and MLLW tidal elevation (4.6 meters).
2. Wet season Model Case 25 yields a dilution of **155 at the ZID** based on 2- to 3-hour peak effluent flow (56.72 mgd), 10th-percentile ebb current speed (0.69 m/sec), and MLLW tidal elevation (4.6 meters).
3. Wet season Model Case 27 yields a dilution of **122 at the ZID** based on 2- to 3-hour peak effluent flow (56.72 mgd), 10th-percentile flood current speed (0.59 m/sec), and MLLW tidal elevation (4.6 meters).

These four model cases that yielded the minimum model-predicted dilutions under the defined Section 301(h) critical discharge conditions have been plotted over the field-measured instantaneous dilutions recorded in DPRO-1 through DPRO-41 on Figure IIIA-4. It is important to note that the field-measured dilutions in this plot are based on effluent discharge flows of 27 to 43.6 mgd on October 1 and 2, 2022, while the model-predicted dilutions plotted in this figure are based on peak-hour effluent flows of 56.7 mgd (wet season) and 57.6 mgd (dry season). Therefore, these model-predicted dilutions are quite conservative representatives of AWPCF discharge dilutions.

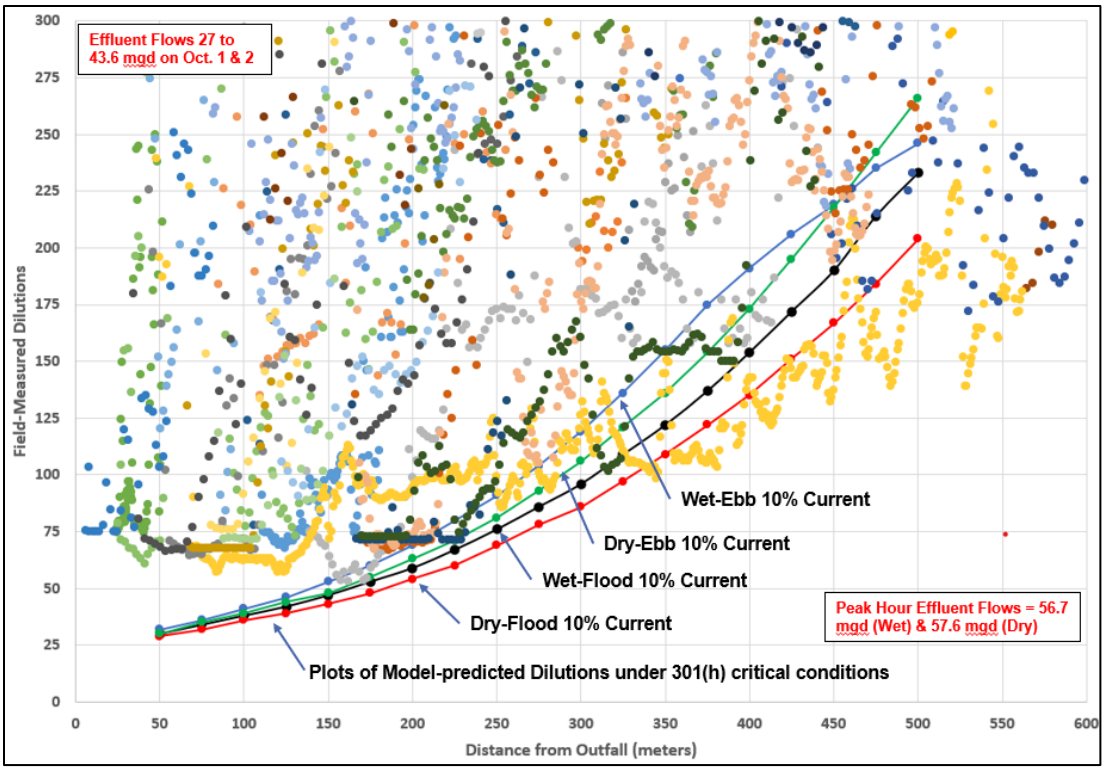


Figure IIIA-4. Plot of Model-predicted Minimum Dilutions under Section 301(h) Critical Conditions Over Field-measured Dilutions in DPRO-1 through DPRO-41

Source: Outfall Mixing Zone Study Update for the Asplund Water Pollution Control Facility (Jacobs 2024)

These four critical conditions model case results that are plotted in Figure IIIA-4 show these results under-predict dilutions compared to the lowest field-measured dilutions at distances up to 150 meters from the AWPCF outfall, and they show good agreement with the minimum field-measured dilutions beyond a 150-meter distance from the outfall. It is important to recognize that field-measured dilutions from the 2-day tracer study were recorded under a wide range of ambient current velocities and tidal depths and with effluent flows ranging between 27 and 43.6 mgd, whereas the model-predicted dilutions under defined Section 301(h) critical discharge conditions represent peak 2- to 3-hour effluent flows, 10th-percentile ebb and flood current speed, and only MLLW tidal elevation (4.6 meters). Therefore, these model-predicted dilutions under the defined Section 301(h) critical discharge conditions provide very conservative representations of actual discharge conditions and dilutions.

Model-predicted dilutions for the defined Section 301(h) critical discharge conditions (four model cases) that yielded minimum dilutions were plotted over distance from the AWPCF outfall on Figure IIIA-5. These four model cases are based on dry and wet season peak 2- to 3-hour effluent flows, 10th-percentile ebb and flood current speeds, and MLLW tidal elevation (4.6 meters)—all conservative model cases. The model-predicted plume travel distances under the 10th-percentile current speed are shown on Figure IIIA-5. EPA Region 10 and ADEC have specified that the plume travel time to the ZID (representing a drifting organism's exposure time inside plume) should be limited to 15 minutes. The 10-minute plume travel distance under a 10th-percentile current speed is 350 meters from the AWPCF outfall turret, and additional plume travel times and distances are also illustrated in Figure IIIA-5.

Based on the modeling results developed and presented in this mixing zone study report, the revised AWPCF ZID should be established at a 350-meter distance to provide sufficient dilution for the AWPCF discharge to meet Alaska water quality standards and be protective of

receiving water quality. The CID at the 350-meter ZID is 109 for water quality criteria for the protection of aquatic life. The dilution modeling developed in the *Outfall Mixing Zone Study Update for the Asplund Water Pollution Control Facility* (Jacobs 2024) includes results for human health criteria conditions with a minimum dilution of 240 at a 350-meter ZID.

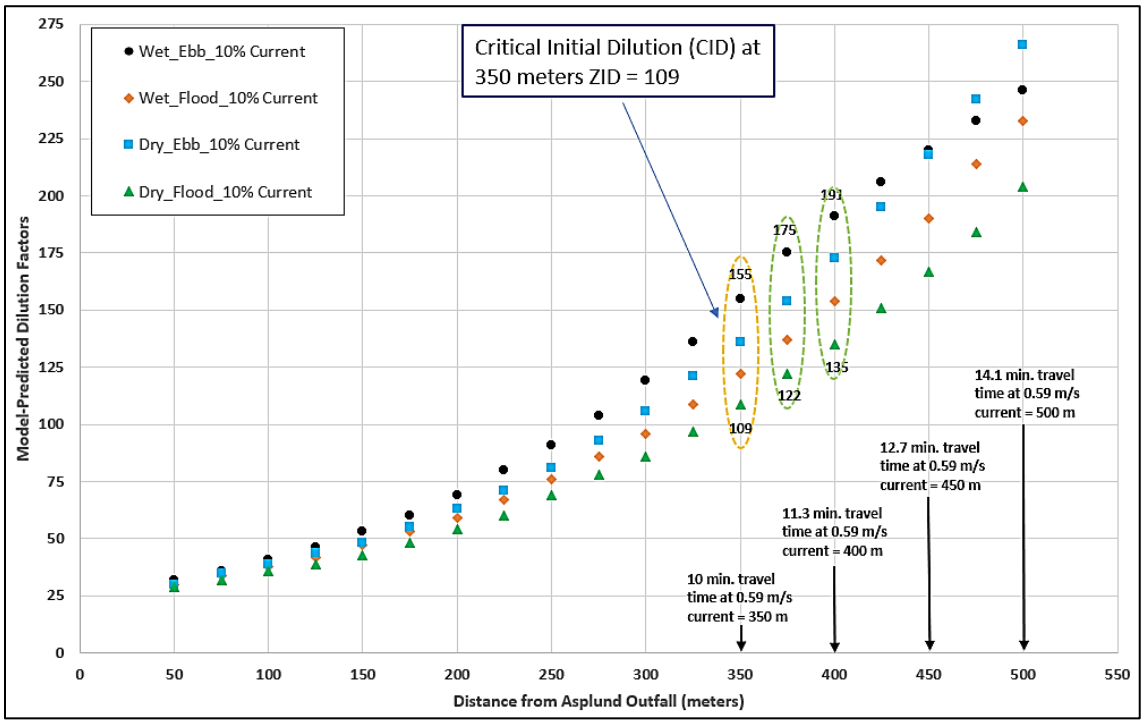


Figure IIIA-5. Plot of Model-predicted Minimum Dilutions under 301(h) Critical Conditions over Distances from the AWPCF Outfall at 10% Ambient Current Velocities

Source: Outfall Mixing Zone Study Update for the Asplund Water Pollution Control Facility (Jacobs 2024)

The model-predicted minimum dilutions under defined critical discharge conditions at the recommended revised ZID distance of 350 meters are 109 (flood) and 136 (ebb) in the dry season and 122 (flood) and 155 (ebb) in the wet season. The model-predicted minimum dilutions for chronic aquatic life criteria conditions are 169 in dry season and 195 in wet season, and model-predicted minimum dilutions for human health criteria at the revised ZID (350 meters) are 240 (dry season) and 273 (wet season), as provided in the *Outfall Mixing Zone Study Update for the Asplund Water Pollution Control Facility* (Jacobs 2024). Refer to Table IIIA-2.

b. Summary of CID and ZID for AWPCF Outfall

- The model-predicted dilutions for worst-case dry and wet season model cases, according to EPA's 301(h) guidance (EPA 1994), yield minimum dilutions of 109 to 122 under flood tide and 136 to 155 under ebb tide at the revised ZID distance of 350 meters from the AWPCF outfall.
- The CID at the revised ZID distance of 350 meters from the AWPCF outfall is 109 for water quality criteria for the protection of aquatic life.

Table IIIA-2. Summary of Model-Predicted Dilutions Under Critical Seasonal Discharge Conditions

Season	Water Quality Condition	Effluent Conditions				Ambient Conditions								Dilution Factor (DF) at 350 m
									Current Speed			Discharge Depth		
		Basis	Flow (mgd)	Temp. (°C)	Density (kg/m^3)	Salinity (psu)	Temp. (°C)	Density (kg/m^3)	Tidal Condition	Basis	(m/sec)	Basis	Depth (m)	
Wet	Acute Aquatic Life	Peak 2-3 Hour	56.72	17.5	998.98	13.0	12.0	1009.43	Ebb	10th-percentile	0.69	MLLW	4.6	155
									Flood	10th-percentile	0.59	MLLW	4.6	122
	Chronic Aquatic Life	Max. Month	35.74	17.0	999.16				Flood	50th-percentile	1.47	MTL	9.3	195
	Human Health	Annual Avg.	27.58	13.0	999.30				Flood	50th-percentile	1.47			273
Dry	Acute Aquatic Life	Peak 2-3 Hour	57.63	15.5	1002.98	21.0	5.0	1016.46	Ebb	10th-percentile	0.69	MLLW	4.6	136
									Flood	10th-percentile	0.59	MLLW	4.6	109
	Chronic Aquatic Life	Max. Month	32.31	14.2	998.75				Flood	50th-percentile	1.47	MTL	9.3	169
	Human Health	Annual Avg.	27.58	13.0	999.30				Flood	50th-percentile	1.47			240

Source: Outfall Mixing Zone Study Update for the Asplund Water Pollution Control Facility (Jacobs 2024)

5. What are the dimensions of the zone of initial dilution for your modified discharge(s)?

EPA and ADEC seek the smallest mixing zone region that is feasible for a discharge to meet Alaska water quality standards and be protective of the receiving water quality in accordance with 18 AAC 70.240 Mixing Zones (ADEC 2022). Based on the modeling results developed and presented in the *Outfall Mixing Zone Study Update for the Asplund Water Pollution Control Facility* (Jacobs 2024), the revised ZID mixing zone boundary of 350 meters provides dilution for the AWPCF discharge to meet Alaska water quality standards and be protective of receiving water quality.

The ZID for the AWPCF outfall has been revised based on a 2-day extensive field dye-tracer study, site-specific ambient current measurements near the outfall, dilution modeling to select the best-fit model compared to field-measured dilutions, and dilution modeling of critical discharge conditions specified in the EPA 301(h) guidance (EPA 1994). Refer to the *Outfall Mixing Zone Study Update for the Asplund Water Pollution Control Facility* (Jacobs 2024).

Figure IIIA-1 illustrates the existing 650-meter ZID for the AWPCF outfall as defined in the NPDES permit, and the revised 350-meter ZID presented in this section of the Large Questionnaire and documented in the *Outfall Mixing Zone Study Update for the Asplund Water Pollution Control Facility* (Jacobs 2024). The revised definition of the ZID adopted for this waiver renewal application, is an area encompassing a 220 degrees sector of a circle with a radius of 350 m (1,148 feet) centered 30 m (100 feet) shoreward (east) of the AWPCF outfall turret, as shown on Figure IIIA-1.

Current speed and direction, water depth, and discharge rate determine the length, width, and trajectory of the AWPCF plume. The width of the AWPCF discharge plume at distances from the outfall are shown in model-predicted plots on Figure IIIA-6 and these plume widths are based on dry and wet season peak-hour effluent flows and 10th-percentile ebb and flood tidal current velocities. Model-predicted plume widths at the 350-meter ZID distance range from 50 to 60 meters in the wet season and from 60 to 70 meters in the dry season, based on 10th-percentile ebb and flood tidal current velocities. These discharge plume widths at the 350-meter ZID occupy approximately 3% of the area of one-half of the total ZID area (note approximately one-half of the total ZID region would have the plume travel path on each ebb

and flood tide). Under higher ambient current velocity the AWPCF discharge plume is narrower and occupies a smaller area within the ZID.

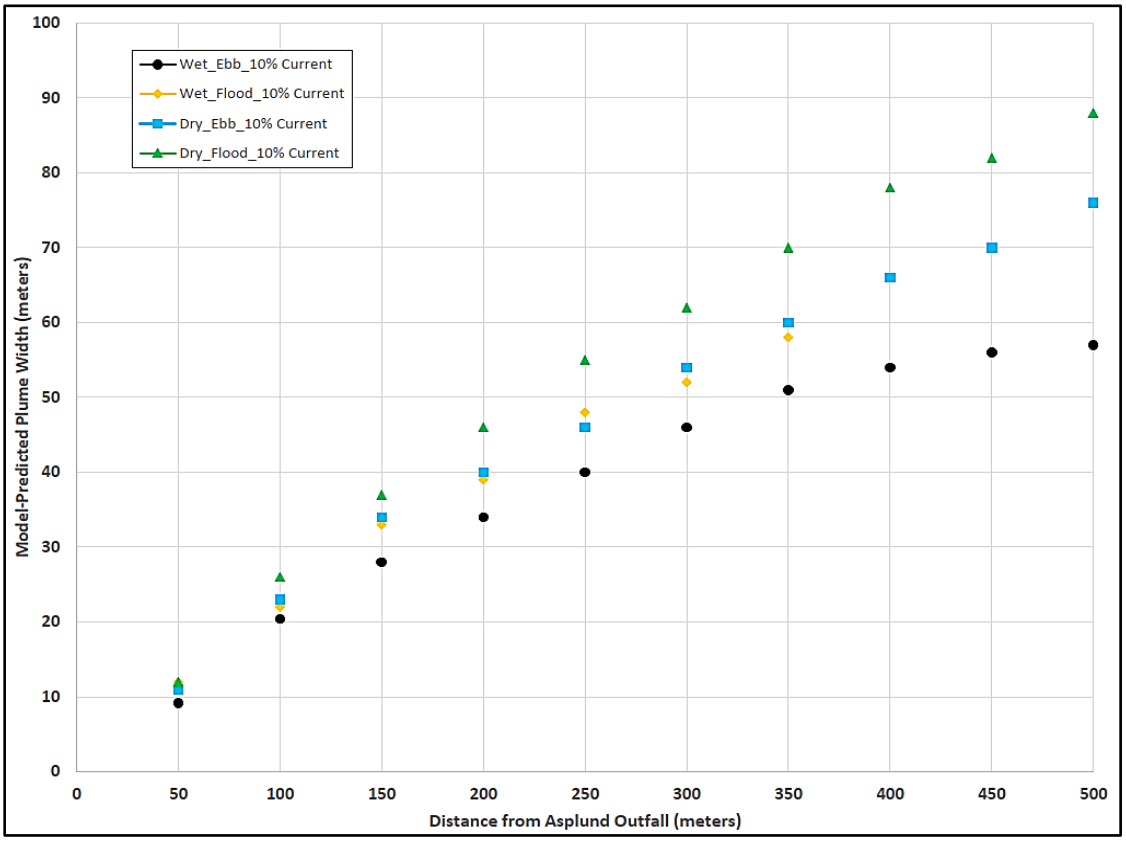


Figure IIIA-6. Plot of Model-Predicted Plume Width at Distances from the AWPCF Outfall for Dry and Wet Season Peak-Hour Effluent Flows and 10th-Percentile Ebb and Flood Ambient Current Velocities

Source: Outfall Mixing Zone Study Update for the Asplund Water Pollution Control Facility (Jacobs 2024)

6. *What are the effects of ambient currents and stratification on dispersion and transport of the discharge plume/waste field?*

As described in Sections II.B.3 and II.B.4, the density structure in the vicinity of the discharge is typically uniformly mixed or very weakly stratified for short durations of ebb tides when freshwater runoff in Knik Arm is greatest. Ambient tidal currents and associated circulation patterns near Point Woronzof create turbulence and the transport mechanism for rapid dilution of the outfall discharge plume, and tidal-driven currents in Upper Cook Inlet result in rapid transport, dilution, and dispersion of the AWPCF outfall discharge plume, as described in Section II.B.5.

As discussed in Section II.A.1, detailed field tracer study measurements of the AWPCF outfall discharge plume dilutions were conducted over 2 consecutive days in October 2022 using real-time DGPS tracking. Figure IIIA-7 illustrates all DPRO paths recorded in the discharge plume from the AWPCF outfall turret site to their end point during the outfall tracer study on October 2, 2022. This figure shows the AWPCF discharge plume transport path during ebb and flood tides off Point Woronzof. Complete field data sets and plots of all DPRO paths from up-current of the AWPCF outfall turret site, crossing over the outfall, and to their down-current end point are provided on Figures 2-24 through 2-31 in the *Outfall Mixing Zone Study Update for the Asplund Water Pollution Control Facility* (Jacobs 2024).

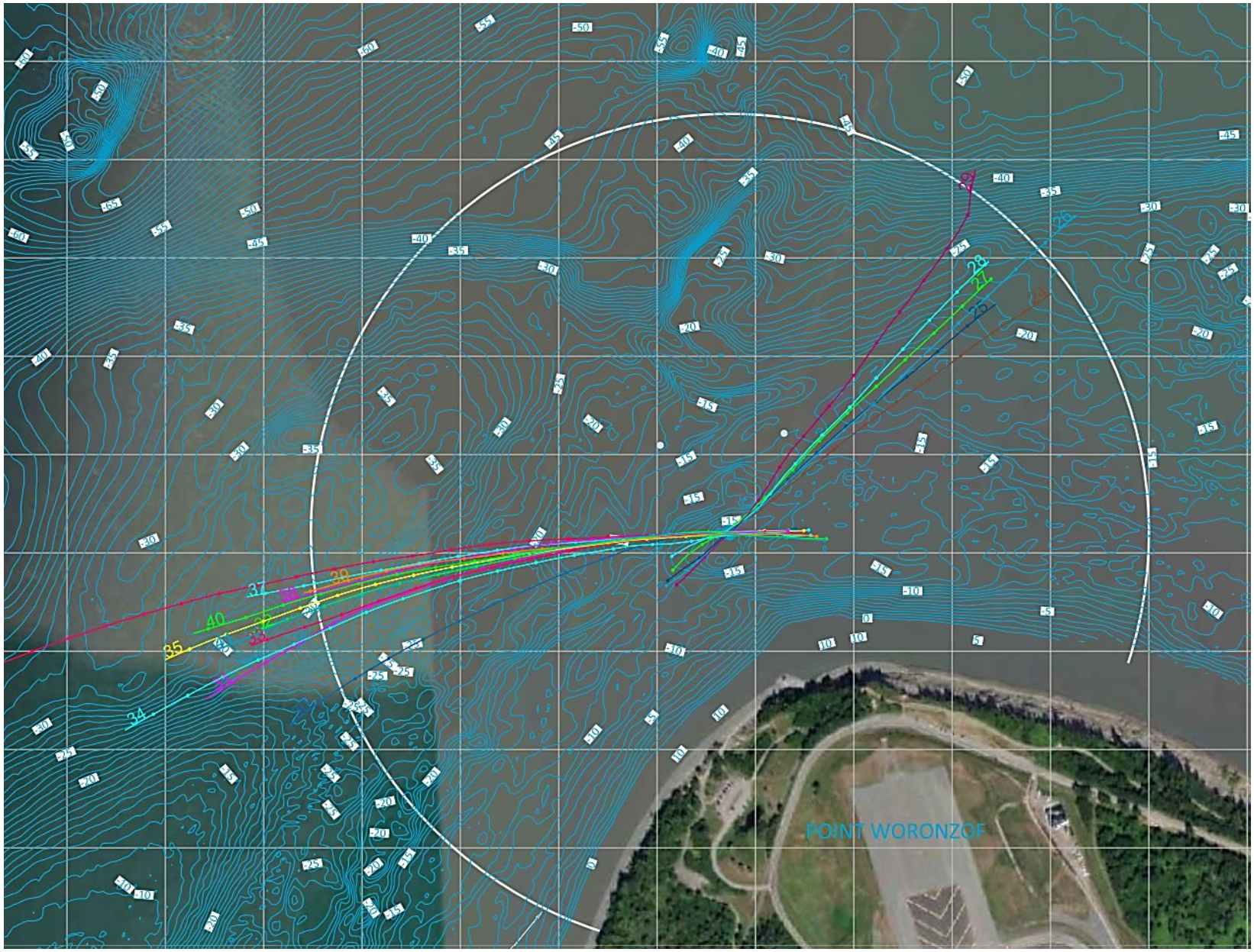


Figure IIIA-7. Plot of Recorded Plume Transport from the AWPCF Outfall Under Ebb and Flood Tides on October 2, 2022

Source: Jacobs 2023

The polar scatter plot on Figure IIIA-8 of current speed and direction measurements recorded at the NE ADCP mooring clearly shows that the flood and ebb tidal currents are tightly clustered with very limited variability. Flood tides are directed to the east-northeast (65 degrees, true) and ebb tide currents are directed to the west (275 degrees, true). The flood tides direction is offset slight to the northeast from due east as a result of the bathymetry at Point Woronzof, with flood currents being directed to the east-northeast into Knik Arm.

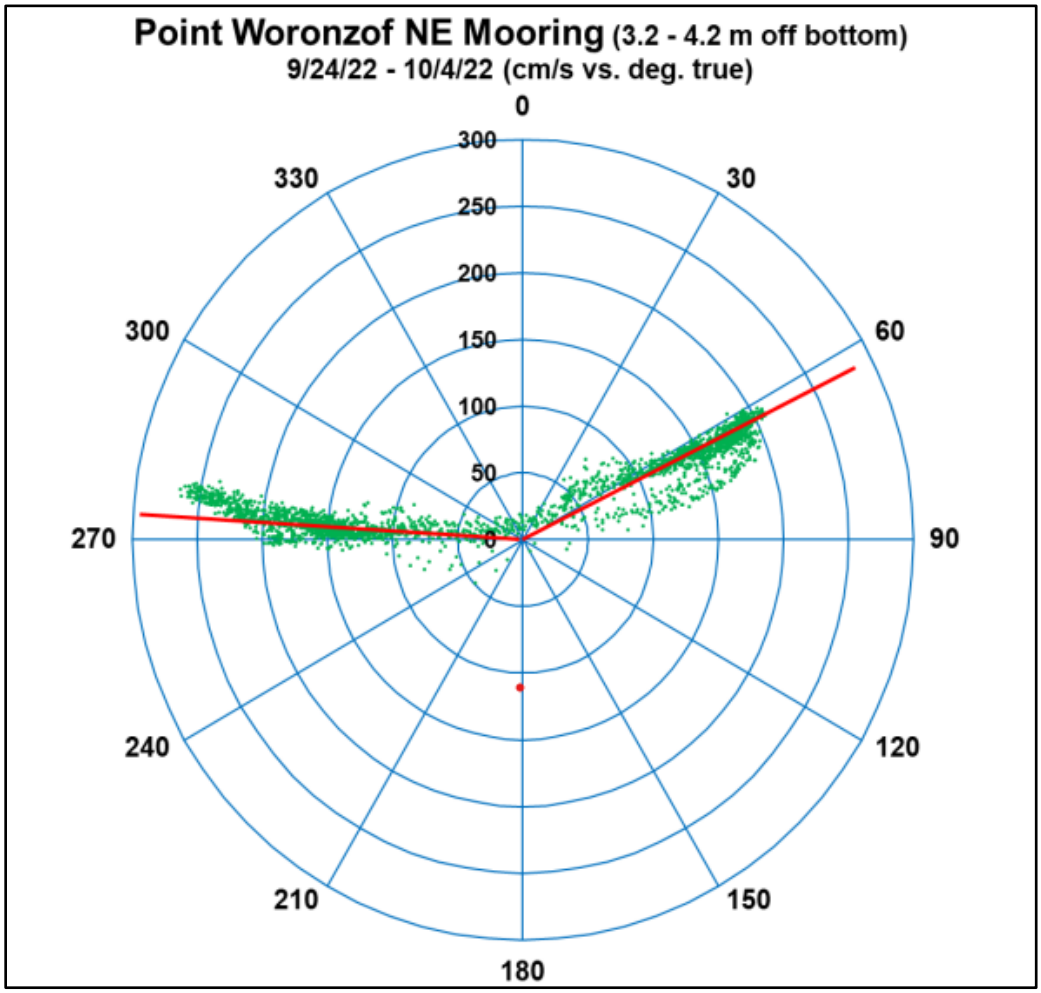


Figure IIIA-8. Polar Scatter Plot of Measured Current Speed and Directions at Northeast ADCP Instrument

Source: Jacobs 2023

The net transport of water containing effluent discharged from the AWPCF outfall during each tidal cycle can be depicted as a progressive vector plot of current direction and velocities, where the outfall (origin) is zero (0) on the east-west axis and each 6-minute current vector is added end-to-end of the preceding vector to determine the net water mass transport (Figure IIIA-9). Transport of this water during ebb tides ranged from approximately 25 to 40 kilometers (km) to the west-southwest out of Cook Inlet on each tidal cycle. During flood tides travel ranged from approximately 20 to 35 km to the east-northeast on each tidal cycle. The net transport over the period of record, based on the measurements at the NE ADCP mooring, was directed west-northwest out of Cook Inlet. This progressive vector plot illustrates that after mixing and dispersion of the AWPCF outfall plume during each tidal exchange, the dispersed plume will not travel

back over AWPCF's outfall on subsequent tidal cycles because of the geometry of the shoreline around Point Woronzof and the location of the outfall. Ebb tides have higher current velocities than the flood tidal currents with the addition of riverine inputs to Knik Arm, and this results in net transport out of Upper Cook Inlet. Therefore, effluent constituents discharged from the AWPCF outfall do not accumulate in the discharge area over subsequent tidal cycles.

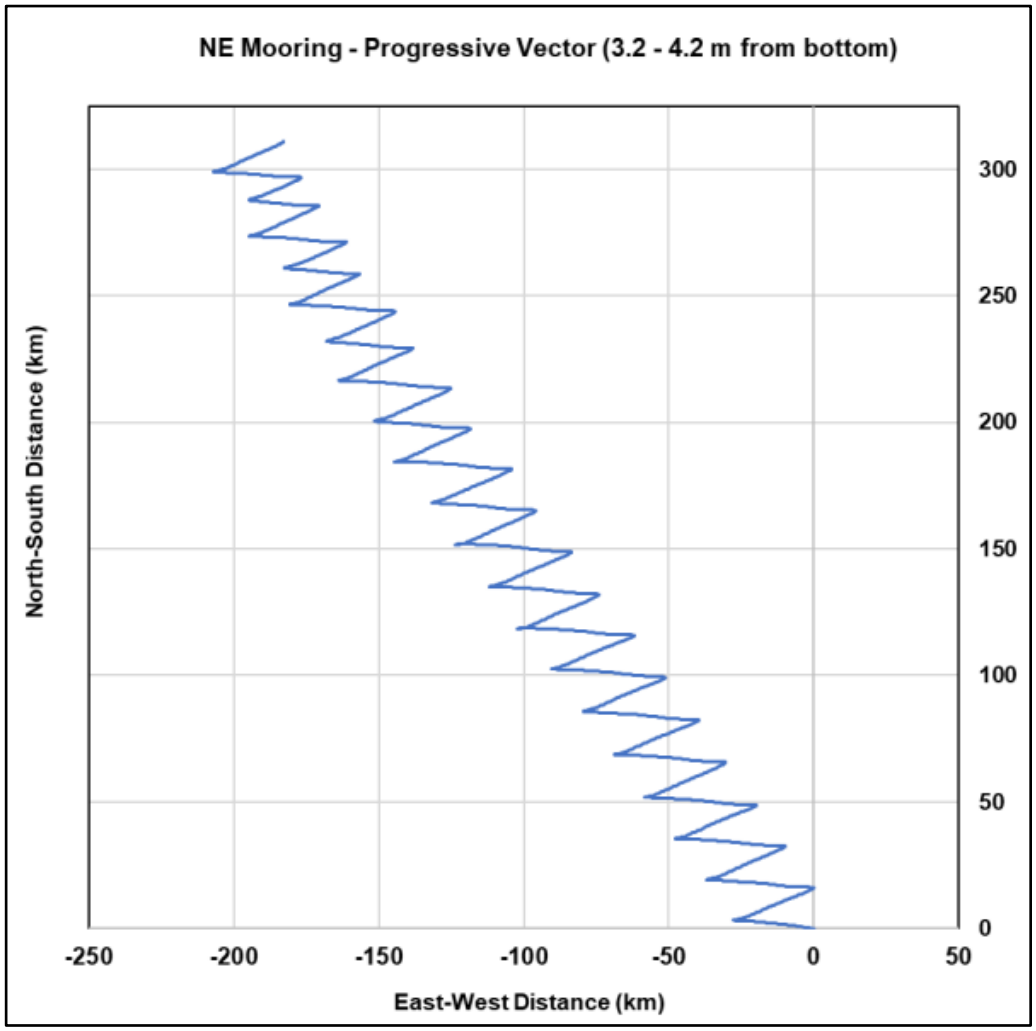


Figure IIIA-9. Progressive Vector Plot of Measured Currents at Northeast ADCP Instrument

Source: Jacobs 2023

Current meter records during tidal reversals on the field dye-tracer study days were extracted and plotted to illustrate the duration of tidal reversals at the AWPCF outfall. Figure IIIA-9 provides a plot of current tide directions (degrees T) measured every 6 minutes during the period of late flood tide through current reversal and into early ebb tide on October 1, 2022 (1,130 to 1,230 absolute dynamic topography [ADT]). The current record plot on Figure IIIA-10 shows a single measurement of tidal currents at 153 degrees (true) directed midway between flood direction and ebb direction.

Figure IIIA-11 provides a plot of current directions measured every 6 minutes during the period of late ebb tide through current reversal and early flood tide on October 1, 2022 (1,730 to 1,830 ADT). The current record plot in Figure IIIA-10 shows the tidal reversal from ebb to flood tide directions occurred within 6 minutes and no measurement of

intermediate current directions were recorded between ebb and flood directions. Current meter records from the second field tracer study day (October 2, 2022) show the same results as Figure IIIA-11, with immediate reversals of current directions between both flood/ebb and ebb/flood tide changes. These current meter records during tidal reversals document that slack water conditions during tide reversal do not exist at the AWPCF outfall site, but they are better characterized as a tidal ellipse with a very fast rotation at the change of tidal stage. The outfall discharge plume is being mixed and transported away from the outfall continuously.

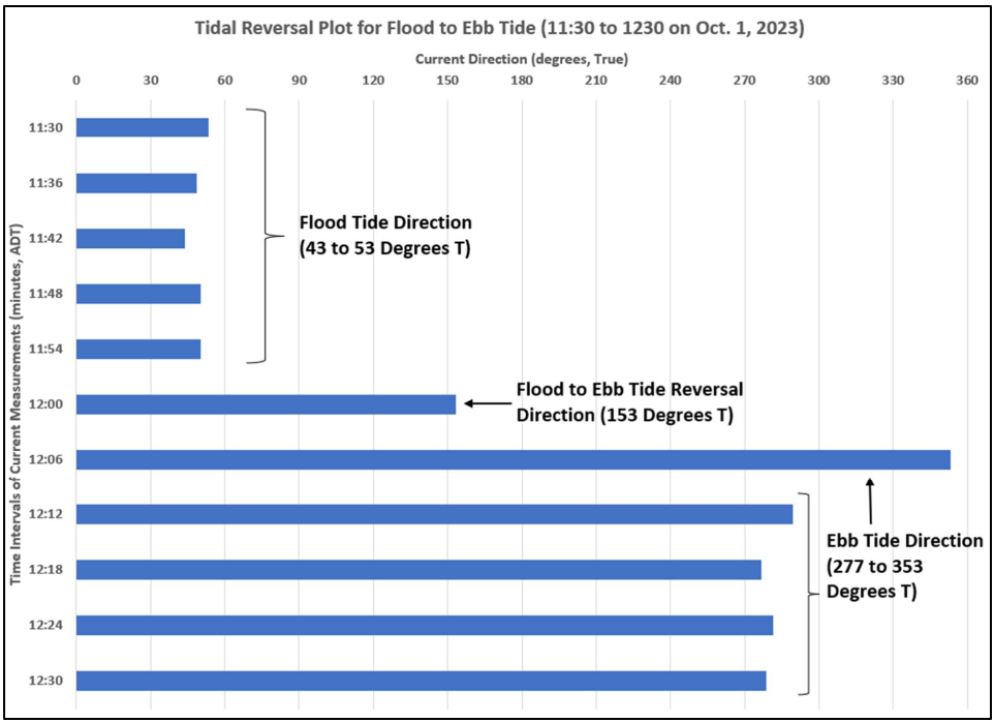


Figure IIIA-10. Plot of Current Directions (every 6 minutes) During Late Flood Tide to Early Ebb Tide Current Reversal on October 1, 2022 (1,130 to 1,230 ADT)

Source: Jacobs 2023

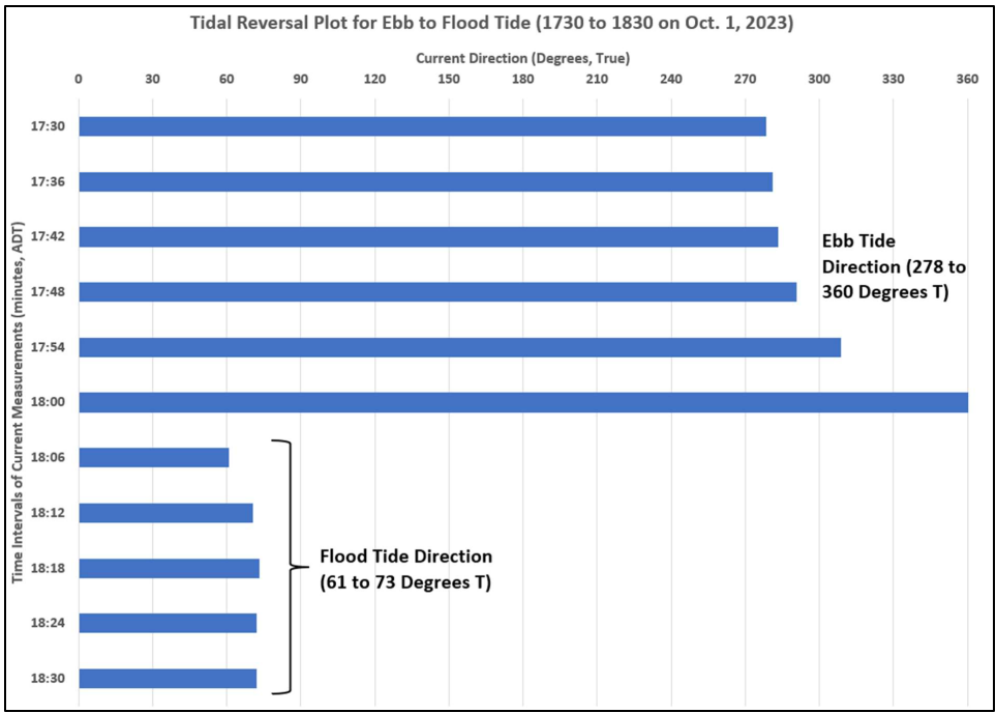


Figure IIIA-11. Plot of Current Directions (every 6 minutes) During Late Ebb Tide to Early Flood Tide Current Reversal on October 1, 2022 (1,730 to 1,830 ADT)

In addition to the 2022 field data collections presented, numerical modeling of the transport and distribution of effluent and effluent constituents from the AWPCF was developed to support an ecological risk assessment during the development of the 2011 Biological Evaluation (BE) of the AWPCF discharge to Upper Cook Inlet (CH2M 2011). Appendix F in the 2011 BE presents the development, calibration, and applications for the Upper Cook Inlet BE model. These results of the numerical modeling have also been applied in the 2025 updated BE of the AWPCF discharge to Upper Cook Inlet (Jacobs and ECO49 2025).

The numerical modeling developed for the Upper Cook Inlet applied a three-dimensional (3D) hydrodynamic and transport model to predict mixing and transport of effluent-derived water column and sediment constituents. The Environmental Fluid Dynamics Code (EFDC) (Hamrick 1996) model was selected as the most appropriate farfield model to address the mixing, fate, and transport of the parameters of concern, based on experience with hydrodynamic models, plume modeling, CI, and the objectives of the BE. The EFDC model is in the public domain, has been widely applied in similar applications, and is supported and endorsed by EPA for complex modeling. The EFDC model is a general-purpose modeling package for simulating 3D flow, transport, and biogeochemical processes in surface water systems. In addition to hydrodynamic, salinity, and temperature transport simulation capabilities, EFDC includes sub-models to simulate sediment transport and the transport and fate of toxic contaminants in the water and sediment bed.

The EFDC model of Upper Cook Inlet was developed to investigate the physical processes, sediment dynamics, and concentrations of pollutants of concern at distances from the AWPCF outfall in Upper Cook Inlet. The model quantified exposure concentrations of effluent-derived constituents from the AWPCF discharge. The model simulated hydrodynamic and transport processes based on the following factors: tidal forcing, water column density effects, wind-generated currents, inflow from major rivers, effluent

loading from the AWPCF, and open water and iced-over conditions. Figure IIIA-12 illustrates the EFDC model grid setup in Upper Cook Inlet. The modeling approach used to address the winter "ice" condition was to turn off surface wind-forcing for the area of the model expected to be frozen over. This approach removed any wind-driven currents and mixing during the winter period (November to March) to provide a conservative representation of winter "ice" conditions in upper Cook Inlet and Knik Arm.

The transport and distribution of whole effluent was simulated in the model using a dye-tracer as a surrogate. The concentrations of individual effluent constituents were represented by the dye-tracer concentrations at any point in space and time and the known or assumed concentrations of individual constituents in the AWPCF whole effluent. Model simulations were conducted for the following three representative categories: conservative substances (no degradation of the dye tracer), slowly degrading substances (half-life of the dye tracer = 150 days), and rapidly degrading substances (half-life of the dye tracer = 7 days).

To address the effluent-derived constituents that are bound to effluent-derived suspended solids (those with high octanol-water coefficients), the transport, distribution, and settling of effluent-derived suspended solids were simulated by the model. It was assumed that those constituents with high octanol-water coefficients (greater than 10^5) would be directly associated with the suspended solids. Sediment grain size distribution and loadings were based on available data and known characteristics of typical wastewater effluent. Effluent-derived sediment accumulation was estimated based on modeled sedimentation rates.

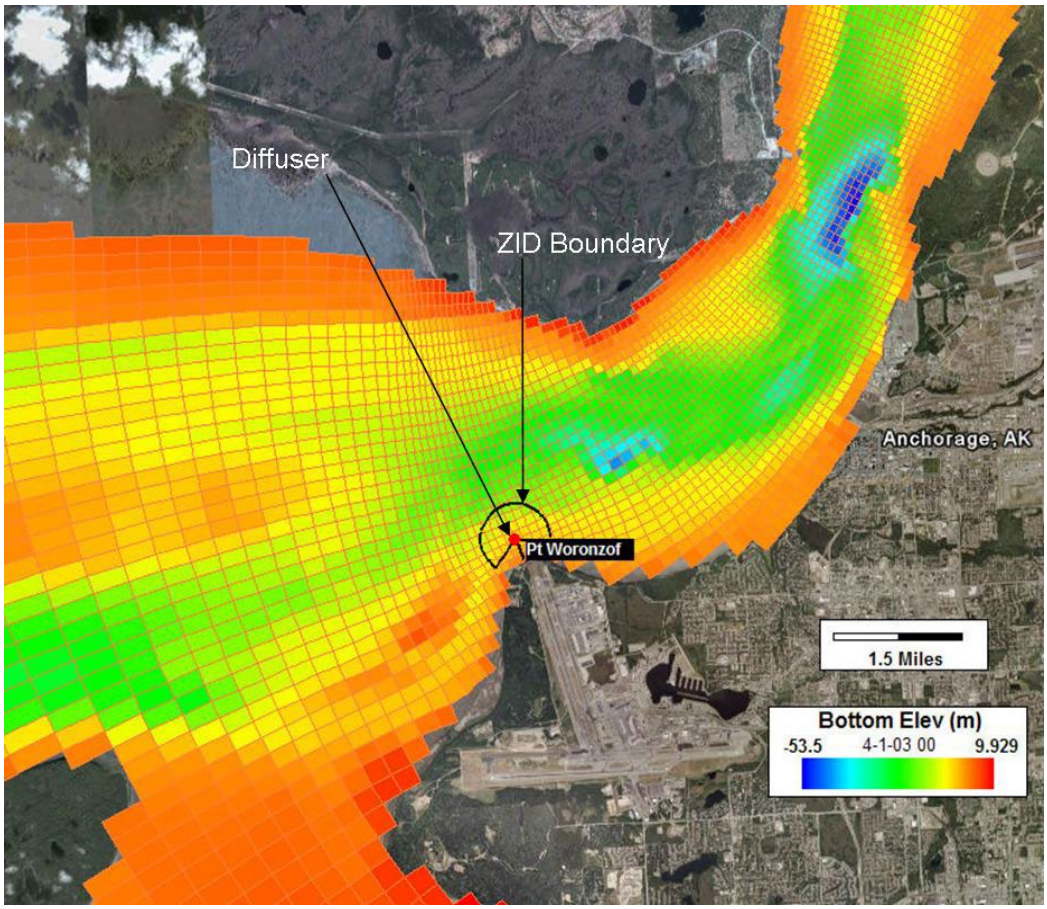


Figure IIIA-12. EFDC Model Grid and Bathymetry Around AWPCF Outfall in Upper Cook Inlet showing original 650m ZID Boundary

Figure IIIA-13 illustrates model-calculated dye-tracer concentrations (as hourly snapshots) with no degradation applied in the three model regions (Upper Cook Inlet, Knik Arm, and Turnagain Arm) throughout the year of modeling. The dye concentrations in the plot are easily converted to dilutions and concentrations of effluent constituents. The dye-tracer concentration assumed in the AWPCF effluent discharge was 1 mg/L, and therefore, the effluent dilution is the reciprocal of the receiving water dye-tracer concentration. For example, a dye-tracer concentration of 0.0001 represents an effluent dilution of 10,000:1, and a dye-tracer concentration of 0.0008 represents an effluent dilution of 1,250:1. The initial dilution input to the model cell at the AWPCF outfall applied an initial dilution factor of 142. Based on the updated initial dilution modeling using the CORMIX-1 model and current effluent flows and measured ambient current velocities, the updated average dilution of is 156 at 350m under maximum month effluent flow, 50th-percentile ambient current speed, and ebb and flood tide conditions, Model-predicted dilutions in the hydrodynamic model were not changed in the 2025 Biological Evaluation. These model-predicted farfield dilutions produced by the hydrodynamic model represent dynamic steady-state dilution of the effluent in the water column that includes any potential buildup of effluent that is not immediately flushed from the water body on ebb tides. The concentration of any effluent constituent in the receiving water is the initial whole effluent concentration divided by the dilution (or times the dye-tracer concentration).

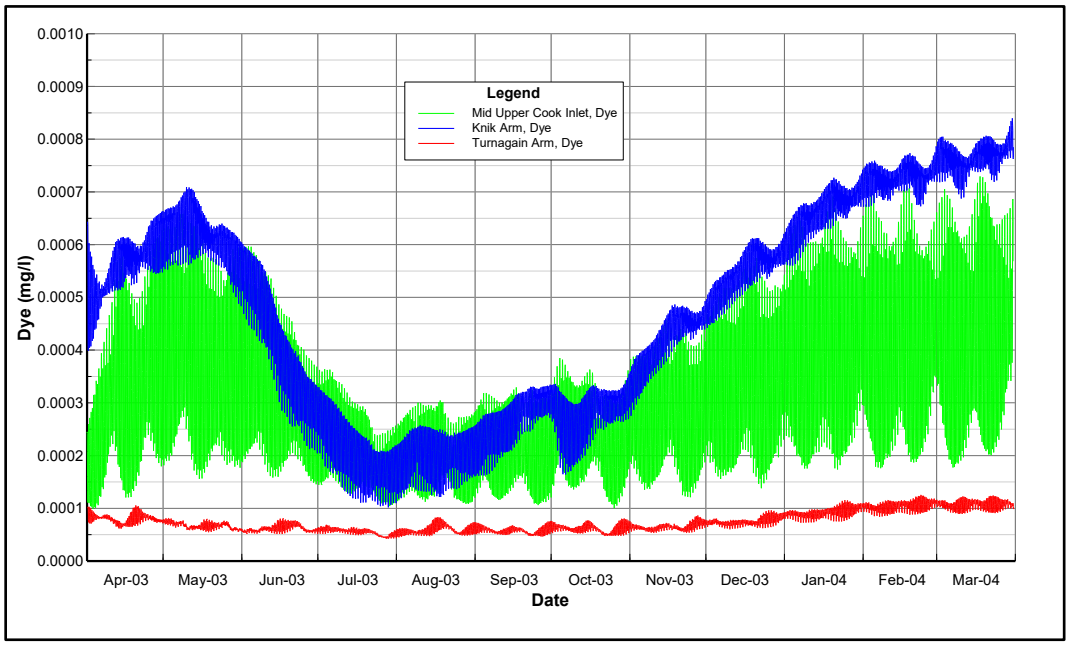


Figure IIIA-13. Dye Concentration Time Series based on Hourly Snapshots for Each Region in Upper Cook Inlet with No Degradation

The model-calculated dye concentrations shown on Figure IIIA-13 illustrates the dye-tracer concentrations range from highest concentrations in Knik Arm, to lower values in Mid-Upper Cook Inlet, and the lowest values in Turnagain Arm. This plot also shows the seasonal pattern in concentrations with the lowest values in the summer-fall when freshwater runoff is greatest and the highest values in the winter-spring when freshwater runoff is limited and surface ice cover can persist. The highest dye-tracer concentration of 0.0008 in Knik Arm in winter equals an effluent dilution of 1,250:1,

and the highest dye-tracer concentration of 0.00035 in Upper Cook Inlet and Knik Arm in fall equals an effluent dilution of 2,850:1. Applying these model-predicted dilutions to AWPCF effluent concentrations results in very low or undetectable concentrations. For example, a dissolved effluent copper concentration of 60.8 ug/L (the maximum recorded), a background dissolved copper concentration of 1.53 µg/L (85th percentile measured values), and an effluent dilution of 1,250:1 yields a dissolved copper concentration of 1.58 µg/L, which is 0.05 µg/L above the background dissolved copper concentration.

The dye concentration time series in Figure IIIA-13 illustrates model-predicted higher concentrations during the winter months due to the surface ice cover reducing mixing, and the concentrations decline after surface ice cover breaks up in April-May.

The hydrodynamic modeling development and findings are summarized as follows:

- The 3D hydrodynamic/transport model (EFDC) was developed for Upper Cook Inlet and calibrated using water levels recorded at the Port of Anchorage NOAA gauge, current velocities recorded by five ADCP current meter stations in Upper Cook Inlet, and temperature records from the Port of Anchorage NOAA gauge.
- The model calibrations demonstrate that the model simulations are realistic and accurate, and model simulations reproduce the circulation and transport patterns of Upper Cook Inlet and provide a sound technical basis to evaluate the transport and distribution of AWPCF discharge constituents in the modeled area.
- The model results clearly show the geographic and seasonal variability of effluent distribution, and the effects of degradation on the distribution of effluent constituents were clearly demonstrated.
- The model-predicted dye-tracer average dilutions of whole effluent over the Upper Cook Inlet regions range from over 1,000:1 to approximately 20,000:1 for conservative substances that do not degrade rapidly with time.
- Effluent-derived suspended solids concentrations are more than six orders of magnitude smaller than the concentration of natural sediments, and the deposition of effluent-derived sediments occur in only very limited areas and comprise an extremely small fraction of the total sediment deposits. (Refer to Question 5 answer in this section for details.)

7. Will there be significant sedimentation of suspended solids in the vicinity of the modified discharge?

No. Refer to the analysis under Question 5.

8. Sedimentation of suspended solids

a. What fraction of the modified discharge's suspended solids will accumulate within the vicinity of the modified discharge?

As explained in the responses to Questions III.B and III.E, no seabed accumulation of suspended sediments (either natural or from the AWPCF outfall discharge) occurs on the seabed surrounding the AWPCF outfall because of the extremely high tidal currents and coarse seabed materials. The seabed within the ZID is composed of coarse gravel, cobble, rocks, and boulders (refer to Figure IIIA-14). The seabed bathymetry image clearly shows rock ridges that are oriented north-south offshore of Point Woronzof, as well as exposed power and communication cables.

A detailed bathymetric survey was conducted in July 2022 within an approximately 1,400-meter radius of the AWPCF outfall turret. Figure IIIA-14 provides an excerpt of the bathymetric map showing the location of the AWPCF outfall and seabed features. The complete detailed bathymetry chart and technical memorandum prepared by Benthic GeoScience are provided in Appendix C of the *Outfall Mixing Zone Study Update for the Asplund Water Pollution Control Facility* (Jacobs 2024).

On the high-energy gravel cobble beaches, such as at Point Woronzof, deposition of a thin layer of suspended solids (silt) may occur on retreating tides, and then this layer is swept away by high currents during the next rising or falling tide, leaving no permanent accumulation.

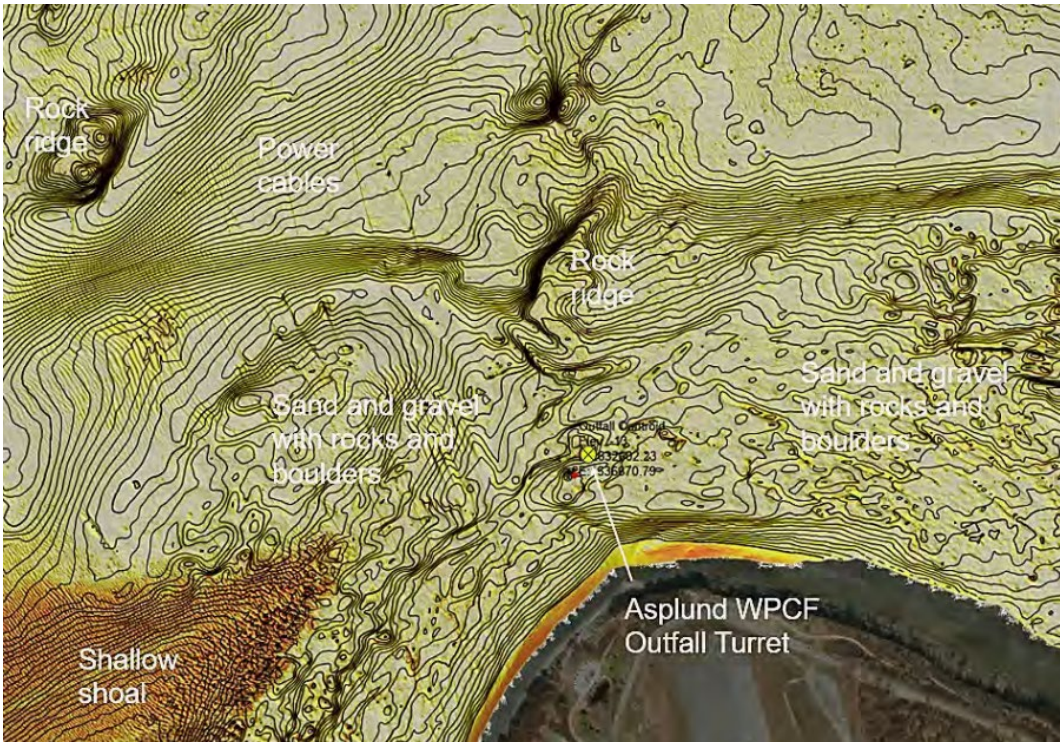


Figure IIIA-14. Bathymetry and Seabed Features Offshore of Point Woronzof and Surrounding the AWPCF Outfall

Source: Benthic GeoScience, Inc. 2022

Sediment monitoring was performed by Kinnetic Laboratories, Inc. in 2003 as a part of the annual AWPCF NPDES monitoring program (KLI 2004). Because of the coarse cobble substrate at subtidal stations, van Veen grab samples could not be obtained. A pipe dredge was utilized to sample these stations and sediment samples of gravel and cobble substrate were only subject to gross grain size distribution analysis. Intertidal sediment sample analyses showed no evidence of outfall impacts in chemistry. Data from the AWPCF outfall region and control sites at Point MacKenzie (across the inlet) showed similar physical and chemical results. Subtidal surface sediment samples from both the AWPCF outfall vicinity and the control site consist of only cobbles.

b. What are the calculated areas(s) and rate(s) of sediment accumulation within the vicinity of the modified discharge(s) (g/m^2/yr)?

Based upon field observations of sediment samples collected within and near the AWPCF outfall ZID, there is no accumulation of discharged sediments within the AWPCF ZID or

adjacent seabed region because of the extremely high tidal currents. Observed bed materials consist of very coarse material inconsistent with the effluent discharge.

c. What is the fate of settleable solids transported beyond the calculated sediment accumulation area?

Settleable solids transported beyond the ZID and outfall discharge vicinity are transported into lower Cook Inlet and the Gulf of Alaska, and some may settle in localized intertidal mudflats until resuspension by tidal currents. Intertidal mudflats are located northeast of the outfall in Bootlegger Cove, southwest between Fire Island and Point Woronzof, and northwest in the Susitna River flats. Additional mudflats occur in upper Knik Arm north of Cairn Point.

Upper Cook Inlet receives freshwater and suspended sediment from the Matanuska and Knik Rivers at the head of Knik Arm and the Susitna and Beluga Rivers to the northwest of Upper Cook Inlet. The combined flow of these rivers supplies about 70% to 80% of the freshwater input and 75% to 90% of the suspended-sediment input to Upper Cook Inlet. Total suspended sediments concentrations measured in from water column sampling in Upper Cook Inlet between the Forelands and Point Woronzof ranged from 92 to 440 mg/L (Segar 1995). Further, the annual receiving water monitoring program conducted by AWWU in Upper Cook Inlet records turbidity measurements and these turbidity values range from 50 to over 700 nephelometric turbidity units due to the total suspended solids load in the water column.

The magnitude of the AWPCF discharged suspended-sediment load when compared to the natural sediment load in Upper Cook Inlet can be assessed by considering the sediment loads discharged from the Knik and Matanuska Rivers. The AWPCF effluent annual average total suspended solids discharge is limited to 100 mg/L at a flow of 2.5 m^3/sec (58 mgd). The annual averages for the Knik and Matanuska Rivers are 1,115 mg/L at 70,299 m^3/sec (1.6 mgd) and 1,698 mg/L at 40,351 m^3/sec (920,000 mgd), respectively. The natural input of suspended sediments is approximately 10,000 times greater than suspended sediments discharged from the AWPCF outfall. This comparison does not include the suspended sediments input from the Susitna and Beluga Rivers, located nearby and west of Point Woronzof. Upper Cook Inlet receives freshwater and suspended sediment from the Matanuska and Knik Rivers at the head of Knik Arm and the Susitna and Beluga Rivers to the northwest.

For Cook Inlet in general most of the fine-grain sediment entering the inlet is transported out and deposited in Shelikof Strait in Lower Cook Inlet. Some sediment accumulation also occurs in Kachemak and Kamishak Bays. These areas are more than 170 km (100 miles) south of Point Woronzof.

Depositional regimes exist in the quiescent boundary regions of the turbulent flows of the inlet itself. Any settleable solids of effluent origin would be diluted by the much larger natural load in the receiving water (250 to 2,480 mg/L ambient versus less than 100 mg/L effluent) in addition to the dilution ratio (effluent to receiving water) provided by the AWPCF outfall diffuser.

An estimate of the contribution of sediment to depositional areas such as Bootlegger Cove (northeast of Point Woronzof) was based on the equation made using several worst-case assumptions. The estimate was based on the following equation:

$$\% SSeo = (SSeo / (SSa + SSeo)) \times 100$$

Where:

% SSeo = percent of suspended sediment of effluent origin

SSeo = suspended sediment originating from effluent, as determined by the effluent sediment concentration divided by farfield dilution

where effluent sediment concentration =52 mg/L (monthly average maximum) and farfield dilution in Bootlegger Cove equals 500 to 700, based on low runoff conditions:

SSa = ambient sediment concentration (minimum= 240 mg/L)

Based on this approach, the percent of suspended sediment of effluent origin would be less than 0.03% to 0.04% reaching the intertidal sediments in Bootlegger Cove (located northeast of Point Woronzof). This is a negligible contribution under a worst-case condition. An even smaller percentage of deposited sediment would be of effluent origin since ambient sediments are of a larger diameter and settle more readily.

Another method applied to evaluate effluent-derived sediments transport and distribution was sediment modeling of the Upper Cook Inlet using the EFDC model. This model was used to assess sediment influx from the rivers and the AWPCF effluent, sediment deposition/resuspension, and suspended-sediment advection/diffusion. The initial condition for sediment beds were set to zero and bedload transport was not simulated. The objective of the sediment transport modeling was to obtain reasonable TSS concentrations and behavior.

Figure IIIA-15 shows a time series of the computed TSS concentrations near the AWPCF outfall during the year of model simulation, based on river sources input. The range of TSS values is consistent with historical discrete water column samples of TSS in Upper Cook Inlet, which range from a few hundred mg/L to more than 4,000 mg/L. The simulated values are in overall agreement with the historical observations.

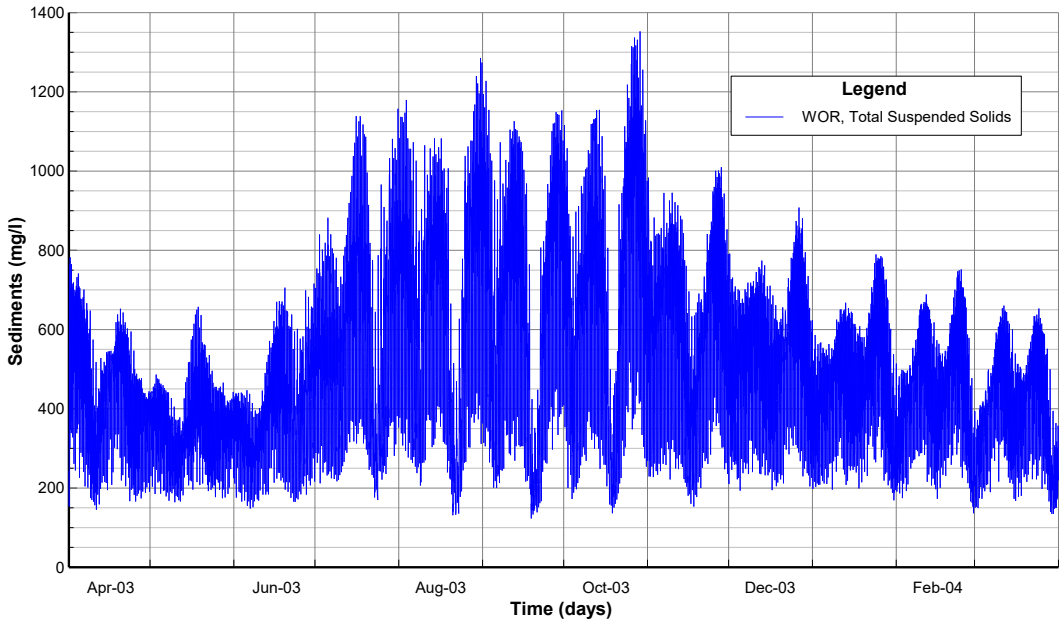


Figure IIIA-15. Computed Ambient Total Suspended Sediments in the Vicinity of the AWPCF Outfall at Point Woronzof

The TSS concentrations for the AWPCF sediment classes (TSS_{AWWU}) for the three model regions in Upper Cook Inlet are plotted on Figure IIIA-16. The figure clearly shows that the AWWU fraction of solids in Upper Cook Inlet is well below 1/10,000 of the total solids in the water column.

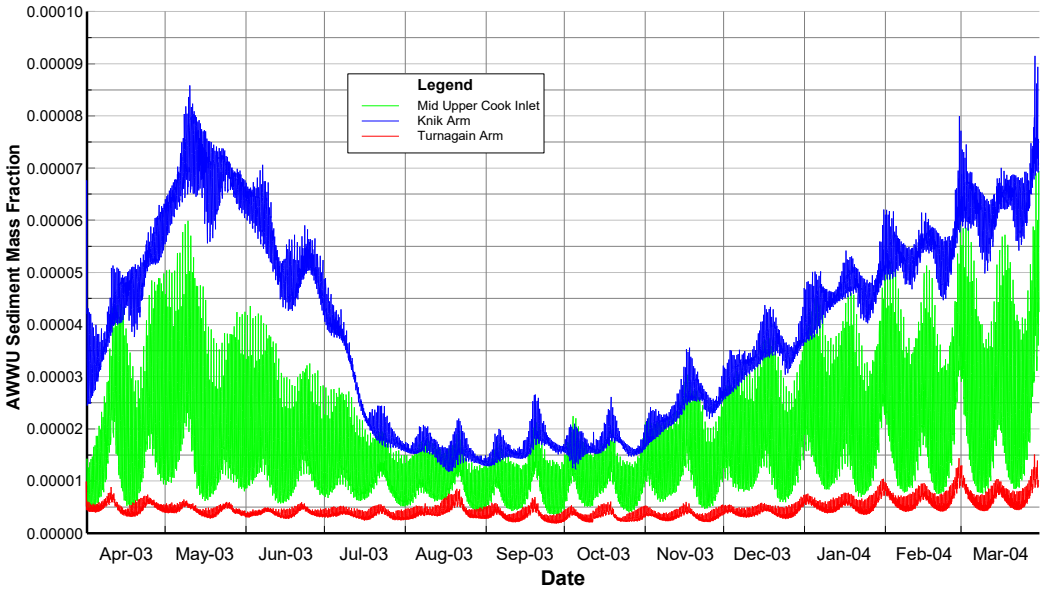


Figure IIIA-16. Time Series of AWPCF Suspended Sediments Mass Fraction in Each Region in Upper Cook Inlet

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III.B. Compliance with Applicable Water Quality Standards

The model-predicted minimum dilutions under defined critical discharge conditions at the recommended revised ZID distance of 350 meters are 109 (flood) and 136 (ebb) in the dry season and 122 (flood) and 155 (ebb) in the wet season. The model-predicted minimum dilutions for chronic aquatic life criteria conditions are 169 in dry season and 195 in wet season, and model-predicted minimum dilutions for human health criteria at the revised ZID (350 meters) are 240 (dry season) and 273 (wet season), as provided in the *Outfall Mixing Zone Study Update for the Asplund Water Pollution Control Facilit*y (Jacobs 2024). Refer to Section IIA.4 in this Large Questionnaire.

A minimum critical initial dilution of 109 has been applied in the following evaluations of BOD/dissolved oxygen, fecal coliforms, and total chlorine residual.

1. What is concentration of dissolved oxygen immediately following initial dilution for the period(s) of maximum stratification and any other critical period(s) of discharge volume/composition, water quality, biological seasons, or oceanographic conditions?

The critical period for the AWPCF discharge site is the ice-free summer season. During this period, dissolved oxygen is lowest due to higher ambient water temperatures and biological activity.

The dissolved oxygen concentration following initial dilution can be calculated using the formula provided in EPA's Revised Section 301 (h) Technical Support Document (EPA, 1982):

$$DO_f = DO_a + \frac{DO_e - IDOD - DO_a}{S_a}$$

Where:

DO_f = dissolved oxygen concentration following initial dilution, mg/L

DO_a = ambient dissolved oxygen concentration, mg/L

DO_e = effluent dissolved oxygen concentration, mg/L

IDOD = immediate dissolved oxygen demand, mg/L

S_a = minimum initial dilution

The following input was used in this calculation:

DO_a = 8.18 mg/L

DO_e = 0.0 mg/L

IDOD = 5.0 mg/L

S_a = 109

Therefore:

$$DO_f = 8.18 + \frac{(0.0 - 5.0 - 8.18)}{109} = 8.06\ mg/L$$

The DO_a is the minimum dissolved oxygen concentration measured in the vicinity of the outfall, based on the 2019 to 2023 Monitoring Program Annual Reports. The DO_e value of 0.0 mg/L shows the effect of the worst possible case effluent with no dissolved oxygen. The IDOD number was chosen based on values suggested by the Technical Support

Document (EPA 1991). This calculation results in a DO_f of 8.06 mg/L, which represents a calculated dissolved oxygen depression of 1.5%, compared to an ambient concentration of 8.18 mg/L. Because the effluent always has some dissolved oxygen concentration, the actual impact would be less.

2. What is the farfield dissolved oxygen depression and resulting concentration due to BOD exertion of the wastefield during the period(s) of maximum stratification and any other critical other critical period(s)?

The simplified farfield oxygen depletion model described by the Technical Support Document (EPA 1991) was designed to evaluate farfield dissolved oxygen depression resulting from wastewater BOD. The maximum monthly average BOD_5 concentration is 189 mg/L, based on the 2019 to 2023 Discharge Monitoring Reports (DMRs). This can be converted to an ultimate BOD of 278 mg/L. Following an initial dilution of 109, the ultimate BOD concentration above ambient is 2.55 mg/L. Stepwise dissolved oxygen depletion was evaluated using the following formula provided in EPA's Revised Section 301 (h) Technical Support Document (EPA, 1982):

$$DO(t) = DO_a + \frac{DO_f - DO_a}{D_s} - \frac{L_{fc}}{D_s}[1 - \exp(-k_c t)]$$

Where:

DO(t) = wastefield dissolved oxygen concentration at time t, mg/L

DO_a = ambient dissolved oxygen concentration, mg/L

DO_f = dissolved oxygen concentration at the completion of initial dilution, mg/L

D_s = dilution attained after initial dilution as a function of travel time

L_{fc} = ultimate BOD above ambient at completion of initial dilution, mg/L

k_c = BOD decay rate per day

t = time, days

The BOD decay rate depends on temperature, as follows:

$$kc = 0.23 \times 1.047^{T-20}$$

Where:

T = receiving water temperature, °C

The average summertime receiving water temperature is 13°C, based on the 2019 to 2023 Monitoring Program Annual Reports. At that temperature, kc equals 0.167. Figure IIIB-1 shows the farfield dissolved oxygen depletion due to wastewater BOD exertion. The maximum DO depression due to the AWPCF discharge is 0.005 mg/L. This results in a dissolved oxygen depression of less than 1% compared to an ambient concentration of 8.18 mg/L. Farfield dilution is sufficiently high to prevent any further dissolved oxygen depression caused by BOD exertion.

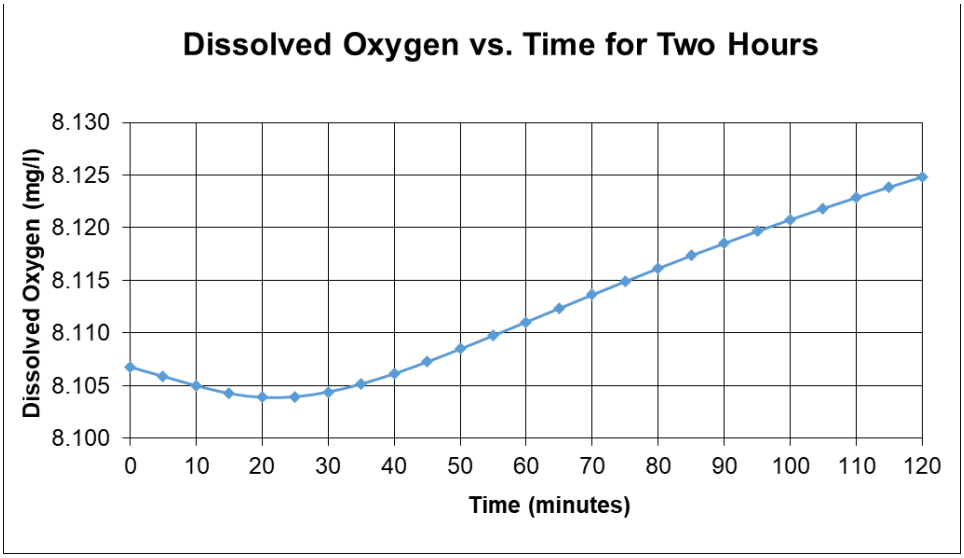


Figure IIIB-1. Farfield Dissolved Oxygen Depression Caused by Wastewater BOD Exertion

3. What are the dissolved oxygen depressions and resulting concentrations near the bottom due to steady sediment demand and resuspension of sediments?

Refer to the response to Question II.B.7. Because of the rapid currents and coarse seabed sediments in the vicinity of the AWPCF outfall off Point Woronzof, effluent settleable solids have not been shown to settle in the vicinity of the diffuser and the existing sediments consist of large gravel and cobble with very low organic content. No dissolved oxygen depression resulting from sediment demand and resuspension of sediments is expected.

4. What is the increase in receiving water suspended solids concentration immediately following initial dilution of the modified discharge(s)?

The following formula provided in EPA's Revised Section 301 (h) Technical Support Document (EPA, 1982) was used to estimate the change in receiving water suspended solids at the ZID from the AWPCF discharge:

$$SS_f = SS_a + (SS_e - SS_a)/S_e$$

Where:

SS_f = suspended solids concentration at the completion of initial dilution, mg/L

SS_a = ambient suspended solids concentration, mg/L

SS_e = effluent suspended solids concentration, mg/L

S_e = critical initial dilution (109)

The suspended solids concentration in Upper Cook Inlet varies from 68 to 1,490 mg/L. The maximum monthly average effluent suspended solids concentration is 79 mg/L, based on the 2019 to 2023 DMRs. Suspended solids concentration at the completion of initial dilution will therefore vary from 69 to 1,490 mg/L. Effluent suspended solids discharges into Upper Cook Inlet do not result in changes in detectable the suspended solids concentration of the receiving water.

5. What is the change in receiving water pH immediately following initial dilution of the modified discharge(s)?

Changes in the receiving water pH caused by the effluent discharge can be evaluated using a mass balance equation and Table VI-1 in EPA's Technical Support Document (EPA 1991). From 2019 to 2023, background receiving water pH in the vicinity of the outfall ranged from 7.8 to 8.0. During that 5-year period, effluent pH ranged from 6.6 (minimum) to 8.48 (maximum), with a mean pH of 7.2. The greatest potential impact on the receiving water pH would occur when effluent pH is 6.6. At this pH the assumed effluent alkalinity is 0.5 milliequivalents per liter (meq/L).

Table IIIB-1 shows the expected receiving water pH for two receiving water temperatures after application of critical initial dilution of 109 and an effluent pH of 6.5.

Table IIIB-1. Expected Receiving Water pH

Seawater pH	Effluent pH	Receiving Water pH After Initial Dilution	
		5°C	15°C
7.5	6.6	7.49	7.49
7.7	6.6	7.69	7.69
8.0	6.6	7.99	7.99
8.3	6.6	8.28	8.28

Source: EPA 1991, Table VI-1

The maximum change estimated under these conditions is 0.01 pH unit. Upper Cook Inlet temperature can be as low as -1°C and alkalinity is generally less than 2.3 mg/L, conditions not covered by the Technical Support Document. Both of these conditions would increase the pH change in the receiving water. Counteracting this increase is the initial dilution of 109, a condition also not covered by the Technical Support Document (EPA 1991), which would tend to decrease pH change. Total pH change is expected to be less than 0.01 pH unit.

6. Does (will) the modified discharge comply with applicable water quality standards for:

a. Dissolved oxygen?

Yes. The Alaska dissolved oxygen criteria are contained in the Dissolved Gas section of the Alaska Water Quality Standards (AWQS). The criteria require that dissolved oxygen not be depressed to less than 5.0 mg/L or elevated above 110% of saturation. Dissolved oxygen in Upper Cook Inlet is kept near saturation by the swift current and rapid mixing. The analysis of the effect of BOD from the AWPCF discharge on dissolved oxygen in the receiving water is presented in Section III.B.1. The analysis showed that the maximum dissolved oxygen deficit caused by the discharge is expected to be less than 0.13 mg/L. This impact is not expected to cause a violation of the water quality criteria. Receiving water monitoring has also shown no impact of the discharge on dissolved oxygen concentration.

b. Suspended solids or surrogate standards?

Yes. The AWQS surrogate for suspended solids is turbidity. The site-specific water quality criterion requires that the discharge not cause the turbidity to exceed the natural condition of Cook Inlet. As shown in the analysis presented in Section III.B.4, the effluent has less suspended solids than the receiving water so it is expected that the discharge will decrease receiving water turbidity in the mixing discharge plume. The discharge would

therefore also be expected to increase the Secchi depth and increase the depth of the photic zone. The discharge is not expected to cause a violation of the water quality criteria. Receiving water monitoring has also shown no impact of the discharge on turbidity.

c. pH?

Yes. The AWQS require that pH may not be less than 6.5 or greater than 8.5 and may not vary more than 0.2 pH unit from natural conditions. The analysis of the effect of the AWPCF discharge on receiving water pH is presented in Section III.B.5. The analysis showed that the maximum pH change caused by the discharge is expected to be 0.01 pH unit. This impact is not expected to cause a violation of the water quality criteria. Receiving water monitoring has also shown no impact of the AWPCF discharge on pH.

7. Provide data to demonstrate that all applicable State water quality standards, and all applicable water quality criteria established under Section 304(a)(1) of the Clean Water Act for which there are no directly corresponding numerical applicable water quality standards approved by EPA, are met at and beyond the boundary of the ZID under critical environmental and treatment plant conditions in the waters surrounding or adjacent to the point at which your effluent is discharged. [40 CFR 125.62(a)(1)]

Fecal Coliforms

The current NPDES permit has the following limits for fecal coliforms (FC):

- Monthly geometric mean of at least five samples shall not exceed 850 FC/100 milliliters.
- Not more than 10% of samples shall exceed 2,600 most probable number (MPN)/100 milliliters.

From 2019 to 2023, effluent FC concentrations were substantially below the NPDES permit limits; monthly geometric means ranged from 2 to 49 FC/100 mL based on the 2019 to 2023 DMRs. The plant also consistently met the requirement that no more than 10% of samples shall exceed 2,600 MPN/100 mL. The AWPCF effluent is disinfected prior to discharge.

The AWQS state that FC concentrations at the receiving water may not exceed a geometric mean of 14 FC/100 mL and not more than 10% of samples may exceed 43 MPN/100 mL (for a five-tube decimal dilution test). FC concentrations have been consistently below the AWQS at and beyond the boundary of the ZID, based on the 2019 to 2023 Monitoring Program Annual Reports. FC concentrations at the intertidal area were also below the AWQS during this period, according to the 2019 to 2023 Monitoring Program Annual Reports. The AWPCF discharge will continue to comply with AWQS for FC with the revised ZID (350 meters) and revised CID (109) as a result of the effluent disinfection performance.

The Recreational Water Quality Criteria recommend an enterococcus geometric mean limit of 35 colony-forming units (CFUs)/100 mL for the estimated illness rate of 36 per 1,000 primary contact recreators and 30 CFU/100 mL for the estimated illness rate of 32 per 1,000 primary contact recreators (EPA 2022). This results in effluent discharge limits of 6,300 CFU/100 mL and 5,400 CFU/100 mL, respectively. The current NPDES permit does not have an enterococcus limit; however, the effluent is monitored twice a year. The discharge is not expected to exceed the recommended enterococcus criteria based on the 2019 to 2023 Monitoring Program Annual Reports.

Temperature

The AWQS state that temperature at the receiving water may not exceed 15°C and that a discharge may not cause the weekly average temperature to increase more than 1°C. Based on the 2019 to 2023 Monitoring Program Annual Reports, monthly average effluent temperatures ranged from 10°C to 17°C and receiving water temperatures, collected annually during the summer, ranged from 10°C to 15°C.

After initial dilution, the receiving water temperatures would be changed by less than 0.1°C. The discharge will not cause a violation of the water quality criteria. Receiving water monitoring has also shown no impact on temperature.

Dissolved Inorganic Substances

From 2019 to 2023, receiving water salinity ranged from 9 parts per trillion (ppt) to 13 ppt based on the Monitoring Program Annual Reports. The AWQS state that human-induced variation above natural water salinity (between 3.5 ppt and 13.5 ppt) shall not exceed 2 ppt. With an effluent salinity of 0 ppt, the change in receiving water salinity after initial dilution is expected to be less than 1%. The discharge is not expected to cause a violation of the water quality criteria. Receiving water monitoring has also shown no impact of the discharge on salinity.

Sediment

The AWQS states that sediment concentrations shall not exceed natural conditions. As explained in the analysis of compliance with the turbidity criteria, the discharge does not increase suspended solids in the receiving water. The settling rate of suspended solids in the effluent is also lower than the settling rate of the naturally occurring receiving water suspended solids, and the ambient current velocities at the outfall discharge site do not allow for settlement of suspended solids. The discharge will not cause an increase in the concentration of settleable solids. Therefore, it is not expected to cause a violation of water quality criteria. Settleable solids are not routinely measured as part of the receiving water monitoring.

Toxics and Other Deleterious Organic and Inorganic Substances

For this analysis, toxics and deleterious substances are divided into three groups: metals, total residual chlorine, and other inorganic and organic compounds.

Metals

The AWQS include site-specific criteria for the dissolved fraction of the following metals: arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc (Table IIIB-2). Effluent metals concentrations at the ZID following initial dilution (109) were determined based on the maximum effluent (total recoverable) concentrations reported from 2017 to 2023, based on the AWWU Monitoring Program Annual Reports. The AWWU Monitoring Program also samples and analyzes dissolved metals in background receiving water collected at the control sites off Point McKenzie. The mixed concentrations of the maximum effluent total recoverable metals concentrations with dissolved metals in background receiving water are calculated in Table IIIB-2. These mixed metals concentrations at the ZID are all below the site-specific dissolved metals criteria.

Additionally, receiving water monitoring has also shown that concentrations have been consistently below the AWQS at and beyond the boundary of the ZID, as reported in the

2019 to 2023 Monitoring Program Annual Reports. The discharge has not shown and is not expected to cause a violation of the AWQS.

Table IIIB-2. Dissolved Metals

Dissolved Metals	Maximum Effluent Concentration (µg/L)	Receiving Water Dissolved Concentration[a] (µg/L)	Concentration After Initial Dilution (µg/L)	Acute AWQ Criteria (µg/L) [c]	Chronic AWQ Criteria (µg/L) [c]
Arsenic	2.74	1.77	1.78	69	36
Cadmium	0.18	0.08	0.08	42	9.3
Chromium VI	3.63	0.17	0.2	1,100	50
Copper	41.8	2.13	2.5	4.8	3.1
Lead	1.54	0.05	0.06	210	8.1
Mercury	0.0531	0.004	0.0045	1.8	0.025
Nickel	9.49	1.33	1.4	74	8.2
Selenium	0.8	1.0[b]	1.0	290	71
Silver	0.231	0.05	0.05	1.9	-
Zinc	165	2.09	3.6	90	81

[a] 85% receiving water concentrations of dissolved metals measured at background control sites.
[b] No receiving water data for selenium and method detection limit assumed for receiving water data.
[c] Site Specific Criteria for Cook Inlet
NM = not monitored

Total Residual Chlorine

The current NPDES permit has a daily maximum total residual chlorine (TRC) limit of 1.2 mg/L. In March 2020, AWPCF modified the chlorine disinfection system to lower the chlorine dosing while maintaining the effective disinfection of bacteria to meet effluent bacteria limits. Effluent TRC concentrations from March 2020 through 2024 show TRC values below the NPDES permit limit and the maximum TRC value was 0.81 mg/L. The AWQS states that TRC at the receiving water may not exceed a 1-hour average acute limit of 0.013 mg/L and a 4-day average chronic limit of 0.0075 mg/L. After initial dilution (109), TRC concentrations at the ZID are less than 0.007 mg/L, without including TRC degradation or conversions to brominate compounds in seawater.

Receiving water monitoring from 2019 to 2023 show that TRC concentrations at and beyond the boundary of ZID were below the minimum detection limit (MDL) of 0.010 mg/L. The lowest achievable TRC MDL in seawater is above the chronic criteria due to seawater matrix interferences for TRC analysis. Lower TRC measurements at the ZID are not possible due to the elevated suspended solids concentrations and turbidity interferences.

The discharge of chlorinated wastewater into seawater results in immediate chemical changes because of the relatively high concentrations of bromide naturally present in seawater compared to the amount of chlorine. At pH 8, the addition of chlorine to seawater results in the rapid formation of hypobromous acid in equilibrium with hypobromite ions and all the chlorine would be reduced to chloride ions (British Columbia Ministry of Environment and Climate Change Strategy (MECCS), 2021). Chlorine can also react with both inorganic and organic materials in seawater. By-products of chlorine disinfection of wastewater include trihalomethanes and haloacetic acids. The AWPCF effluent is sampled and tested for volatile organic chemicals including trihalomethanes and haloacetic acids. Effluent chemistry results during 2019-2023 detected chloroform (2.7 ug/L maximum) and chloromethane (0.75 ug/L maximum), and no other trihalomethanes

or haloacetic acids chemicals were detected in AWPCF effluent. The effluent samples are collected from the final effluent sample line pumped from the outfall tunnel sampling point back to the AWPCF and this sample point is representative of chlorine contact time in the outfall to the AWPCF outfall discharge.

The Whole Effluent Toxicity (WET) testing of AWPCF effluent provides a direct means of evaluating potential toxicity of the chlorinated AWPCF effluent. AWWU conducts quarterly WET testing of AWPCF effluent in accordance with the current NPDES permit. These quarterly WET tests have demonstrated continued compliance with the permit WET toxicity limit of ≤ 143 TUc (toxicity units concentration). A following subsection in this Section IIIB.7 provides detailed results of the WET tests of AWPCF effluent performed in 2019 through 2023.

Other Inorganic and Organic Compounds

The *Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances* (2022) includes water quality criteria for toxics and other deleterious substances. Table IIIB-3 shows the maximum effluent concentrations for detected priority pollutants based on the 2019 to 2023 Monitoring Program Annual Reports. All concentrations after initial dilution (109) are well below the most stringent water quality criteria (WQC) for all pollutants. Additionally, receiving water concentrations at and beyond the boundary ZID were below the WQCs. The discharge is not expected to cause a violation of WQS.

Table IIIB-3. Comparison of Other Inorganic and Organic Substances in AWPCF Effluent (2019-2023) with Water Quality Criteria (µg/L)

Pollutant	Maximum Effluent Conc.	Maximum Receiving Water Conc.[a]	Concentration After Initial Dilution (µg/L)	Most Stringent Aquatic Life Criteria	AK Human Health Criteria (Aquatic Organisms)
1,4-Dichlorobenzene	0.75	ND	0.006		2600
1,6,7-Trimethylnaphthalene	0.052	0.005	0.005		
1-Methyldibenzothiophene	0.016	0.000	0.0001		
1-Methylfluorene	0.023	0.004	0.004		
1-Methylnaphthalene	0.427	0.030	0.034		
1-Methylphenanthrene	0.021	0.006	0.006		
2,4,6-Trichlorophenol	1.2	ND	0.011		9800
2,6-Dimethylnaphthalene	0.344	0.014	0.017		
2,3-Methyl dibenzothiophene	0.014	0.001	0.001		
2-Butanone (MEK)	24	ND	0.22		
2-Hexanone	5.7	ND	0.05		
2-Methylanthracene	0.007	0.001	0.001		
2-Methylfluoranthene	0.010	0.001	0.001		

Pollutant	Maximum Effluent Conc.	Maximum Receiving Water Conc.[a]	Concentration After Initial Dilution (µg/L)	Most Stringent Aquatic Life Criteria	AK Human Health Criteria (Aquatic Organisms)
2-Methylnaphthalene	0.541	0.047	0.052		
2-Methylphenanthrene	0.039	0.006	0.006		
3,6-Dimethylphenanthrene	0.011	0.001	0.001		
3-Methylphenanthrene	0.045	0.005	0.005		
4,4'-DDD	0.021	ND	0.0002	0.001	
4,9-Methylphenanthrene	0.026	0.005	0.005		
4-Methyl dibenzothiophene	0.013	0.001	0.001		
Acenaphthene	0.082	0.003	0.003		2700
Acenaphthylene	0.012	0.060	0.06		
Acetone	270	ND	2.5		
Acrolein	1.3	ND	0.012		780
Aldrin	0.0068	ND	0.0001	1.3	
Anthracene	0.047	0.003	0.0004		110,000
Asbestos (MFL)	9.3	NT	0.09		
Benz(a)anthracene	0.047	0.004	0.004		0.031
Benzene	0.31	ND	0.003		
Benzo(a)fluoranthene	0.015	ND	0.0001		
Benzo(a)pyrene	0.034	0.007	0.007		
Benzo(b)fluoranthene	0.018	0.004	0.004		
Benzo(b)fluorene	0.015	0.002	0.002		
Benzo(e)pyrene	0.052	0.003	0.003		0.031
Benzo(g,h,i)perylene	0.041	0.004	0.004		
Benzo(k,j)fluoranthene	0.016	0.003	0.003		
Benzothiophenes	0.121	ND	0.001		
Biphenyl	0.102	0.010	0.01		
Bis(2-ethylhexyl) Phthalate	95	ND	0.87		5.9
Bromodichloromethane	0.05	ND	0.001		
Bromomethane	0.09	ND	0.001		

Pollutant	Maximum Effluent Conc.	Maximum Receiving Water Conc.[a]	Concentration After Initial Dilution (µg/L)	Most Stringent Aquatic Life Criteria	AK Human Health Criteria (Aquatic Organisms)
Butyl Benzyl Phthalate	2.3	ND	0.021		5,200
Carbon Disulfide	0.7	ND	0.006		
Chlorobenzene	0.03	ND	0.0003		21,000
Chloroethane	0.69	ND	0.006		
Chloroform	3.3	ND	0.03		
Chloromethane	1.9	ND	0.017		
Chrysene/Triphenylene	0.032	0.004	0.004		
cis/trans Decalin	0.403	ND	0.004		
cis-1,2-Dichloroethene	0.07	ND	0.0006		
Cyanide, Total	9	ND	0.08	1	220,000
Decalins	1.035	ND	0.009		
Demeton-O,S	0.038	ND	0.0003	0.1	
Dibenzo(a,h)anthracene	0.005	0.002	0.002		
Dibenzothiophenes	0.065	ND	0.001		
Dibenzofuran	0.070	0.005	0.005		
Dibenzothiophene	0.033	ND	0.0003		
Dichloromethane (Methylene Chloride)	6.85	ND	0.06		
Diethyl Phthalate	3	ND	0.03		5.9
Dimethyl Phthalate	0.12	ND	0.001		2,900,000
Di-n-butyl Phthalate	0.8	ND	0.007		12,000
Di-n-octyl Phthalate	1.5	ND	0.014		
Endosulfan Sulfate	0.022	ND	0.0002		240
Endrin Ketone	0.0096	ND	0.0001	0.0023	0.81
Ethylbenzene	0.76	ND	0.007		29,000
Fluoranthene	0.172	0.007	0.009		370
Fluorene	0.105	0.012	0.013		14,000
Heptachlor	0.014	ND	0.0001	0.0036	
Hopane	0.165	0.017	0.018		
Indeno(1,2,3-c,d)pyrene	0.006	0.003	0.003		

Pollutant	Maximum Effluent Conc.	Maximum Receiving Water Conc.[a]	Concentration After Initial Dilution (µg/L)	Most Stringent Aquatic Life Criteria	AK Human Health Criteria (Aquatic Organisms)
Isophorone	0.38	ND	0.004		
m,p-Xylenes	3.1	ND	0.03		
Malathion	0.02	ND	0.0002	0.1	
Naphthalenes	0.699	0.174	0.18		
Naphthobenzothiophene	0.022	ND	0.0002		
o-Xylene	1.5	ND	0.014		
Perylene	0.033	0.007	0.007		
Phenanthrene	0.45	0.021	0.025		
Phenol	54.5	ND	0.5		4,600,000
Pyrene	0.134	0.009	0.01		11,000
Retene	0.011	0.007	0.007		
Styrene	0.38	ND	0.003		
Tetrachloroethene (PCE)	0.57	ND	0.005		
Toluene	8.5	ND	0.08		200,000
Total PAHs	7.011	0.482	0.54		
Vinyl Chloride	0.02	ND	0.0002		

[a] Maximum receiving water concentrations measured at and beyond the boundary of the ZID.

DDD = dichlorodiphenyldichloroethane; MEK = methyl ethyl ketone; MFL = million fibers per liter; ND = not detected; NT = not tested

Color

The AWQS state that color at the receiving water shall not exceed 15 color units or natural conditions, whichever is greater. According to the 2019 to 2023 Monitoring Program Annual Reports, color values registered at the vicinity of the outfall were below the AWQS. The discharge is not expected to cause a violation of the WQC.

Petroleum Hydrocarbons, Oil, and Grease

The AWQS states that total aqueous hydrocarbons (TAqH) and total aromatic hydrocarbons (TAH) in the receiving water may not exceed 15 µg/L and 10 µg/L, respectively. According to the 2019 to 2023 Monitoring Program Annual Reports, TAqH and TAH concentrations were consistently below the AWQS at the vicinity of the outfall. Additionally, no surface sheens or oil films have been observed during annual receiving water monitoring.

Radioactivity

Radioactivity of the AWPCF effluent is not measured and no radioactivity is expected to occur.

Residues (Floating Solids, Debris, Sludge, Deposits, Foam, Scum, or Other Residues)

No visible evidence of effluent residue has ever been observed during the annual receiving water monitoring. The combination of high initial dilution, swift currents, and complete vertical mixing results in no accumulation of residues on the water surface or on the bottom.

Whole Effluent Toxicity

Whole Effluent Toxicity (WET) tests are conducted quarterly on AWPCF effluent in accordance with the current NPDES permit. The NPDES permit WET toxicity limit is the no observed effect concentration (NOEC) of 143 TUc (toxicity units concentration). These quarterly WET tests conducted in 2019 through 2023 have demonstrated compliance with the NPDES permit WET toxicity limit of 143 TUc (toxicity units concentration). The following subsection provides detailed results of WET tests of AWPCF effluent performed in 2019 through 2023.

Summary of WET Testing Results for 2019 - 2023

2019. Quarterly WET testing for 2019 was conducted during January, May, July, and October and were based on 24-hr flow composite effluent samples as required by the permit. Results included the determination of lowest observed effect concentration (LOEC), no observed effect concentration (NOEC), and the calculation of chronic toxicity units (TUc) for each test. Annual re-screening for the most sensitive species was performed during the third quarter in 2019, with detailed laboratory results supporting the recommendation that the purple sea urchin be continued in subsequent WET testing until the annual three-species comparison was again performed in 2020. First, second, and fourth quarter WET tests were performed successfully using the purple urchin fertilization test method.

Results of all the tests performed in 2019 are summarized below and presented in Table IIIB-4 as the LOEC, NOEC, and TUc, where TUc = 100/NOEC. Detailed results in the form of descriptive laboratory reports that present all data in tabular form along with statistical analyses, QA/QC information, and reference toxicant test results were submitted to ADEC and EPA with the AWPCF monthly discharge monitoring reports (DMRs).

First quarter 2019 toxicity testing was performed on a single 24-hr composite sample collected on 29 January 2019. The LOEC concentration was 1.4% effluent with a NOEC concentration of 0.7% effluent. Chronic toxicity units were 142.9 TUc. The second quarter echinoderm fertilization testing was performed on a single 24-hr composite sample collected on 8 May 2019. The LOEC concentration was 2.8% effluent with a NOEC concentration of 1.4% effluent. Chronic toxicity units were 71.4 TUc.

Table IIIB-4. Summary of WET Test Data for 2019.

Toxicity Test	LOEC (%)	NOEC (%)	TUc
1st Quarter 2019			
Echinoderm (fertilization)	1.4	0.7	142.9
2nd Quarter 2019			
Echinoderm (fertilization)	2.8	1.4	71.4
3rd Quarter 2019			
Bivalve (development)	5.6	2.8	35.7
Topsmelt (survival)	>11.2	11.2	8.9
Topsmelt (growth)	>11.2	11.2	8.9
Echinoderm (fertilization)	5.6	2.8	35.7
4th Quarter 2019			
Echinoderm (fertilization)	5.6	2.8	35.7

Note: Toxic trigger in Permit for additional testing is a TUc of >143.

Third quarter WET testing included the annual rescreening for the most sensitive species and was conducted on samples collected between 15-19 July 2019. The WET tests included: bivalve (*Mytilus galloprovincialis*) larval development; topsmelt (*Atherinops affinis*) survival and growth; and echinoderm (*Strongylocentrotus purpuratus*) fertilization. Results of the topsmelt bioassay showed no toxicity at any effluent test concentration for either the survival or growth endpoints. The LOEC for survival and growth was >11.2% effluent, the NOEC was 11.2%, and the TUc was 8.9.

For the bivalve larval development test, some toxicity was observed only at the highest effluent concentration tested resulting in an LOEC of 5.6%, a NOEC of 2.8%, and a TUc of 35.7. Results of the echinoderm fertilization test showed that the LOEC for fertilization was 5.6%, the NOEC was 2.8%, and TUc was 35.7. The concurrent reference toxicant test results for all three species were within laboratory control chart limits and indicated typical sensitivity of the test populations. Based on the results of the three-species testing and past years' results, it was determined to continue to use the echinoderm as the most sensitive species for the toxicity testing until the three-species comparison was repeated in 2020.

Based on the results of the third quarter three-species screening, the echinoderm fertilization test was performed using the purple sea urchin during the fourth quarter of 2019. The WET testing was performed on samples collected 23 October 2019. The LOEC for fertilization was 5.6% effluent, the NOEC was 2.8%, and chronic toxicity was 35.7 TUc.

2020. Quarterly WET testing in 2020 was conducted during February, April, September, and November and was based on 24-hr flow composite effluent samples as required by the permit. Results included the determination of lowest observed effect concentration (LOEC), no observed effect concentration (NOEC), and the calculation of chronic toxicity units (TUc) for each test. Annual re-screening for the most sensitive species in 2020 was performed during the second quarter, with detailed laboratory results supporting the recommendation that the purple sea urchin be continued in subsequent WET testing until the annual three-species comparison was again performed in 2021. First, third, and fourth quarter WET tests were performed successfully using the purple urchin fertilization test method.

Results of all the tests performed in 2020 are summarized below and presented in Table IIIB-5 as the LOEC, NOEC, and TUc, where TUc = 100/NOEC. Detailed results in the form of descriptive laboratory reports that present all data in tabular form along with statistical analyses, QA/QC information, and reference toxicant test results have previously been

submitted to ADEC and EPA with the AWPCF monthly discharge monitoring reports (DMRs).

First quarter 2020 toxicity testing for echinoderm fertilization was performed on a single 24-hr composite sample collected on 3 February 2020. The LOEC concentration was 2.8% effluent with a NOEC concentration of 1.4% effluent. Chronic toxicity was 71.4 TUc. Second quarter WET testing included the annual rescreening for the most sensitive species and was conducted on samples collected between 20-24 April 2020. The WET tests included: bivalve (*Mytilus galloprovincialis*) larval development; topsmelt (*Atherinops affinis*) survival and growth; and echinoderm (*Strongylocentrotus purpuratus*) fertilization.

Table IIIB-5. Summary of WET Test Data for 2020.

Toxicity Test	LOEC (%)	NOEC (%)	TUc
1st Quarter 2020			
Echinoderm (fertilization)	2.8	1.4	71.4
2nd Quarter 2020			
Bivalve (development)	11.2	5.6	17.9
Topsmelt (survival)	>11.2	11.2	8.9
Topsmelt (growth)	>11.2	11.2	8.9
Echinoderm (fertilization)	1.4	0.7	142.9
3rd Quarter 2020			
Echinoderm (fertilization)	5.6	2.8	35.7
4th Quarter 2020			
Echinoderm (fertilization)	5.6	2.8	35.7

Note: Toxic trigger in permit for additional testing is a TUc of >143.

Second quarter results of the topsmelt bioassay showed no toxicity at any effluent test concentration for either the survival or growth endpoints. The LOEC for survival and growth was >11.2% effluent, the NOEC was 11.2%, and the TUc was 8.9. For the bivalve larval development test, some toxicity was observed only at the highest effluent concentration tested resulting in an LOEC of 11.2%, a NOEC of 5.6%, and a TUc of 17.9. Results of the echinoderm fertilization test showed that the LOEC for fertilization was 1.4%, the NOEC was 0.7%, and TUc was 142.9. The concurrent reference toxicant test results for all three species were within laboratory control chart limits and indicated typical sensitivity of the test populations. Based on the results of the three-species testing and past years' results, it was determined to continue to use the echinoderm as the most sensitive species for the toxicity testing until the three-species comparison was repeated in 2021.

The third quarter WET echinoderm fertilization bioassay was performed on a single 24-hr composite sample collected on 2 September 2020. The LOEC concentration was 5.6% effluent with a NOEC concentration of 2.8% effluent. Chronic toxicity was 35.7 TUc. Fourth quarter WET testing was performed on a single 24-hr composite sample collected on 24 November 2020. The LOEC concentration was 5.6% effluent with a NOEC concentration of 2.8% effluent. Chronic toxicity was 35.7 TUc. In general, WET test results for 2020 were similar to those seen in previous years with some variability between quarters and species with all test results within permit-specified effluent limits.

2021. Quarterly WET testing for 2021 was conducted during February, April, July, and November and was based on 24-hr flow composite effluent samples as required by the permit. Results included the determination of lowest observed effect concentration (LOEC), no observed effect concentration (NOEC), and the calculation of chronic toxicity

units (TUc) for each test. Annual re-screening for the most sensitive species in 2021 was performed during the first quarter, with detailed laboratory results supporting the recommendation that the purple sea urchin be continued in subsequent WET testing until the annual three-species comparison is performed in 2022. Second, third, and fourth quarter WET tests were performed successfully using the purple urchin fertilization test method.

Results of all the tests performed in 2021 are summarized below and presented in Table IIIB-6 as the LOEC, NOEC, and TUc, where TUc = 100/NOEC. Detailed results in the form of descriptive laboratory reports that present all data in tabular form along with statistical analyses, QA/QC information, and reference toxicant test results have previously been submitted to ADEC and EPA with the AWPCF monthly discharge monitoring reports (DMRs).

Table IIIB-6. Summary of WET Test Data for 2021.

Toxicity Test	LOEC (%)	NOEC (%)	TUc
1st Quarter 2021			
Bivalve (development)	5.6	2.8	35.7
Topsmelt (survival)	>11.2	11.2	8.9
Topsmelt (growth)	>11.2	11.2	8.9
Echinoderm (fertilization)	1.4	0.7	142.9
2nd Quarter 2021			
Echinoderm (fertilization)	5.6	2.8	35.7
3rd Quarter 2021			
Echinoderm (fertilization)	5.6	2.8	35.7
4th Quarter 2021			
Echinoderm (fertilization)	2.8	1.4	71.4

Note: Toxic trigger in permit for additional testing is a TUc of >143.

First quarter WET testing included the annual rescreening for the most sensitive species and was conducted on samples collected between 22-26 February 2021. The WET tests included: bivalve (*Mytilus galloprovincialis*) larval development; topsmelt (*Atherinops affinis*) survival and growth; and echinoderm (*Strongylocentrotus purpuratus*) fertilization. Results of the topsmelt bioassay showed no toxicity at any effluent test concentration for either the survival or growth endpoints. The LOEC for survival and growth was >11.2% effluent, the NOEC was 11.2%, and the TUc was 8.9. For the bivalve larval development test, some toxicity was observed at the second highest effluent concentration tested resulting in an LOEC of 5.6%, a NOEC of 2.8%, and a TUc of 35.7. Results of the echinoderm fertilization test showed that the LOEC for fertilization was 1.4%, the NOEC was 0.7%, and TUc was 142.9.

The concurrent reference toxicant test results for all three species were within laboratory control chart limits and indicated typical sensitivity of the test populations. Based on the results of the three-species testing and past years' results, it was determined to continue to use the echinoderm as the most sensitive species for the toxicity testing until the three-species comparison was repeated in 2022.

The second quarter WET echinoderm fertilization bioassay was performed on a single 24-hr composite sample collected on 19 April 2021. The LOEC concentration was 5.6% effluent with a NOEC concentration of 2.8% effluent. Chronic toxicity was 35.7 TUc. Third quarter WET testing was performed on a single 24-hr composite sample collected on 28

July 2021. The LOEC concentration was 5.6% effluent with a NOEC concentration of 2.8% effluent. Chronic toxicity was 35.7 TUc.

Fourth quarter WET testing was performed on a single 24-hr composite sample collected on 10 November 2021. The LOEC concentration was 2.8% effluent with a NOEC concentration of 1.4% effluent. Chronic toxicity was 71.4 TUc. In general, WET test results for 2021 were similar to those seen in previous years with some variability between quarters and species with all test results within permit-specified effluent limits.

2022. Quarterly WET testing for 2022 was initiated during February, April, July/August, and October and consisted of 24-hr flow based composite effluent samples as required by the permit. Results included the determination of lowest observed effect concentration (LOEC), no observed effect concentration (NOEC), and the calculation of chronic toxicity units (TUc) for each test. Annual re-screening for the most sensitive species in 2022 was performed during the third quarter, with detailed laboratory results supporting the recommendation that the purple sea urchin be continued in subsequent WET testing until the annual three-species comparison was again performed in 2023. First, second, and fourth quarter WET tests were performed successfully using the purple urchin fertilization test method.

Results of all the tests performed in 2022 are summarized below in Table IIIB-7 as the LOEC, NOEC, and TUc, where TUc = 100/NOEC. Detailed results in the form of descriptive laboratory reports that present all data in tabular form along with statistical analyses, QA/QC information, and reference toxicant test results have previously been submitted to ADEC and EPA with the AWPCF monthly discharge monitoring reports (DMRs).

Table IIIB-7. Summary of WET Test Data for 2022.

Toxicity Test	LOEC (%)	NOEC (%)	TUc
1st Quarter			
Echinoderm (fertilization)	2.8	1.4	71.4
2nd Quarter			
Echinoderm (fertilization)	5.6	2.8	35.7
3rd Quarter			
Bivalave (development)	5.6	2.8	35.7
Topsmelt (survival)	>11.2	11.2	8.9
Topsmelt (growth)	>11.2	11.2	8.9
Echinoderm (fertilization)	0.175	<0.175	>571.4
3rd Quarter Echinoderm Retest			
Echinoderm (fertilization)	2.8	1.4	71.4
4th Quarter			
Echinoderm (fertilization)	2.8	1.4	71.4

Note: Toxic trigger in permit for additional testing is a TUc of >143.

First quarter testing was performed on a single 24-hr composite sample collected on 16 February 2022. This was a gamete fertilization test performed with the previous year's most sensitive species, the echinoderm *Strongylocentrotus purpuratus*. The LOEC concentration was 2.8% effluent with a NOEC concentration of 1.4% effluent. Chronic toxicity was 71.4 TUc.

The second quarter WET echinoderm fertilization bioassay was performed on a single 24-hr composite sample collected on 11 April 2022. The LOEC concentration was 5.6% effluent with a NOEC concentration of 2.8% effluent. Chronic toxicity was 35.7 TUc. Third quarter WET testing included the annual rescreening for the most sensitive species and was conducted on samples collected between 27 July – 1 August 2022. The WET tests

included: the bivalve (*Mytilus galloprovincialis*) larval development; topsmelt (*Atherinops affinis*) survival and growth; and echinoderm (*Strongylocentrotus purpuratus*) fertilization.

Results of the topsmelt bioassay showed no toxicity at any effluent test concentration for either the survival or growth endpoints. The LOEC for survival and growth was >11.2% effluent, the NOEC was 11.2%, and the TUc was 8.9. For the bivalve larval development test, some toxicity was observed at the second highest effluent concentration tested resulting in an LOEC of 5.6%, a NOEC of 2.8%, and a TUc of 35.7. The concurrent reference toxicant test results for these two species were within laboratory control chart limits and indicated typical sensitivity of the test populations.

Results of the echinoderm fertilization test showed that the LOEC for fertilization was 0.175%, the NOEC was <0.175%, and TUc was >571.4, exceeding the permit trigger level of 143. The reference toxicant's 50% effected concentration (EC50) for this test was consistent with the typical response range established by the laboratory for this species, indicating that these organisms were responding to toxic stress in a typical and consistent fashion. However, the percent survival on both laboratory and saltwater controls were atypically low indicating a potential problem with the test organisms. No AWPCF operational or pretreatment issues were identified during the performance review, however, as a result of the laboratory control inconsistencies, the effluent was retested as required by the permit.

A new 24-hour composite sample was collected on 7 September 2022. This urchin fertilization test exhibited a LOEC concentration of 2.8% effluent with a NOEC concentration of 1.4% effluent. Chronic toxicity was 71.4 TUc, well within the permit limit indicating that additional retesting was not required. Based on the results of the three-species testing and past years' results, it was determined to continue to use the echinoderm as the most sensitive species for the toxicity testing until the three-species comparison was repeated in 2023. Fourth quarter WET testing was performed on a single 24-hr composite sample collected on 25 October 2022. The LOEC concentration was 2.8% effluent with a NOEC concentration of 1.4% effluent. Chronic toxicity was 71.4 TUc.

2023. Quarterly WET testing for 2023 was initiated during March, May, August, and October and consisted of 24-hr flow based composite effluent samples as required by the permit. Results included the determination of lowest observed effect concentration (LOEC), no observed effect concentration (NOEC), and the calculation of chronic toxicity units (TUc) for each test.

WET test results for 2023 are summarized below in Table IIIB-8 as the LOEC, NOEC, and TUc, where TUc = 100/NOEC. Detailed results in the form of descriptive laboratory reports that present all data in tabular form along with statistical analyses, QA/QC information, and reference toxicant test results have previously been submitted to ADEC and EPA with the AWPCF monthly discharge monitoring reports (DMRs).

First quarter testing was performed on a single 24-hr composite sample collected in March 2023. This gamete fertilization test was performed with the previous year's most sensitive species, the echinoderm *Strongylocentrotus purpuratus*. The LOEC concentration was 5.6% effluent with a NOEC concentration of 2.8% effluent. Chronic toxicity was 35.7 TUc. Annual re-screening for the most sensitive species in 2023 was performed during the second quarter, with detailed laboratory results supporting the recommendation that the bivalve (*Mytilus galloprovincialis*) larval development test be used in subsequent WET testing until the annual three-species comparison is again performed in 2024. Third and fourth quarter WET tests were performed using the bivalve larval development test method.

Table IIIB-8. Summary of WET Test Data for 2023.

Toxicity Test	LOEC (%)	NOEC (%)	TUc
1st Quarter 2023			
Echinoderm (fertilization)	5.6	2.8	35.7
2nd Quarter 2023			
Bivalve (development)	2.8	1.4	71.4
Topsmelt (survival)	>11.2	11.2	8.9
Topsmelt (growth)	>11.2	11.2	8.9
Echinoderm (fertilization)	5.6	2.8	35.7
3rd Quarter 2023			
Bivalve (development)	11.2	5.6	17.9
4th Quarter 2023			
Bivalve (development)	5.6	2.8	35.7

Note: Toxic trigger in Permit for additional testing is a TUc of >143.

Second quarter WET testing included the annual rescreening for the most sensitive species and was conducted on samples collected between 15-19 May 2023. The WET tests included: bivalve (*Mytilus galloprovincialis*) larval development; topsmelt (*Atherinops affinis*) survival and growth; and echinoderm (*Strongylocentrotus purpuratus*) fertilization. Results of the topsmelt bioassay showed no toxicity at any effluent test concentration for either the survival or growth endpoints. The LOEC for survival and growth was >11.2% effluent, the NOEC was 11.2%, and the TUc was 8.9. For the echinoderm fertilization test, some toxicity was observed at the second highest effluent concentration tested resulting in an LOEC of 5.6%, a NOEC of 2.8%, and a TUc of 35.7. Results for the bivalve larval development test showed the LOEC concentration was 2.8% effluent with a NOEC concentration of 1.4% effluent. Chronic toxicity was 71.4 TUc. The concurrent reference toxicant test results for these three species were within laboratory control chart limits and indicated typical sensitivity of the test populations. Based on the results of the three-species testing it was determined to use the bivalve larval development test as the most sensitive species for toxicity testing until the three-species comparison is repeated in 2024.

The third quarter WET bivalve larval development test was performed on a single 24-hr composite sample collected on 16 August 2023. The LOEC concentration was 11.2% effluent with a NOEC concentration of 5.6% effluent. Chronic toxicity was 17.9 TUc. Fourth quarter WET testing was performed on a single 24-hr composite sample collected on 10 October 2023. The LOEC concentration was 5.6% effluent with a NOEC concentration of 2.8% effluent. Chronic toxicity was 35.7 TUc. In summary, all WET tests that were performed for the 2023 monitoring program were within the permit specified trigger of ≤ 143 TUc.

8. Provide the determination required by 40 CFR 125.61(b)(2) for compliance with all applicable provisions of State law, including water quality standards or, if the determination has not yet been received, a copy of a letter to the appropriate agency(s) requesting the required determination.

See Attached Letter

References

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ANCHORAGE WATER & WASTEWATER UTILITY

General Manager's Office
3000 Artic Boulevard
Anchorage, Alaska, 99503-3898

July 31, 2025

Emma Pokon
Commissioner
Alaska Department of Environmental Conservation
410 Willoughby Avenue, Suite 105
Juneau, AK 99801-1795

Subject: Request for Determination Required 40 CFR 125.61(b)(2) for Compliance with Water Quality Standards for the John M. Asplund Water Pollution Control Facility - NPDES No. AK-002255-1

Dear Ms. Pokon:

The Municipality of Anchorage is applying for a renewal of its NPDES permit and an extension of its Section 301(h) modification for the John M. Asplund Water Pollution Control Facility (AWPCF). As part of the NPDES permit renewal and 301(h) extension process, it is necessary to obtain a determination of compliance with all applicable provisions of State law, including compliance with water quality standards. This determination is required by 40 CFR 125.61(b)(2).

To support this request, we submitted Forms 2A, 2M, 2G, and 2S, which include results from the facility's Discharge Monitoring Reports (DMRs), Whole Effluent Toxicity (WET) test reports, and receiving water monitoring program as evidence of compliance with applicable water quality standards.

We request that the ADEC provide us with a letter confirming compliance with applicable state law and water quality standards. If we can assist you in any way during your evaluation, please contact us.

Sincerely,

Dave Persinger
Assistant General Manager
Anchorage Water & Wastewater Utility

III.C. Impact on Public Water Supplies [40 CFR 125.62(b)]

1. ***Is there a planned or existing public water supply (desalinization facility) intake in the vicinity of the current or modified discharge?***

No. The closest public water systems are located more than 3 miles away and draw from a freshwater aquifer not hydraulically connected to the upper Cook Inlet, the marine water body into which Anchorage Water and Wastewater Utility discharges. The municipal water supply for the Anchorage Bowl, Eagle River, and northern communities is derived from three major sources: Ship Creek, Eklutna Lake, and groundwater. Eklutna Lake is located 55 kilometers (km) (33 miles) from the outfall, and the Ship Creek Water Treatment Plant is located 16.7 km (10.4 miles) from the outfall. Refer to Drinking Water Source Protection Areas Map for additional information on this topic.

2. ***If yes,***

   a. *What is the location of the intake(s) (latitude and longitude)?*

   Not applicable.

   b. *Will the modified discharge(s) prevent the use of intake(s) for public water supply?*

   Not applicable.

   c. *Will the modified discharge(s) cause increased treatment requirements for public water supply(s) to meet local, state, and EPA drinking water standards?*

   Not applicable.

III.D. Biological Impact of Discharge

1. Does (will) a balanced indigenous population of shellfish, fish, and wildlife exist:

a. Immediately beyond the ZID of the current and modified discharge(s)?

Yes. Under 40 C.F.R. § 125.62(c)(1)-(2), AWWU must show that a balanced indigenous population of shellfish, fish, and wildlife exists and that AWWU's discharge "allow[s] for the attainment or maintenance of water quality which assures protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife." AWWU's application satisfies both – there is a balanced indigenous population of shellfish, fish, and wildlife immediately beyond the ZID and AWWU will meet future permit effluent limitations and will attain and preserve water quality standards in Upper Cook Inlet receiving waters to support the protection and propagation of existing indigenous populations that are acclimated to the environmental conditions in Upper Cook Inlet.

Federal regulations defined a balanced indigenous population as "an ecological community which: (1) Exhibits characteristics similar to those of nearby, healthy communities existing under comparable but unpolluted environmental conditions; or (2) may reasonably be expected to become re-established in the polluted water body segment from adjacent waters if sources of pollution were removed." 40 C.F.R. § 125.58(f). EPA's Amended Section 301(h) Technical Support Document further provides that in evaluating a balanced indigenous population, the biological community can be evaluated on a number of factors, including species composition, abundance, biomass, dominance, and diversity; growth and reproduction of populations; and trophic structure and productivity patterns. In other words, a

Similarly, the Ohio EPA defined a balanced indigenous community as a stable assemblage of species living in a prescribed physical habitat (Ohio Environmental Protection Agency 1978). Balanced indigenous populations exhibit functional unity, characteristic trophic structure, and patterns of energy flow leading to the probability that certain species will occur together. They are characterized by all trophic levels and are not dominated by pollution-tolerant species; species in a balanced indigenous population are present in numerical proportion, indicating that environmental stress is minimal.

The balanced indigenous populations of shellfish, fish, and wildlife in upper Cook Inlet and Knik Arm differ considerably from other marine and estuarine systems meet both definitions <u>because of the unique characteristics of the waterway</u>. As described briefly in Section II.C.1, the infaunal benthic community is limited in diversity and abundance generally because of high sediment loads, large fluctuations in salinity and water level, gravel-cobble substrate, low light penetration, and high tidal velocities in the vicinity of the Anchorage Water and Wastewater Utility (AWWU) outfall and in upper Cook Inlet in general. For these reasons, resident fish and marine mammal populations in the immediate vicinity of the outfall and within and beyond the zone of initial dilution (ZID) are also limited in diversity and abundance.

Specifically, environmental and physical conditions in the action area and ZID are harsh and less likely to support a diverse and abundant indigenous community because of the following reasons:

- Sediments in the action area consist of rounded gravel and boulders with only traces of the silt and sand needed to support infaunal benthic organisms.

- Tidal velocities in the area range from 8 to 250 centimeters per second (cm/sec) (average 136 cm/sec). These velocities can move suspended sediment loads ranging from 250 to 2,480 milligrams per liter (mg/L).
- Because of high glacial silt loads, light penetration determined with a Secchi disc at the depth of the outfall and within the ZID is only 10 cm and would be insufficient to support the growth of algae on boulders within the ZID, immediately beyond the ZID, or on the outfall itself.
- Surveys by divers and the use of sampling devices such as pipe dredges and biological dredge tows have produced substrate samples with almost no subtidal organisms. The exception to this was the collection in 1977 of a single minute hydroid colony (similar to *Obelia*) (Kinnetic Laboratories 1977). In addition, greenish growth was reported on some boulders and cobbles within the ZID.
- Sampling efforts for subtidal benthos are restricted to short periods during short slack tide (less than 30 minutes) and based on high tidal current velocities, planktonic and weakly swimming organisms do not spend more than a few minutes within the ZID. Therefore, a measurable difference in the organisms exposed to effluent has not been detected.
- Phytoplankton are not expected to be diverse and abundant in the ZID, even in the presence of nutrients.
- It is not feasible to sample subtidal demersal fish species at Point Woronzof because of the coarse nature of the bottom and the extremely high currents. Nonetheless, because of these conditions, demersal fish are not expected to inhabit this area in abundant numbers. Demersal fish were targeted during the intertidal beach seine surveys in 2022 to 2024 near Point Woronzof; catches included a few juvenile starry flounder and quite a few juvenile Pacific cod (Kinnetic Environmental, Inc. 2025). Anadromous fish species such as salmon and eulachon would transit through the ZID only toward streams and rivers such as Ship Creek, Eagle River, Susitna River, and the Little Susitna River. Anadromous fish have not been documented in measurable numbers in the action area.
- Marine mammals such as Cook Inlet beluga whales or Steller sea lions that feed on prey fish such as salmon, eulachon, or cod have been documented transiting through the action area but are not known to spend any amount of time near AWPCF outfall or within the ZID because the conditions in that area do not provide important habitat or notable foraging opportunities. For example, Cook Inlet beluga whales spend significant time north of the action area in the Susitna River Delta or across the inlet in and around Beluga River where salmon are present in higher numbers (additional details on Cook Inlet beluga whales are provided in the pages that follow).

40 C.F.R. § 125.62(c) also requires that AWWU's discharge must allow for the attainment or maintenance of water quality that assures the protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife immediately beyond the ZID and in all other areas beyond the ZID. AWWU will meet future permit effluent limitations and will attain and preserve water quality standards in Upper Cook Inlet receiving waters to support the protection and propagation of existing indigenous populations that are acclimated to the environmental conditions in Upper Cook Inlet. In addition, the discharge will not cause adverse impacts on habitats of limited distribution or commercial or recreational fisheries. There have been no known cases of mass mortalities of fish or

invertebrates, no increased incidence of disease in marine organisms, and no other known cases of direct adverse biological impacts of the current discharge.

The following provides an analysis that shows (1) the existence of a balanced indigenous population beyond the ZID of the current and modified discharges and (2) how AWWU's discharge will attain and preserve water quality standards to support the protection and propagation of the existing balanced indigenous population that are uniquely acclimated to the Upper Cook Inlet's environmental conditions. Given the severe restrictions on the use of subtidal and plankton organisms as community indicators, the following data are offered as an indication of the effort expended to determine the effect of the outfall on the balanced indigenous community.

Plankton

On an a priori basis, no detectable impact is likely on planktonic organisms. As a result of the high current speeds, organisms are exposed to only the diluted waste stream for short periods of time during the initial mixing of the discharge. The high turbulence mixes organisms exposed with those not exposed, making detection of toxicity or stimulation highly unlikely.

As stated, stimulation of phytoplankton, even in the presence of nutrient enrichment, is unlikely because of the sharp attenuation of light near the water surface.

In addition, because blooms of toxic phytoplankton or pollution-resistant species are not known to occur in these areas (Chew 1989), it seems reasonable to assume that the phytoplankton communities are not dominated by nuisance species.

Subtidal Macroinvertebrates

The results of four studies indicate that subtidal macroinvertebrates are extremely rare in Upper Cook Inlet and Knik Arm due to natural limiting factors of coarse seabed sediments, high velocity tidal currents, and high background suspended solids and turbidity levels. Naturally occurring subtidal macroinvertebrate populations are absent and adverse impacts from the AWPCF wastewater discharge are not possible. The following summarizes sampling efforts to collect subtidal macroinvertebrates from seabed near the AWPCF outfall off Point Woronzof and the control site off Point MacKenzie.

Subtidal samples were collected by Tetra Tech (1977) and Kinnetic Laboratories (1979) near the existing outfall. To collect subtidal benthic samples, Tetra Tech (1977) used a pipe dredge with an internal diameter of 15.2 cm (6.0 inches) and a length of 45.0 cm (17.7 inches), a small biological dredge with a mouth opening of 24.9 cm (9.8 inches) by 50.0 cm (19.7 inches) fitted with a 1.0 cm (0.4 inch) mesh liner and a Shipek grab. A total of 20 pipe dredge samples and 3 biological dredge tows were taken at the subtidal stations. The Shipek grab did not collect any samples due to the coarse seabed sediments not being penetrated by the grab sampler. Because dredge type samplers are often not quantitative, especially on hard sand and cobble substrate such as that encountered in Knik Arm, the benthic data generated were suitable only for qualitative comparisons of communities.

The three sampling stations were located within the ZID, and at 247 meters (m), 595 m, and 700 m from the chlorination tower on the outfall alignment off Point Woronzof. Substrate at all three stations consisted of tumbled gravel, cobbles, and small boulders. Samples were collected by hand because no cores or grabs could effectively obtain quantitative samples.

The Tetra Tech (1977) and Kinnetic Laboratories (1979) studies in the discharge area have shown macroinvertebrate benthic biota to be virtually absent. The only benthic species

collected subtidally was a minute hydroid colony (similar to *Obelia*) attached to a small cobble. Kinnetic Laboratories (1979) did not find any subtidal organisms.

As part of the requirements of the NPDES permit granted in 1985, a subtidal benthic monitoring program was initiated to evaluate the potential impacts of the discharge on the subtidal communities. This program was designed to compare the spatial and temporal variability of the subtidal communities at the boundary of the existing ZID with those communities at a control or reference site. The methods and results of the program are described as follows, and a detailed discussion of the complete program, refer to Kinnetic Laboratories (1987a).

Subtidal sampling of macroinvertebrate benthic organisms was attempted at the AWPCF outfall and at a control station near Point MacKenzie during August 1986 and 1989. Originally, 10 replicate 0.1-square-meter (m^2) Van Veen grab samples were to be collected. Based on analysis of sediment substrate of large rock and cobble, this was changed to five semiquantitative replicate samples taken with a pipe dredge. Subtidal stations (SI) were approximately 250 m (820 feet) north of Point Woronzof, and the reference station (SCI) was located across the inlet, approximately 5,100 m (3.2 miles) east of Point MacKenzie. Station locations are shown on Figure IIB-27 in Section IIB.

Station depths were determined in the field. Depths were as close as possible to the outfall depth of 3.7 m (12 feet) (mean lower low water [MLLW]) while still sampling physical substrate similar to that at the outfall site. Samples were obtained by lowering the dredge to the bottom and towing for 2 minutes along the bathymetric contours. The control site tows were made by starting at the control coordinates and traveling toward Point MacKenzie.

The outfall tows were made by starting up-current from the outfall and traveling down-current past the outfall. Collected samples were then labeled and placed in 5-gallon buckets, which were sealed for shipment to the laboratory.

Each sample was sieved through nested 1.0-millimeter (mm) (0.04-inch) and 0.5-mm (0.02--inch) mesh sieves. Samples collected on each sieve were labeled by station, replicate, and sieve size and transferred into plastic jars. Samples were fixed with 10% buffered formalin. Before laboratory processing, all samples were transferred into 70% ethanol for sorting and identification. In addition, a photographic log was kept of samples obtained because it was expected that only coarse gravel and cobble would be dredged.

In the 1986 study, no benthic floral or faunal organisms were found at either Point Woronzof or the control subtidal location. Only a portion of a polychaete worm was recovered from the control station. The dredging produced only gravel and cobble.

Judging from the rounded and abraded appearance of the cobbles, the mechanical disturbance or physical stress is sufficient to deter colonization by either plants or animals. In the 1989 study, only three individuals of the polychaete genus Rhaphidrilus were found at Station SCI. The results of the 1986 and 1989 benthic sampling studies were essentially identical to the results of those conducted in 1977 and in 1979 (Kinnetic Laboratories, 1979). No biota were collected in 1979 and only one small hydroid colony was collected near Point Woronzof in 1977.

The subtidal benthic biota is naturally limited rather than anthropogenically disturbed. Swift currents, large tidal ranges, wide ranging salinity and flows, and high naturally occurring suspended solids loadings in Upper Cook Inlet and Knik Arm probably prevent colonization of the substrate, or smother and abrade organisms that do become established. If wastewater was stressing the benthic biota, enrichment of benthic

communities as evidenced by increased abundance of certain species, rather than the absence of fauna, would be expected. Because of swift currents, substrates consisting of coarse sand, gravel, and cobbles are found near the outfall, and the effluent solids are not deposited locally.

In summary, the results of four studies indicate that subtidal macrobenthic invertebrates are extremely rare in Upper Cook Inlet or Knik Arm. The absence of macrobenthic invertebrates is attributable to natural limiting factors. In the absence of naturally occurring subtidal macrobenthic invertebrate populations, adverse impacts from wastewater discharge are not possible.

Demersal Fish

Sampling for subtidal demersal fish within the existing and proposed ZID and nearby areas is not feasible at Point Woronzof because of the coarse cobble nature of the bottom and the extremely high currents.

Dames and Moore (1983) attempted to sample subtidal demersal fish with an otter trawl which is dragged along the seabed. However, irregular bottom conditions made sampling impossible and unsafe (due to potential net snagging) in most areas and precluded sampling within or near the ZID. Kinnetic Environmental has conducted mid-water trawling in the offshore areas near the ZID to collect demersal fish in the water column, but these efforts have not yielded sufficient fish to be representative of the demersal community.

Demersal fish have been caught in limited numbers in vicinity of the outfall and in other areas in Upper Cook Inlet and Knik Arm as part of intertidal beach seine surveys that have been conducted for the AWPCF monitoring program as well as other studies conducted in the area (Dames and Moore 1983; Kinnetic Environmental, Inc. 2023 and 2024; Pentec 2005). Demersal fish species catches in beach seine surveys included a few juvenile starry flounder, eulachon, longfin smelt, juvenile Pacific and saffron cod, spot shrimp, and some salmon fry. All three of these studies found high numbers of three-spine stickleback, which can be considered either demersal or pelagic, depending on the location.

Beluga Whale

The population of Cook Inlet beluga whales has declined an estimated 75% since the first attempt at a census in 1979 (Carretta et al. 2016); however, a slight increase (0.2 %) in the population was documented for the 5-year period of 2018 to 2022 (NOAA 2023; Goetz et al. 2023). The population trend of Cook Inlet belugas is influenced by a multitude of factors including low population abundance; low reproductive potential (females can have a single calf every 2+ years); previously unsustainable levels of subsistence harvest (NMFS 2016); declines in prey abundance such as Chinook salmon and other species of salmon (ADF&G 2023); mass stranding events (NMFS 2023); and changing climate. Small populations like the Cook Inlet beluga whales are more susceptible to disease, predation, and natural or human-caused catastrophic events; all of which can add stress to an already declining population (NMFS 2016). Cook Inlet beluga whale distribution and habitat also overlaps with the largest human population in the state and Cook Inlet has many uses, including shipping, industrial and residential development, fishing, oil and gas development, transportation, and military activities. For these reasons, beluga whale critical habitat overlaps spatially with high anthropogenic use, which may contribute to stresses on habitat or the beluga population.

The action area around Point Woronzof is best described as a movement corridor for Cook Inlet beluga whales. Belugas are distributed seasonally in Upper Cook Inlet, primarily near the Susitna River Delta and then moving briefly through areas such as Point Woronzof to

other parts of the inlet, including Chickaloon Bay and Turnagain Arm where prey often aggregate during specific times of the year (McGuire et al. 2020). Therefore, belugas do not spend any meaningful amount of time near the AWPCF outfall or within the ZID given they are focused on reaching important foraging areas such as the Susitna River Delta, Eagle River, or Beluga River in Upper Cook Inlet. Biologically significant factors for Cook Inlet beluga survival (reproduction, feeding, or habitat) are not expected to be adversely affected by the AWPCF discharge.

The risk evaluation presented in the Biological Evaluation (BE) determined that no effects on ESA-listed Cook Inlet beluga whales from chemicals in AWPCF effluent are likely based on the fact that effluent chemical concentrations were either not detected or did not indicate risk to prey species (fish) or marine mammals through food chain uptake when compared to aquatic toxicity benchmarks (BMs). No risk to Cook Inlet beluga whales or Steller sea lions was estimated from the consumption of chemicals measured in Cook Inlet fish tissues.

Beluga Presence in Cook Inlet

Beluga whales from the Cook Inlet Distinct Population Segment (DPS) are geographically and genetically isolated from other beluga whale stocks in Alaska (Young et al. 2023) and the stock is recognized as endangered under the Endangered Species Act (ESA). Historically, beluga whales have been distributed throughout Cook Inlet, with occasional sightings in the Gulf of Alaska (Huntington 2000; Laidre et al. 2000; Moore et al. 2000; Rugh et al. 2000). However, in the 2000s their range contracted to mostly the upper and middle waters of the inlet (Shelden et al. 2018). While beluga whales remain in the inlet year-round, there are seasonal shifts in their distribution generally influenced by prey availability, ice coverage, and peak river discharge events (Hobbs et al. 2005; Rugh et al. 2010; Goetz et al. 2012 Shelden et al. 2013; Shelden et al. 2017). During the ice-free months belugas are concentrated near river mouths in Upper Cook Inlet, dispersing and moving into middle and lower inlet waters during the winter (Polasek et al. 2015; Shelden et al. 2015b). The surge of eulachon in April and May, and salmon in May and the again in July through October, draws Cook Inlet belugas to important foraging areas near river mouths in Upper Cook Inlet during these ice-free periods (Moore et al. 2000; Quakenbush et al. 2015; McGuire et al. 2020).

The best historical estimate of Cook Inlet beluga abundance is derived from a 1979 survey, which estimated a total population of 1,293 belugas (Calkins 1989). This 1979 population estimate (Calkins, 1989) was not corroborated through replicate surveys and is considered to have limited reliability. Systematic abundance surveys beginning in 1994 indicated a decline in Cook Inlet beluga abundance from 653 individuals in 1994 to 347 belugas in 1998 (NMFS 2019b). Based on archaeological evidence from the coastal areas of the inlet, belugas have been hunted by Alaska Natives long before historical contact with Russian or American explorers (NMFS 2008) and while subsistence hunting of whales was suspended in 2006 due to the decline, the population did not recover at a rate of 2 to 6% per year as expected (Hobbs et al. 2008). The population declined at a rate of 1.3% per year between 1999 and 2012 (Hobbs et al. 2015) despite a brief period of an increase 2005 to 2010. Based on analysis of data from 2008 to 2018, a decline of about 2.3% per year (95% Prediction Interval: -4.1% to -0.6%) continued for the beluga population in Cook Inlet (Wade et al. 2019). Recently, a slight increase (0.2%) in the population has been documented from 2018 to 2022 (NOAA 2023) (Goetz et al. 2023). Subsistence hunting of the population remains suspended. The 2022 abundance estimate for Cook Inlet beluga whales was 331 whales (Goetz et al. 2023).

Beluga Presence Near the Point Woronzof Action Area

For nearly two decades in Cook Inlet, land-, aerial-, and vessel-based monitoring programs as well as acoustic monitoring for Cook Inlet beluga whales has been undertaken by the oil and gas industry, the Port of Alaska (formerly Port of Anchorage), and other entities (Blackwell and Greene Jr. 2003; HDR Alaska Inc. et al. 2006; Prevel Ramos et al. 2006; URS 2007; Scientific Fishery Systems and Alaska Native Technologies 2008; Integrated Concepts & Research Corporation 2009, 2010, 2012; SAExploration 2012; Lammers et al. 2013; CH2M Engineers Inc. 2016; Fairweather Science LLC 2018; Sitkiewicz et al. 2018; Castellote 2019; Castellote et al. 2019; 61 North Environmental 2020d 2020c, 2020b, 2020a, 2020g, 2020f, 2020e). Sitkiewicz et al. (2018) conducted marine mammal monitoring during Hilcorp's Cross Inlet Pipeline project near the Tyonek platform in middle Cook Inlet, approximately 50 km southwest of the AWPCF action area. From May 9 to September 15, 2018 (more than 3,000 hours of monitoring), 143 sightings of beluga whales were observed in that area (well outside of the AWPCF outfall and ZID boundary).

During the period 2005 to 2022, aerial surveys documented beluga whales near Fire Island, located approximately 8.5 km east of Point Woronzof (Shelden et al. 2013, Shelden and Wade 2019, Shelden et al. 2022). June observations represented the highest daily count as shown in the following list. No surveys were conducted in 2013, 2015, 2017, or 2020.

Beluga Presence Near Fire Island

2005 – 47
2006 – 0
2007 – 2
2008 – 0
2009 – 0
2010 – 9
2011 – 2
2012 – 0
2014 – 0
2016 – 0
2018 – 0
2021 – 0
2022 – 4

Belugas have also been observed near the Port of Alaska, which is 8 km northeast of Point Woronzof. To meet the requirements of an IHA authorization, monitoring for marine mammals in the vicinity of the Port was conducted during construction work in 2020 (61 North Environmental 2020f, b, g, a, e, d, c, 2021). The IHA required monitoring four locations:

- Point Woronzof (PWS Station)
- Near the boat launch at Ship Creek (SC Station) - about 6.5 km northeast of Point Woronzof
- At the Petroleum and Cement Terminal (PCTS Station) - about 7.5 km northeast of Point Woronzof, and
- At the northern end of the port (NEX Station) - about 8 m northeast from Point Woronzof.

Monthly total beluga observations from all observation points were as follows:

April – 11 groups, 33 individuals
May – 35 groups, 168 individuals
June – 33 groups, 114 individuals
July – 12 groups, 25 individuals

August – 56 groups, 274 individuals

September – 73 groups, 276 individuals

October – no belugas sighted

November – 25 groups, 97 individuals

Summary on Cook Inlet Beluga Whales

In summary, the population of Cook Inlet beluga whales has declined an estimated 75% since the first attempt at a census in 1979 (Carretta et al. 2016); however, a slight increase (0.2 %) in the population was documented for the 5-year period 2018 to 2022 (NOAA 2023; Goetz et al. 2023). The population trend of Cook Inlet belugas is influenced by a multitude of factors. including low population abundance; low reproductive potential (that is, females can have a single calf every 2 or more years); previously unsustainable levels of subsistence harvest (NMFS 2016); declines in prey abundance such as Chinook salmon and other species of salmon (ADF&G 2023); mass stranding events (NMFS 2023); and changing climate. There are inherent risks for animals with small populations like Cook Inlet beluga whales such as being more susceptible to disease, predation, and natural or human-caused catastrophic events; all of which can add stress to an already declining population (NMFS 2016). Cook Inlet beluga whale distribution and habitat also overlaps with the largest human population in the state; therefore, Cook Inlet has many uses, including shipping, industrial and residential development, fishing, oil and gas development, transportation, and military activities. For this reason, beluga whale critical habitat overlaps spatially with high anthropogenic use, which may contribute to stresses on habitat or the beluga population.

As stated in the 2016 Cook Inlet Beluga Whale Recovery Plan: “Cumulative effects of multiple stressors are considered to be a high concern for the recovery of CI belugas. In the absence of a single threat clearly limiting recovery, the cumulative effects (including any synergistic effects) from multiple stressors limiting recovery is a most plausible explanation for why the CI beluga population has not recovered” (NMFS 2016).

The action area around Point Woronzof is best described as a movement corridor for Cook Inlet beluga whales. Belugas are distributed seasonally in Upper Cook Inlet, primarily near the Susitna River Delta and then moving briefly through areas such as Point Woronzof (and the ZID) to other parts of the inlet, including Chickaloon Bay and Turnagain Arm where prey often aggregate during specific times of the year (McGuire et al. 2020). Therefore, belugas do not spend a meaningful amount of time near the AWPCF outfall or within the ZID given they are focused on reaching important foraging areas such as the Susitna River Delta, Eagle River, or Beluga River in Upper Cook Inlet.

Only very brief contact by Cook Inlet beluga whales with the ZID and vicinity is likely. Compared to the cross-sectional area of Cook Inlet in the vicinity of the discharge (ZID cross section of less than 1 square kilometer [km^2] versus approximately 130 km^2 between Point Woronzof and Point MacKenzie). As a result, biologically significant factors for Cook Inlet beluga survival (that is, reproduction, feeding, or habitat) are not expected to be adversely affected by the discharge.

b. In all other areas beyond the ZID where marine life is actually or potentially affected by the current and modified discharge(s)?

Intertidal Macroinvertebrates

Qualitative and quantitative results from the 1986 and 1989 studies indicate an intertidal marine benthic flora and fauna of very low standing crop and low species diversity in the vicinity of the discharge. Only one species of marine macrophytic algae was found in the

intertidal collections, and only four taxa of macroinvertebrates that can be considered truly marine (*Eteone longa, Macoma balthica*, harpacticoida, and mysidacea) were observed. The mysids are epibenthic and occasionally move up into the water column, becoming part of the plankton. Only the bivalve *M. balthica*, the polychaete *E. longa*, and the harpacticoid copepods were macroinvertebrate infauna species in the area.

Intertidal macroinvertebrate sampling was also performed more recently in 2022 to 2023 as part of the AWWU permit reapplication effort (Kinnetic Environmental, Inc. 2024d). Results of these studies are consistent with past studies, finding the diversity of the intertidal shoreline infauna near Point Woronzof and Point MacKenzie (control site) were generally found to be low, and in some areas the benthic infauna were very sparsely represented. In the 2022 to 2023 study, oligochaetes and polychaete annelids dominated the study sites and were most abundant at the stations closest to the outfall due to the finer sediments.

Overall, the diversity of organisms was very low with fewer than 10 total taxa found across all sites. The low species diversity and low standing stock are much lower than other types of marine environments in Alaska and are believed to be primarily the result of physical stresses in Upper Cook Inlet. The main elements contributing to this stress are the heavy suspended loads of glacial inorganic sediment, low and fluctuating salinities, temperature fluctuations, and mechanical disturbances of the substrate from tidal currents and winter ice conditions.

The intertidal area east and northeast of the outfall offshore of Point Woronzof is a habitat that could detect any impacts from the outfall discharge since the outfall plume under early flood tide can reach this area. This is an area of possible shoreline contact of the diluted wastewater plume, and the intertidal region has more organisms than are found at subtidal stations. The area is also an erosional zone for sediments, as evidenced by the receding shoreline and bluff erosion to the east and southwest of Point Woronzof.

As discussed in Sections II.B.5, II.B.6, and III.A.6, the contribution of the outfall sediment to total accumulated sediments is very low, typically below 0.1 %. This very low contribution occurs because of the relatively low effluent sediment concentration relative to natural receiving water levels and because of the dilution provided by tidal exchanges in upper Cook Inlet. Additionally, the system of eddies developing on flood tide to the east of Point Woronzof has high turbulence, providing dilution and dispersion before shoreward contact.

Despite the highly unlikely possibility of an impact from the outfall, intertidal sampling has been conducted to establish the potential for impacts. Previous intertidal studies (USACE 1977; Kinnetic Laboratories 1979) have shown that essentially no benthic biota were found on the gravel, cobble beaches at Point Woronzof and the control area near Point MacKenzie. Similar sampling of soft bottom beaches and tidal flats showed very sparse abundances and very low diversities. The harsh physical environment of high silt content, turbulence, currents, tides, and ice limit benthic intertidal marine faunal and floral populations.

As part of the 1985 NPDES permit, an intertidal benthic program was initiated to monitor changes in those marine communities subject to potential discharge impacts in the Point Woronzof area. The methods and results of the program are described as follows. A detailed discussion of the complete program can be found in Kinnetic Laboratories 1987a.

During August 1986 and 1989, intertidal invertebrates were sampled at three stations: I17, which is 1,200 m (4,000 feet) east of the outfall; I16, which is 2,000 m (6,600 feet) east of

the outfall; and IC4, a control station across Knik Arm northeast of Point MacKenzie. Station locations are shown on Figure IIB-27. The substrate at Station I17 consisted primarily of coarse sand mixed with gravel and cobbles of variable thickness, covering a layer of bluish-gray day of undetermined thickness. The substrate of Station I16 was characterized by an unconsolidated layer of fine silt, measuring up to 10 cm in thickness, overlaying the same dense clay observed at Station I17. At Station IC4, the substrate consisted of a layer of unconsolidated silt of varying thickness, overlying dense clay similar to that observed on the Point Woronzof side of the inlet.

Vertical placement was determined by selecting the height of the maximum biological growth at Station I16 and then setting Station I17 at the same elevation. Elevation of IC4 was set to match biological habitat (algal mats) at Station I16. Accurate horizontal and vertical positioning of the stations was determined by standard land survey techniques. Station locations were surveyed into permanent benchmarks on top of the bluff at Point Woronzof.

Benthic samples were collected at random distances and bearings within a 10-m (33-foot) radius of the intertidal station markers. Ten replicated cores were obtained from each station for analyses of benthic infauna. Cores were obtained by pushing a 15-cm (6-inch) inside diameter corer into the sediment. The upper 4- to 15-cm (1.5- to 4-inch) layer of sediment was sampled depending upon the substrate and corer penetration depth. A cap was then placed across the mouth of the corer prior to its removal from the sediment. Individual cores were labeled and placed into 2-gallon buckets, which were sealed and transported for field processing.

Each core was sieved through nested 1.0-mm (0.04-inch) and 0.5-mm (0.02-inch) mesh sieves. Samples collected on each sieve were labeled by station, replicate, and sieve size, and transferred into plastic jars. Samples were fixed with 10 % buffered formalin. Before laboratory processing, all samples were transferred into 70 % ethanol for sorting and identification.

Samples were rough sorted into major taxonomic groups. Organisms within each subsample were identified to the lowest possible taxonomic level. In addition to the calculation of biomass and numerical density, a number of numerical density and index calculations were conducted. Because of extremely low abundance, only biomass and numerical density were determined.

During August 1986, only nine taxa were collected from the three intertidal stations sampled. These taxa are listed in Table IIID-1. The total number of taxa sampled is only an estimate of the actual number of species present because some species could only be identified in taxonomic family categories such as Oligochaeta, Syllidae, Halacaridae, and unidentified.

Table IIID-1. List of Taxa and Species of Intertidal Benthic Infauna Community

Annelida
Clitellata
Oligochaeta
Enchytraeida
Enchytraeidae
Enchytraeidae, unidentified
Tubificida
Naididae
Naididae, unidentified
Aclitellata
Polychaeta
Palpata
Aciculata
Phyllodocida
Nereididae
Hediste limnicola
Arthropoda
Crustacea
Malacostraca
Eumalacostraca
Peracarida
Amphipoda
Gammaridea
Gammaridae
Gammarus setosus
Mysida
Mysidae
Neomysis mercedis
Mollusca
Bivalvia
Bivalvia, unidentified
Heterodonta
Veneroida
Tellinoidea
Tellinidae
Macoma balthica
***Macoma* sp.**
Nemertea
Nemertea, unidentified
Nematoda (excluded from analysis but retained and enumerated)
Nematoda, unidentified

Oligochaetes and mysids were found at all three stations. Refer to Tables IIC-5 through IIC-7 in Section IIC - Biological Conditions in the 2005 Permit Renewal Application (CH2M Hill 2004). Oligochaetes were the most abundant taxa encountered. Station I17 had the fewest number of taxa with only three species, while Station IC4 had the greatest with eight. Station I16, however, had the greatest mean densities due to an abundance of oligochaetes (Tables IIC-8 through IIC-10 in 2005 Permit Renewal). The lowest mean densities were found at Station I17. The only intertidal flora collected was the yellow-brown alga *Vaucheria* sp. It occurred at Stations IC4 and I16 but not at Station I17 (Tables IIC-5 through IIC-7 in 2005 Permit Renewal).

Biomass differences were clear among the three stations (Table IIC-11 through IIC-13 of 2005 Permit Renewal). Standing stock was lowest at Station I17 and greatest at Station IC4. The greatest biomass was contributed by the yellow-brown alga *Vaucheria*. Among the fauna collected, the greatest biomass was contributed by the bivalve mollusk *Macoma balthica*, followed by the various annelid polychaete taxa. No bivalves or algae were found at Station I17, giving it the lowest standing stock of the three stations sampled.

During 1989, only 11 taxa were collected from the three intertidal stations. Lists of collected taxa are presented in Tables IIC-14 through IIC-16 in the 2005 Permit Renewal. The total number of taxa sampled is only an estimate of the actual number of species present because, as stated previously, many species were potentially represented in larger taxonomic categories.

Oligochaetes and the bivalve *Macoma* were found at all three stations (Tables IIC-14 through IIC-19 of 2005 Permit Renewal). Oligochaetes were the most abundant taxa encountered. Station IC4 had the fewest number of taxa with only four species; Station I17 had the greatest with eight. Station I17 had the greatest mean densities because of an abundance of oligochaetes (summary in Table IIC-20 of 2005 Permit Renewal). The lowest mean densities were found at Station IC4. Details of the densities per replicate are in Tables IIC-17 through IIC-19 of 2005 Permit Renewal. The only intertidal flora collected was *Vaucheria* sp., which was abundant but patchy in distribution.

Differences in biomass were clear among the three stations (Tables IIC-21 through IIC-23 of 2005 Permit Renewal). Standing stock was lowest at control Station IC4 and highest at Station I17 (summary in Table IIC-24 of 2005 Permit Renewal). Among the fauna collected, the greatest biomass was contributed by the bivalve mollusk *Macoma*, followed by the various annelid taxa.

In summary, both qualitative and quantitative results from the 1986 and 1989 studies indicate an intertidal marine benthic flora and fauna of very low standing crop and low species diversity in the vicinity of the discharge. Only one species of marine macrophytic algae was found in the intertidal collections, and only four taxa of macrofaunal invertebrates that can be considered truly marine (*Eteone longa, Macoma balthica*, harpacticoida, and mysidacea) were observed. Of these, the mysids are epibenthic and occasionally move up into the water column, becoming part of the plankton. This leaves only the bivalve *M. balthica*, the polychaete *E. longa*, and the harpacticoid copepods as benthic species in the area that can be regarded as truly resident marine intertidal populations. These are the only organisms in the area possibly suitable for monitoring assessments.

Both M. balthica and E. longa are pioneer species and can tolerate broad fluctuations in salinity and temperature. They are probably the only marine benthic species able to colonize these areas with any degree of success. Even so, their densities are generally so

low and their distribution so patchy that any long-term, statistically valid monitoring design would be difficult.

Intertidal benthic invertebrate studies were also performed more recently in 2022 to 2023 as part of the AWWU permit reapplication effort (Kinnetic Environmental, Inc. 2024d). Results of these studies are consistent with past studies, finding the diversity of the intertidal shoreline infauna near Point Woronzof and Point MacKenzie was generally found to be low, and in some areas the benthic infauna were very sparsely represented. In the 2022 to 2023 study, oligochaetes and polychaete annelids dominated the study sites and were most abundant at the stations closest to the outfall. Results of the study concluded that it was unclear whether the outfall directly influences the higher abundances observed at these sites, or if the observed differences are simply due to large differences in substrate and sediment characteristics, particularly sediment grain size and organic content.

As in the prior studies, due to the coarse nature of the subtidal bottom sediments, the collection of undisturbed benthic sediments was not possible, so no information was obtained on the subtidal benthic community, which is consistent with historical efforts (Kinnetic Environmental, Inc. 2024b).

Although not documented in benthic sampling performed for the AWPCF monitoring in the past, the polychaete *H. limnicola* (previously *Neanthes limnicola*) was found in 2022 to 2023. This species was found at all six stations, although not in every replicate taken within those stations; it was the second most abundant taxon found overall and occurred in 71% of the samples taken at all sites. This species was also previously documented in intertidal beach seines that were collected in Knik Arm in reference to the Knik Arm Bridge studies during 2004 and 2005 (Pentec 2005). *H. limnicola* occurred in all 11 of the beach sites that were sampled from lower to upper Knik Arm (Point Woronzof [KA13] to offshore of the Beach Lake area [KA1]). These sites represented about a 20- to 22-mile stretch of Knik Arm, and these data suggest that this species may have been well established in this area 20 years ago. However, this represents a range extension for this species, which heretofore had not been documented this far north but is more commonly found in reduced salinity areas (freshwater and brackish) in California, including in Lake Merced and the Salinas River and north to Vancouver Island, Canada (Hiebert 2015). Project taxonomists also noted that this species has now been documented in freshwater lake environments in Idaho, also representing a range extension for this organism.

The oligochaete family Naididae was the most abundant taxon encountered in 2022 to 2023, but it occurred only at three stations: the near-ZID boundary sites IT-9 and IT-8 and the far-field site IT-2. The near-ZID boundary area stations contained 98% of all Naididae individuals found with the majority (77%) found at IT-8, the station closest to the outfall diffuser (Figure 1). The density of the Naididae ranged from 120 m^2 at Station IT-2 to 4,401 m^2 at IT-8. The oligochaete family Enchytraeidae was the third most abundant taxon and occurred only at the same three stations as the Naididae. The far-field Station IT-2 contained 81% of all Enchytraeidae collected, while the two near-ZID boundary sites contained the remaining 19%. The density of Enchytraeidae among the three stations ranged from 90 m^2 at IT-8 to 1,118 m^2 at IT-2. Combined, these two oligochaete families, Enchytraeidae and Naididae, made up roughly 74% of all identified organisms, despite being found in only half of the samples collected (Kinnetic Environmental, Inc. 2024d).Overall, the diversity of organisms was very low with fewer than 10 total taxa found across all sites.

The low species diversity and low standing stock present here are much lower than other types of marine environments in Alaska and are believed to be primarily the result of physical stress. The main elements contributing to this stress are the heavy suspended loads of glacial inorganic sediment, low and fluctuating salinities, temperature fluctuations, and mechanical disturbances of the substrate. This results from the wide tidal range, strong currents, and winter ice conditions.

Nearshore Fish

Because offshore benthic areas were essentially impossible to sample, the only other way to sample resident fish populations for impact assessment would be on shoreline areas using beach seines. Beach seine samples were collected by Dames and Moore (1983) at nine intertidal stations throughout Knik Arm and more recently at five intertidal stations in 2022, 2023, and 2024 by Kinnetic Environmental, Inc. (2025) as part of the Asplund 301(h) reapplication effort. The Kinnetic Environmental study also included offshore mid-water beam trawls within the ZID and at a control site near Point MacKenzie.

Of the nine stations sampled by Dames and Moore, Point Woronzof was low to moderate for total catch and salmon catch, respectively, when compared to the other stations sampled. Catches for all the sites combined (114 hauls) were dominated by three-spine stickleback (4,631), eulachon (220), saffron cod (181), and salmonids (282). The Point Woronzof catch (16 hauls) was dominated by saffron cod (35), three-spine stickleback (68), chum salmon (28), coho salmon (13), eulachon (17), and Bering cisco (16). Kinnetic Environmental found similar numbers for the five locations with a total of 45 hauls. The catch was dominated by three-spine stickleback (117), followed by longfin smelt (95), Pacific cod (51), salmonids (29), and eulachon (8). A marked seasonal difference was noted by Kinnetic Environmental for some species with much higher numbers of stickleback caught during the spring and summer whereas much higher numbers of longfin smelt were seen in the summer and fall. For eulachon, all of the catch was during the spring sampling event, which coincided with the spring spawning migration back to their natal streams and rivers.

Kinnetic Environmental found that the offshore beam trawl surveys at the ZID and control site were dominated by juvenile three-spined stickleback with a total catch of 418 across 12 hauls. Other organisms that were found in high numbers during the trawl surveys included amphipods (410) and spotted shrimp (279), along with a few other fish species that included adult pink salmon (3), Pacific cod (10), larval fish unidentified (1), and juvenile fish unidentified (1).

As shown in Section IIC, analysis of outmigration data, regional fish hatcheries, and aquaculture plans indicates that Knik Arm serves as an important pathway for a large number of out-migrating juvenile salmon. Dames and Moore (1983) and Moulton (1997) data indicate more importance than previously thought for Knik Arm and Upper Cook Inlet, respectively, in terms of possible resident fish and migrating juvenile salmon eating marine-based food as they migrate out to sea.

The beach seine catches at Point Woronzof did not indicate any marked differences in species composition or size from the other areas sampled. It is highly unlikely that any impact from the discharge would occur for the following reasons:

- The AWPCF wastewater composition contains low levels of potential toxicants.
- Dissolved oxygen, suspended sediment, and pH receiving water standards are met.

- High tidal velocities provide a large amount of dispersion and far-field dilution of the wastewater plume.
- Sediments of wastewater origin make up a very small proportion of those in the water column and deposited in the estuary. This low contribution of wastewater sediments limits potential of impacts from accumulation in sediments.
- With the exception of the three-spined stickleback, a large portion of the fish community is anadromous, minimizing their length of exposure in the area. Also, the low food availability and high flushing rate limit their period of residence. Resident fish population numbers, represented by Pacific cod, saffron cod, Bering cisco, snail fish, and longfin smelt, are low based on the available data.

Beluga Whale

As described in Section 1a, beluga whales inhabit Cook Inlet as part of the balanced indigenous population of the inlet. They were historically distributed throughout Cook Inlet but in the 2000s their range contracted to mostly the upper and middle waters of the inlet (Shelden et al. 2018); they are found in Knik and Turnagain arms particularly during October and November, when they have been documented moving between Knik Arm, Turnagain Arm, and Chickaloon Bay (Hobbs et al. 2005). The risk evaluation presented in the Biological Evaluation (BE) determined that no effects on ESA-listed Cook Inlet beluga whales from constituents in AWPCF effluent are likely based on the fact that expected concentrations of constituents were either not detected or did not indicate risk to prey species (that is, fish) or marine mammals through food chain uptake when compared to aquatic toxicity benchmarks (BMs). No risk to Cook Inlet beluga whales or Steller sea lions was estimated from the consumption of chemicals measured in Cook Inlet fish tissues.

Therefore, biologically significant factors that Cook Inlet beluga whales and the Western DPS of Steller sea lions require for survival (that is, reproduction, feeding, or habitat) are not expected to be adversely affected by the discharge within or outside of the ZID.

2. Have distinctive habitats of limited distribution been impacted adversely by the current discharge and will such habitats be impacted adversely by the modified discharge?

Distinctive habitats have not been adversely impacted by the current discharge and are not expected to be adversely impacted by the AWPCF discharge proposed under this application. Cook Inlet beluga critical habitat has been designated in two areas covering 7,800 km^2 of the Cook Inlet marine environment (Figure III.D-1).

Critical habitat for Cook Inlet beluga whales is defined by primary biological features (PBFs) (NMFS 2011), including:

- PBF 1: Intertidal Waters of Cook Inlet with depths less than 30 feet (9.1 m) MLLW and within 5 miles (8 km) of high- and medium-flow anadromous fish streams
- PBF 2: Primary prey species consisting of four species of Pacific salmon (Chinook, sockeye, chum, and coho), Pacific eulachon, Pacific cod, walleye pollock, saffron cod, and yellowfin sole
- PBF 3: Waters free of toxins or other agents of a type and amount harmful to Cook Inlet beluga whales
- PBF 4: Unrestricted passage within or between the critical habitat areas
- PBF 5: Waters with in-water sound below levels resulting in the abandonment of critical habitat areas by Cook Inlet beluga whales

AWPCF discharge actions will not increase underwater sound levels within Cook Inlet. In addition, due to the rapid dilution of AWPCF effluent within the ZID, effects are not anticipated for PBF 3 or PBF 4. Regarding PBF 2, the risk assessment presented in the BE determined that no effects on prey species of Cook Inlet beluga whales are likely within the ZID, Knik Arm, or Turnagain Arm. While the risk evaluation results indicate a potential for concentration-based effects on prey if exposed for extended periods of time to undiluted effluent at the end of the pipe -- this scenario assumes no dilution at all, which is not realistic since the AWPCF effluent discharge is immediately diluted in the receiving waters. In addition, based on biological sampling and what is known about prey species such as salmon or eulachon, fish migrate quickly through the action area to streams and rivers that are located outside the ZID, let alone directly adjacent to the outfall. There is no residency for these species within the ZID. For these reasons, neither prey fish species nor Cook Inlet beluga whales that feed on them are expected to be exposed to AWPCF effluent and be subject to adverse risk for critical life functions, including survival or reproduction.

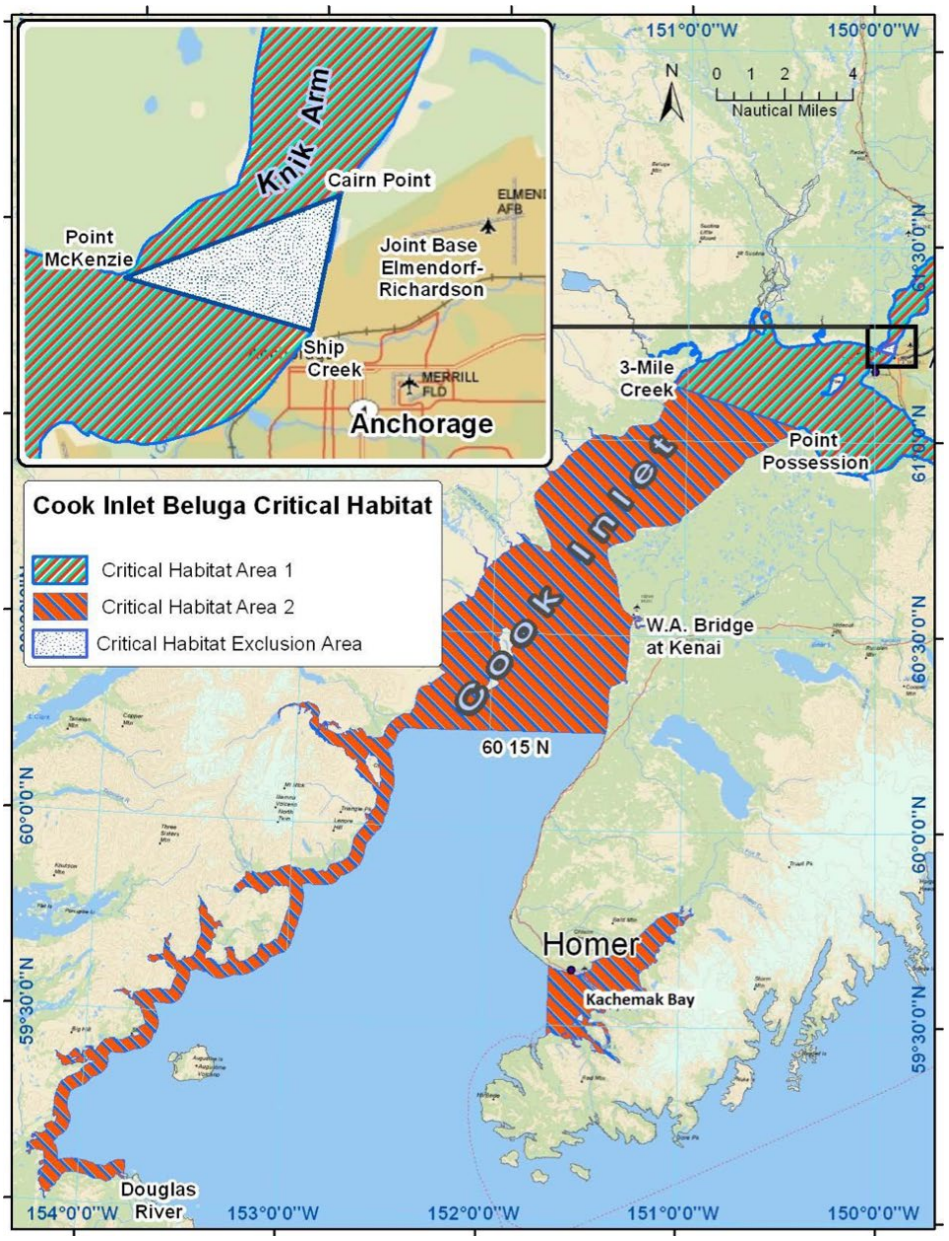


Figure III.D-1. Cook Inlet beluga critical habitat

Mixing and dilution occurs rapidly within the ZID, and actual exposure concentrations for prey species outside of a few meters from the outfall are much lower (that is, below toxicity benchmarks) than undiluted effluent or concentrations directly at the end of pipe. As described in the BE, no beluga prey species are expected to remain in the immediate vicinity of the outfall for a sufficient time for negative impacts to occur. The risk evaluation (Appendix C of the BE) concluded that no constituents detected in AWPCF effluent pose adverse risk to prey species of Cook Inlet beluga whales.

3. Have commercial or recreational fisheries been impacted adversely by the current discharge (e.g. warnings, restrictions, closures, or mass mortalities) or will they be impacted adversely by the modified discharge?

No. The discharge from the AWPCF has not been linked to any adverse effects on commercial or recreational fisheries in Upper Cook Inlet. Rather, there appears to be evidence of large-scale changes in the ecosystem that may be affecting commercial and recreational fisheries in Cook Inlet. As described in Section II.C.3b, Pacific salmon (all five species) and eulachon are commercially harvested in the Northern District of the Upper Cook Inlet Management Area. These species are also harvested by subsistence and recreational fishers.

Section II.C.3b describes trends in salmon abundance in Upper Cook Inlet drainages estimated from escapement and commercial harvest data. Pacific salmon returns in Alaskan waters have been declining, which has led to restrictions in both directed fisheries, bycatch in fisheries directed at other species, and recreational fisheries (Courtney et al. 2019; ADF&G 2020, 2021, 2023; Courtney et al. 2021; Harrison 2021). To protect the fisheries, restrictions on and closures of the Chinook and coho fisheries within Cook Inlet in the Northern District have been enacted. These are described in Section II.C.3.b; notable closures include:

- 2022 Chinook salmon fishery in the Chinitna River, and subsequently the commercial Chinook fishery in the Susitna River, as well as a restriction on the Northern District Chinook salmon fishery to 6 hours per open period
- 2023 commercial salmon fishing season in the Northern District of Upper Cook Inlet on September 14
- 2024 Deshka River Chinook sport fishing and, by emergency order in August 2024, closure of Ship Creek to all sport fishing due to low coho counts in the Ship Creek Hatchery

Researchers have attributed recent declines in Cook Inlet Chinook salmon populations in part to climate-driven changes in temperature and streamflow in freshwater habitats (Jones et al. 2020; Mauger et al. 2023). Declines in Cook Inlet salmon populations have been linked to large-scale climate drivers, but uncertainty remains about the role of local conditions (for example, precipitation, streamflow, and stream temperature) that vary among the watersheds where salmon spawn and rear (Jones et al. 2020). For example, in recent years, water temperatures measured in the Deshka River have been as high as 27 degrees Celsius (°C), with an average increase of 1.5°C since 1980 (Jones et al. 2020). Weekly water temperature averages are projected to exceed 26.0°C by 2060 (Mauger et al. 2023) and are already exceeding weekly averages projected for 2030 (Mauger et al. 2017, Mauger et al. 2023).

Also, Maw and Salmon (2013) theorize that decreased Pacific salmon runs in the Little Susitna River are the result of public access allowing strong recreational fishing pressure, hook and release mortality, parasites, diseases, invasive northern pike, warm water

temperatures (13°C), blocked culverts, beaver dam blockages, urbanization, and impaired water quality.

Other studies have linked Pacific salmon population declines in Cook Inlet to poor marine stage survival (Courtney et al. 2019). Recent research suggests that mortality of Chinook salmon in older marine life stages caused by marine apex predators, including killer whales (*Orcinus orca*), Steller sea lions (*Eumetopias jubatus*), harbor seals (*Phoca vitulna*), and salmon sharks (*Lamna ditropis*) has increased in recent years (Chasco et al. 2017; Courtney et al. 2021) and may explain declines in abundance and demographic changes of adult returns (Ohlberger et al. 2019; Seitz et al. 2019). All of these apex predators including beluga whales are known to occupy Cook Inlet.

Therefore, declines in Chinook and coho salmon stocks in Upper Cook Inlet and related commercial and recreational fishing closures are likely due to warming water temperatures, increased fishing pressure, urbanization, and poor marine stage survival. Effects on commercial or recreational fisheries from the modified discharge covered under this permit application are not expected as described in Section IIIB - Compliance with Applicable Water Quality Standards of the permit renewal.

- The nearest commercial fishing sites are set net sites located well outside of the ZID near Point MacKenzie and Fire Island, 4 km and 8 km from the AWPCF outfall, respectively. The closest recreational fishing site is the mouth of Ship Creek, 7.2 km from the AWPCF outfall.

4. Does the current or modified discharge cause the following within or beyond the ZID: [40 CFR 125.62(c)(3)]

a. Mass morality of fishes or invertebrates due to oxygen depletion, high concentrations of toxics, or other conditions?

No. There is no evidence that AWPCF discharge causes mass mortality of fish or invertebrates due to oxygen depletion, toxic concentrations, or other conditions. Monitoring of effluent characteristics indicate low turbidity and sufficient oxygen concentrations compared to ambient conditions where dissolved oxygen levels in the receiving water are near saturation, including within ZID locations and the ambient turbidity is much higher than the effluent discharge.

Whole effluent toxicity tests evaluating primary effluents quarterly exhibit low and infrequent toxicity that would not be expected to lead to population-level impacts.

Modeled toxicity estimates suggest that concentrations of some contaminants in primary effluent may have low toxicity directly at the outfall for organisms that remain in a limited spatial area (for example, invertebrates); however, rapid dilution reduces concentrations below levels that have the potential for population-level effects.

b. An increased incident of disease in marine organisms?

Infectious diseases can impact the physiological performance of marine organisms, including their mobility, visual acuity, behavior, and tolerance and ability to effectively respond to additional stressors (Miller et al. 2017). Constituents in seawater may play a role in the pathogenicity of several types of diseases of marine mammals and a deteriorated health status from an increased pollutant burden can lead to viral epidemics (Reckendorf et al. 2023). In addition, epidemiological studies suggest a relationship between environmental constituents exposures and congenital anomalies in humans and wildlife, including urogenital defects (Lyons 2007, Winchester et al. 2009).

However, as described in the BE, AWPCF effluent is rapidly diluted within 350 m of the outfall and marine organisms would not be exposed to effluent in any concentrations or for such duration as to induce physiological changes, making them more susceptible to disease.

c. An abnormal body burden of any toxic material in marine organisms?

No. Modeled fish tissue concentrations from detected chemicals in the AWPCF discharge are below levels that would be expected to result in adverse effects in the food chain on upper trophic organisms. Measured concentrations of constituents in fish tissue collected within Cook Inlet were below levels that would result in adverse effects from consumption by Cook Inlet beluga whales. Concentrations of n-nitrosodimethylamine measured in eulachon fish tissue that may cause adverse effects on Stellar sea lions under the most conservative exposure and toxicity assumptions. Specifically, adverse effects were modeled only for a 12-month exposure duration and using the most conservative toxicity reference value. There were no estimated adverse effects on Stellar sea lions under more realistic exposure or toxicity assumptions.

d. Any extreme, adverse biological impacts?

No, adverse biological impacts are not likely due to AWPCF discharge. Based on the evidence provided in Sections III.D.4a, b, and c and in the risk evaluation conducted for the BE, extreme biological impacts of the rapidly diluted AWPCF effluent are not expected.

5. For discharges into saline estuarine waters: [40 CFR 125.62(c)(4)]

a. Does or will the current or modified discharge cause significant differences in the benthic population within the ZID and beyond the ZID?

No. As shown in the response to Question III.D.1, comparisons of benthic populations within the ZID and beyond the ZID are not possible because of the extreme paucity of organisms in the subtidal environment. Because of the absence of benthos, no substantial difference can occur between, within, and beyond the ZID stations.

b. Does or will the current or modified discharge interfere with migratory pathways within the ZID?

No. There is no evidence that AWPCF discharge interferes with migratory pathways within the ZID.

Fish

Pacific salmon and Pacific eulachon must be able to safely return to their freshwater spawning and rearing areas to reproduce. As described in Section II.C, during spawning and migration periods, high river temperatures can block migratory corridors and cause thermal stress or mortality in salmon (Richter and Kolmes 2005; Mauger et al. 2023). Temperature is not a regulated condition of the current effluent discharge permit for AWPCF. However, AWPCF monitors temperature of the discharge; effluent temperatures in 2023 ranged from 10.4 to 15°C with an annual average of 12.3°C with June temperatures of 11.54 and 11.59°C at the ZID boundary and 12.15°C recorded at a control site located across Cook Inlet (Kinnetic Environmental, Inc. 2024a). The 2022 Mixing Zone Study reported a temperature at the AWPCF outfall of 14.0°C (Jacobs 2023). Within the action area near Point Woronzof, the average Cook Inlet water temperature for July through November was 12°C (Jacobs 2023). The temperature of AWPCF effluent would not affect river water temperatures (as these areas do not

spatially overlap). Nor would the range of temperatures reported in the effluent be expected to alter the Pacific salmon or eulachon migration.

Exposure to elevated copper concentrations can induce a number of physiological effects in fish, including disrupting sensory system functions, which can affect their migratory behavior (Johnson et al. 2007). Sandahl et al. (2004) exposed juvenile coho salmon to copper concentrations ranging from 5 to 20 µg/L and observed a 20% loss of sensory function at a copper exposure of 4.4 µg/L over a 4-hour duration. However, Sandahl et al. (2006) determined that chum salmon can recover from 4-hour exposures of from 3 to 58 µg/L copper concentrations within 1 day.

According to NMFS (2019a) and citations therein, zinc is known to cause avoidance in laboratory and field conditions for three different species of trout. Juvenile rainbow trout avoidance has been documented at zinc concentrations as low as 5.6 µg/L and 47 µg/L at a hardness of 13 mg/L. Avoidance in juvenile brown trout and juvenile cutthroat trout was documented at 25 µg/L and 28 µg/L, respectively (Woodward et al. 1995; Woodward et al. 1997). Based these and other studies and similarity of test species to the species occurring in Cook Inlet, NMFS identified conservative laboratory passage thresholds for zinc and other metals (NMFS 2019a); these are shown in Table II.D-2.

Table II.D-2. Summary of Estimated Fish Passage Threshold Concentrations (µg/L Dissolved Metal) for Certain Metals Present in Discharges into Authorized Mixing Zones Based on the Available Data

Passage Threshold[1]	Cadmium	Chromium	Copper	Mercury	Zinc
Laboratory	8	10	32	0.2	6
Field	16	20	32	0.4	12

Source: NMFS 2019a.

[1] Estimates of fish passage thresholds were identified based on the available data. Laboratory thresholds from the literature review were multiplied by two, the lowest laboratory-to-field ratio reported for the literature reviewed (Hartwell et al. 1987), to obtain estimates of field avoidance thresholds, except for copper. The estimated threshold for copper is instead identified as 3 µg/L due to the ambiguity in the available data. The estimated threshold for mercury is based on attraction rather than avoidance, which could also affect passage.

[2] Applicable only to fresh water; increasing dissolved organic level is expected to increase this threshold.

Over the period 2019 to 2023, receiving water samples were collected from immediately over the outfall, at the ZID boundary, and a nearfield station located 1,400 m from the outfall. With the exception of copper, dissolved concentrations of these metals were two or three orders of magnitude below the field passage thresholds shown in Table II.D-2 in all receiving water samples (Kinnetic Environmental, Inc. 2020, 2021, 2022, 2023, 2024a). Disoolved copper ranged from a high of 6.16 µg/L over the outfall in 2020 to a low of 0.94 µg/L at the ZID boundary that same year. Over all 5 years, samples collected at the outfall showed dissolved copper concentrations ranging from 2.15 to 6.16 µg/L; samples at the ZID boundary ranged from 0.94 to 5.84 µg/L; and dissolved copper in nearfield samples ranged from 0.26 to 2.9 µg/L. A nearfield sample collected in 2023 showed a dissolved copper concentration of 20.8 µg/L but that outlier was attributed to a filtration failure (Kinnetic Environmental Inc., 2024a).

Regarding the threshold for copper, as noted in Table II.D-2 footnotes, the threshold applies only to freshwater and that increasing dissolved organic carbon would be

expected to increase this threshold (NMFS 2019a). Due to this and to the low concentrations of all other metals and observed dilution of concentrations detected over the outfall, metals dissolved in AWPCF effluent are not expected to affect fish passage through the ZID.

Cook Inlet Beluga Whales

Seasonal migration patterns of Cook Inlet beluga whales are strongly tied to the migration patterns of eulachon and Pacific salmon in the inlet (Moore et al. 2000). Safe passage of migrating fish and other organisms through and around mixing zones is an important factor to consider in assessing the potential effects on Cook Inlet beluga critical habitat (NMFS 2019a). As described in Section II.C.1b, during the ice-free months beluga whales are concentrated near Upper Cook Inlet river mouths, dispersing and moving into middle and lower inlet waters during the winter (Shelden et al. 2015a). The seasonal movements of beluga whales in Cook Inlet appear to be generally influenced by prey availability, ice coverage, and peak river discharge events (Hobbs et al. 2005; Rugh et al. 2010; Goetz et al. 2012). As described in Section II.C.2b, critical habitat has been designated for Cook Inlet belugas in Upper Cook Inlet. A defining feature of the critical habitat is PBF4: unrestricted passage within or between the critical habitat areas. It is unlikely that AWPCF effluent will affect the ability Cook Inlet beluga whales to freely migrate to Upper Cook Inlet to feed because:

- As described in detail in Section III.D.3, AWPCF effluent does not contain high concentrations of toxic or deleterious substances
- Based on data from aerial beluga surveys conducted in Cook Inlet in June over the period 2008 to 2018, the action area is not a migratory pathway frequented by Cook Inlet beluga whales in high numbers when compared to other areas across the inlet where prey species are present in higher numbers. In 2005, surveys documented 16 belugas at Fire Island located about 8 km from the outfall. Two belugas were counted at that location in 2007, nine in 2010 and two in 2011 (Shelden et al. 2013; Shelden et al. 2015a; Shelden et al. 2017; Shelden and Wade 2019). No belugas were counted at Fire Island during any of the other years. For comparison, during the same study belugas were observed every year at the Susitna Delta (North Foreland to Point MacKenzie located about 30 km from the outfall) at numbers ranging from 41 in 2003 to 333 in 2014 (Shelden et al. 2013; Shelden et al. 2015a; Shelden et al. 2017; Shelden and Wade 2019). These observations indicate that few belugas migrate past the action area on their way to feeding areas near the Susitna Delta and are unlikely to contact undiluted AWPCF effluent or be restricted due to encountering the effluent.

c. Does or will the current or modified discharge result in bioaccumulation of toxic pollutants or pesticides at levels which exert adverse effects on the biota within the ZID?

No. Constituent concentrations measured in the AWPCF effluent discharge are not expected to bioaccumulate at concentrations that would result in adverse effects on biota. Constiuent concentrations within discharge are not expected to increase due to the modified permit conditions that reduce the ZID area. Organisms that could bioaccumulate these constituents would not spend sufficient time within the ZID to result in adverse effects on themselves or through the food chain.

6. For improved discharges, will the proposed discharge(s) comply with the requirements of 40 CFR 125.62(a) through 125.62(d)? [40 CFR 125.62(e)]

This application is not for an improved discharge.

7. For altered discharges, will the proposed discharge(s) comply with the requirements of 40 CFR 125.62(a) through 125.62(d)? [40 CFR 125.62(e)]

This application is not for an altered discharge.

8. If your current discharge is to stressed ocean waters, does or will your current or modified discharge: [40 CFR 125.62(f)]

a. Contribute to, increase, or perpetuate such stressed condition?

b. Contribute to further degradation of the biota or water quality if the level of human perturbation from other sources increase?

c. Retard the recover of the biota or water quality if human perturbation from other sources decreases?

This application is not for a discharge to stressed waters.

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III.E. Impacts of Discharge on Recreational Activities [40 CFR 125.62(d)]

1. Describe the existing or potential recreational activities likely to be affected by the modified discharge(s) beyond the zone of initial dilution.

No existing or potential recreational activities will be affected by the discharge primarily because potential recreational activity in Knik Arm is very limited. According to the Alaska Department of Fish and Game (ADFG), shell fishing, swimming, wading, and underwater diving in the vicinity of Anchorage are rare occurrences. Expansive mud flats at low tide, low water temperatures, high turbidity, winter ice floes, powerful currents, and extreme tidal ranges deter recreationists.

The small beach southwest of Point Woronzof is occasionally used for picnicking and shoreline activities. Only very limited recreational boating, swimming, or wading occurs in the area due to cold water and strong currents. The beach may be accessed through the Tony Knowles Coastal Trail, which was constructed in the 1980s and rehabilitated in 2013.

Local artisans occasionally use clay obtained from the bluffs in Bootleggers Cove for pottery. This clay is dug horn layers located in the bluffs above the high-water line. There is no significant sport fishing in Upper Cook Inlet or in Knik or Turnagain Arm. The strong currents at the mouth of Knik Arm preclude sport fishing from small boats. The wide mud flats and heavy silt loading of glacially originated streams and creeks also deter many people from fishing near shore.

Waterfowl hunting is permitted on the tidelands below the toe of the bluff between Point Woronzof and Point Campbell and in the Potter Point State Game Refuge south of Point Campbell. Most hunting near Anchorage reportedly occurs on the western shores of Knik Arm (north of Point MacKenzie) and Cook Inlet, around the Susitna River where marshland areas are more extensive. The mud flats of the Anchorage area provide little food or shelter for ducks. Waterfowl hunting is not legal east of Point Woronzof until well past the study area.

2. What are the existing and potential impacts of the modified discharge(s) on recreational activities? Your answer should include, but not be limited to, a discussion of fecal coliform bacteria.

The discharge will not impact recreational activities due to the treatment and characteristics of the effluent and the receiving waters. The AWPCF effluent is chlorinated, highly diluted, and discharged into the Upper Cook Inlet receiving water with naturally high turbidity, ensuring that recreational users are not affected. Fecal coliform bacteria levels will meet stringent water quality standards designed to protect water uses, even though such uses, like water contact recreation and shell fishing, do not typically occur in Cook Inlet. Detailed summaries of fecal coliform bacteria sampling results for the Upper Cook Inlet receiving waters are presented in Section IIB.6.a and Section IIIB.7 of this Large Questionnaire.

Point Woronzof, which is primarily used as a vista point, will remain unaffected by the discharge. The high turbidity of the receiving waters, combined with the significant initial dilution of the effluent and the horizontal orientation of the fully submerged outfall ports, ensures that the view will not be impaired.

3. Are there any Federal, State, or local restrictions on recreational activities in the vicinity of the modified discharge(s)? If yes, describe the restrictions and provided citations to available references.

Yes. ADFG restricts recreational hunting and sport fishing in this area. According to ADFG representatives, these restrictions result from safety concerns, not the outfall. Hunting near parks and airport approaches is not encouraged.

The Alaska Division of Aviation manages all the lands in Section 21. Littoral and riparian lands in the north part of Section 29 are State-owned; This land was patented to the State to be used for parks, recreation, or other public purposes, and there is an air space restriction on the land.

4. If recreational restrictions exist, would such restrictions be lifted or modified if you were discharging a secondary treatment effluent?

None of the restrictions mentioned herein would be lifted or modified because of the discharge of secondary treated effluent. The restrictions have no connection with the discharge of wastewater.

III.F. Establishment of a Monitoring Program [40 CFR 125.63]

1. Describe the biological, water quality, and effluent monitoring programs which you propose to meet the criteria of 40 CFR 125.63. Only those scientific investigations that are necessary to study the effects of the proposed discharge should be included in the scope of the 301(h) monitoring program [40 CFR 125.63(a)(1)(i)(B)]

The existing monitoring program is established in the Quality Assurance Project Plan (QAPP) for the John M. Asplund Water Pollution Control Facility (AWPCF) National Pollutant Discharge Elimination System (NPDES) permit and 301(h) waiver (Jacobs & KEI 2022).

2. Describe the sampling techniques, schedules, locations, analytical techniques, quality control, and verification procedure to be used.

The sampling techniques, schedules, locations, analytical techniques, quality control, and verification procedures used in the monitoring program are fully detailed in the QAPP (Jacobs & KEI 2022).

3. Describe the personnel and financial resources available to implement the monitoring programs upon issuance of a modified permit and to carry it out for the life of the modified permit.

Personnel

The key personnel responsible for carrying out the program are documented in the QAPP (Jacobs & KEI 2022). All routine inorganic and bacteriological analyses on treatment plant samples are conducted by the Anchorage Water and Wastewater Utility's AWPCF laboratory. The lab is also responsible for implementation of the pretreatment program. Water quality and biological monitoring of the receiving water is currently done by a contractor, Kinnetic Laboratories. All organic analyses required by the permit are completed by commercial laboratories under subcontract to Kinnetic Laboratories.

Financial Resources

The Municipality of Anchorage has a sewer tariff system that applies varying rates, depending on user cost-of-service classifications. The sewer rates are increased periodically to cover increasing operating costs. Costs of AWWU's Laboratory Services Section and contracts to conduct and oversee the monitoring programs are included in AWWU's yearly operating budget and will be funded sufficiently to meet permit requirements.

References

Jacobs Engineering Group (Jacobs) & Kinnetic Environmental, Inc. (KEI). 2022. *Quality Assurance Project Plan, 301(h) Waiver and NPDES Permit Renewal Application Supplement for Asplund Water Pollution Control Facility*. Prepared for Anchorage Water and Wastewater Utility. August.

III.G. Effect of Discharge on Other Point and Nonpoint Sources [40 CFR 125.64]

1. ***Does (will) your modified discharge(s) cause additional treatment or control requirements for any other point or nonpoint pollution source(s)?***

No. The Ted Stevens Anchorage International Airport has a stormwater general permit. The AWPCF will not affect its discharge. No additional treatment or control requirements will be required for any other sources because of the AWPCF's discharge.

2. ***Provide the determination required by 40 CFR 125.64(b) or, if the determination has not yet been received, a copy of a letter to the appropriate agency(s) requesting the required determination.***

There is no change from the original application.

III.H. Toxics Control Program and Urban Area Pretreatment Program [40 CFR 125.65 and 125.66]

1. [no question, see a and b]

a. Do you have any known or suspected industrial sources of toxic pollutants or pesticides?

Fourteen facilities have been identified as significant industrial users (SIUs). The list of permitted SIUs is provided in Table IIIH-1.

Table IIIH-1: Permitted Significant Industrial Users

Permitted Users	Address	Industrial Classification	Average Flow (gpd)
Copper River Seafoods	1400 East 1st Avenue Anchorage, Alaska 99501	Fish Processor	31,128
Merrill Field Landfill MOA – Solid Waste Services	2115 East 15th Avenue Anchorage, AK	Closed Landfill	303,866
ALSCO	715 West Fireweed Lane Anchorage, AK 99503	Industrial Launderers	1515
Anchorage Regional Landfill MOA – Solid Waste Services	1111 East 56th Avenue Anchorage, AK 99518-1754	Sanitary Landfill	120,000
Joint Base Elmendorf-Richardson (JBER)	724 Quartermaster Road (673d CES/CEIEC) JBER Anchorage, AK 99506-3240	National Security, Air Force	2,190,000
Matanuska-Susitna Borough Central Landfill	1201 North 49th State Street Palmer, AK 99645	Sanitary Landfill	10,400
Chugach Electric, G.M. Sullivan Plant 2/2A	8700/8900 Starview Drive Anchorage, AK 99501	Fossil Fuel Electric Power Generation (Steam Electric)	1276
US Ecology, a Republic Company	2020 Viking Drive Anchorage, AK 99501	Refuse Systems (Centralized Waste Treatment)	6526
Chugach Electric Association, Inc. Southcentral Power Project (SPP)	1275 Dowling Road Anchorage, AK 99518	Fossil Fuel Electric Power Generation (Steam Electric)	17280
Copper River Seafoods	1340 Laona Drive Anchorage, AK 99518	Prepared Fresh or Frozen Fish and Seafoods	26,197
Environmental Compliance Consultants (ECC)	1500 Post Road Anchorage, AK 99501	Other Nonhazardous Waste Treatment and Disposal (Centralized Waste Treatment), Environmental Consulting, Solid Waste Collection	220
Inlet Worldwide Oil, Inc. (Jiffy Lube Alaska #2464)	1221 Bragraw Street Anchorage, AK 99503	Automotive Services, Except Repair and Carwashes	2,684
Tesoro Logistics Operations, LLC	1076 Ocean Dock Road Anchorage, AK 99503	Wholesale Trade	955
Chugach Electric Association, Inc.	5601 Electron Drive Anchorage, AK 99518	Steam Electric	50,000

b. If no, provided the certification required by 40 CFR 125.66(a)(2) for small dischargers, and required by 40 CFR 125.66(c)(2) for large dischargers.

Not applicable.

c. Provided the results of wet and dry weather effluent analyses for toxic pollutants and pesticides as required by 40 CFR 125.66(a)(1).

Table IIIH-2 shows peak effluent concentrations detected for toxic pollutants and pesticides at the AWPCF. These results are based on the 2019 to 2023 Monitoring Program Annual Reports. Toxic pollutants and pesticides are monitored twice per year, once during dry weather and once during wet weather.

Table IIIH-2: AWPCF Peak Concentrations Detected for Effluent Analyses for Toxic Pollutants and Pesticides by year

TOTAL METALS (µg/L)	**2019**	**2020**	**2021**	**2022**	**2023**
Antimony	0.713	0.74	0.712	0.785	0.904
Arsenic	3.32	2.89	2.74	3.22	3.42
Beryllium	0.018J	0.011J	ND	0.011J	0.01J
Cadmium	0.207	0.229	0.212	0.193	0.193
Chromium	3.46	1.95	1.86	2.24	1.82
Copper	60.8	50.2	52.8	37.1	40.9
Lead	2.1	2.75	4.8	1.9	1.8
Mercury	0.0347	0.0268	0.0651	0.023	0.0344
Molybdenum	48.7	6.95	4.35	2.18	5.25
Nickel	6.7	6.19	5.37	4.76	5.18
Selenium	0.9J	0.9J	0.9J	0.7J	0.9J
Silver	0.255	0.33	0.217	0.191	0.2
Thallium	0.02J	0.011J	ND	0.052J	0.015J
Zinc	142	143	165	124	145
DISSOLVED METALS (µg/L)					
Antimony	0.615	0.685	0.6	0.654	0.806
Arsenic	2.74	2.42	2.38	2.6	2.73
Beryllium	ND	ND	ND	ND	ND
Cadmium	0.18	0.113	0.144	0.1	0.124
Chromium	1.92	3.63	0.93	1.03	1.07
Copper	41.8	25.4	21.8	24.1	25.6
Lead	1.54	0.927	0.845	0.812	0.711
Mercury	0.0192	0.0129	0.0348	0.00872	0.0106
Molybdenum	47.6	6.76	4.18	2.44	5.03
Nickel	6.29	5.93	9.49	4.76	4.72
Selenium	0.8J	0.6J	0.7J	0.7J	0.6J
Silver	0.231	0.193	0.084	0.056	0.078
Thallium	0.032	0.016J	ND	0.013J	ND
Zinc	124	82.8	72	81	96.4

TOTAL METALS (µg/L)	2019	2020	2021	2022	2023
VOLATILE ORGANICS (µg/L)					
1,1,1-Trichloroethane (TCA)	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND
1,1,2-Trichlorotrifluoroethane	NT	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND
1,2-Dichloroethane (EDC)	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	0.38J	0.75J	0.41J	0.42J
2-Butanone (MEK)	NT	24	20	19J	19J
2-Chloroethyl Vinyl Ether	ND	ND	ND	ND	ND
2-Hexanone	NT	ND	ND	5.7J	3.3J
4-Methyl-2-pentanone (MIBK)	NT	ND	ND	ND	ND
Acetone	NT	270	200	270	220
Acrolein	ND	1.3J	ND	ND	ND
Acrylonitrile	ND	ND	ND	ND	ND
Benzene	ND	0.17J	0.08J	0.31J	0.27J
Bromodichloromethane	ND	0.05J	ND	ND	ND
Bromoform	ND	ND	ND	ND	ND
Bromomethane	ND	0.09J	ND	ND	ND
Carbon Disulfide	NT	0.62J+,B	0.69J	0.7	ND
Carbon Tetrachloride	ND	ND	ND	ND	ND
Chlorobenzene	ND	0.03J	ND	ND	ND
Chloroethane	ND	0.44	0.69	ND	ND
Chloroform	3.25J	2.7	2.9J	3.3	2.1J
Chloromethane	ND	1.9J+,B	1.9J	1.4	0.96J
cis-1,2-Dichloroethene	ND	ND	0.07J	ND	ND
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND
Dibromochloromethane	ND	ND	ND	ND	ND
Dichlorodifluoromethane (CFC 12)	NT	ND	ND	ND	ND
Dichloromethane (Methylene Chloride)	6.85J	2.8	5.2	0.99J	1.9J
Ethylbenzene	ND	0.22J	0.19J	0.55	0.76J
m,p-Xylenes	1.65J	0.78J	0.69J	2.3	3.1J
o-Xylene	ND	0.35J	0.34J	0.99	1.5J
Styrene	NT	0.07J	0.09J	0.38J	ND
Tetrachloroethene (PCE)	ND	<0.5U,B	0.23J	0.57	0.2J
Toluene	6.65	7.9	6.5	8.5	7.7
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND

TOTAL METALS (µg/L)	2019	2020	2021	2022	2023
Trichloroethene (TCE)	ND	ND	ND	ND	ND
Trichlorofluoromethane (CFC 11)	ND	ND	ND	ND	ND
Vinyl Acetate	NT	ND	ND	ND	ND
Vinyl Chloride	ND	0.02J	ND	ND	ND
SEMI-VOLATILES ORGANICS (µg/L)					
1,2,4-Trichlorobenzene	NT	ND	ND	ND	ND
2,4,6-Trichlorophenol	NT	1.2J	ND	ND	ND
2,4-Dichlorophenol	NT	ND	ND	ND	ND
2,4-Dimethylphenol	NT	ND	ND	ND	ND
2,4-Dinitrophenol	NT	ND	ND	ND	ND
2,4-Dinitrotoluene	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	NT	ND	ND	ND	ND
2-Chloronaphthalene	NT	ND	ND	ND	ND
2-Chlorophenol	ND	ND	ND	ND	ND
2-Nitrophenol	NT	ND	ND	ND	ND
3,3'-Dichlorobenzidine	NT	ND	ND	ND	ND
4,6-Dinitro-2-methylphenol	NT	ND	ND	ND	ND
4-Bromophenyl Phenyl Ether	NT	ND	ND	ND	ND
4-Chloro-3-methylphenol	ND	ND	ND	ND	ND
4-Chlorophenyl Phenyl Ether	NT	ND	ND	ND	ND
4-Nitrophenol	NT	ND	ND	ND	ND
Acenaphthene	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND
Anthracene	ND	ND	ND	ND	ND
Benz(a)anthracene	NT	ND	ND	ND	ND
Benzidine	NT	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	ND	ND	ND	ND	ND
Bis(1-chloroisopropyl) Ether	NT	ND	ND	ND	ND
Bis(2-chloroethoxy)methane	NT	ND	ND	ND	ND
Bis(2-ethylhexyl) Phthalate	95J	5.6	7.2	ND	8.7
Butyl Benzyl Phthalate	NT	2.3	ND	ND	ND
Chrysene	ND	ND	ND	ND	ND
Dibenz(a,h)anthracene	ND	ND	ND	ND	ND
Diethyl Phthalate	ND	1.9J	2.1J	2.1J	3J
Dimethyl Phthalate	NT	0.12J	ND	ND	ND
Di-n-butyl Phthalate	ND	0.8J	ND	ND	ND
Di-n-octyl Phthalate	NT	ND	1.5J	ND	ND
Fluoranthene	ND	0.26J	ND	ND	ND
Fluorene	ND	ND	ND	ND	ND

TOTAL METALS (µg/L)	2019	2020	2021	2022	2023
Hexachlorobenzene	NT	ND	ND	ND	ND
Hexachlorobutadiene	NT	ND	ND	ND	ND
Hexachloroethane	NT	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND
Isophorone	ND	0.38J	ND	ND	ND
Naphthalene	ND	ND	ND	ND	ND
Nitrobenzene	NT	ND	ND	ND	ND
N-Nitrosodi-n-propylamine	NT	ND	ND	ND	ND
Pentachlorophenol (PCP)	NT	ND	ND	ND	ND
Phenanthrene	ND	0.44J	0.45J	ND	ND
Phenol	54.5J	30	15	9.7	15J
Pyrene	ND	0.26J	ND	ND	ND
PESTICIDES, PCBS, & DIOXINS (µg/L)					
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	ND	ND	ND	ND	ND
4,4'-DDD	ND	ND	ND	ND	0.021P
4,4'-DDE	ND	ND	ND	ND	ND
4,4'-DDT	ND	ND	ND	ND	ND
Aldrin	ND	0.0068	ND	ND	ND
alpha-Chlordane	ND	ND	ND	ND	ND
Aroclor 1016	ND	ND	ND	ND	ND
Aroclor 1221	ND	ND	ND	ND	ND
Aroclor 1232	ND	ND	ND	ND	ND
Aroclor 1242	ND	ND	ND	ND	ND
Aroclor 1248	ND	ND	ND	ND	ND
Aroclor 1254	ND	ND	ND	ND	ND
Aroclor 1260	ND	ND	ND	ND	ND
Azinphos-methyl	ND	ND	ND	ND	ND
Chlordane	ND	ND	ND	ND	ND
Demeton-O,S	ND	ND	0.038J,H	ND	ND
Dieldrin	ND	ND	ND	ND	ND
Endosulfan I	ND	ND	ND	ND	ND
Endosulfan II	ND	ND	ND	ND	ND
Endosulfan Sulfate	ND	ND	ND	ND	0.022
Endrin	ND	ND	ND	ND	ND
Endrin Aldehyde	ND	ND	ND	ND	ND
Endrin Ketone	0.0096J	ND	ND	ND	ND
Ethyl parathion	ND	ND	ND	ND	ND
gamma-BHC (Lindane)	ND	ND	ND	ND	ND
gamma-Chlordane	ND	ND	NT	NT	NT
Heptachlor	ND	ND	ND	0.014	ND
Heptachlor Epoxide	ND	ND	ND	ND	ND
Malathion	0.011J	0.013J	ND	ND	0.02J

TOTAL METALS (µg/L)	2019	2020	2021	2022	2023
Methoxychlor	ND	ND	ND	ND	ND
Mirex	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND
trans-Chlordane	ND	ND	ND	ND	ND
OTHER COMPONENTS					
Asbestos, MFL	9.3	<9.3	<9.3	<7.4	< 2.5
Cyanide, Total, ug/L	0.8J	0.7J	2J	0.0011J	0.002J
Oil and Grease, Total (HEM), mg/L	29	30	42.7	42.4	27.9

Notes:
B Compound also detected
J Estimated value (below MRL but above MDL)
J+ Estimated high bias due to MB result
H Exceeded extraction holding time
< Not detected, followed by MDL or MRL
NT Not tested
ND Analyte was not detected at the MRL/MDL.
U Reported at the MRL due to blank result
P >40% RPD between primary and confirmation results; the higher of the two results is reported
MFL Million Fibers per Liter
HEM Hexane Extractable Material

d. Provide an analysis of known or suspected industrial sources of toxic pollutants and pesticides identified in (1)(c) above in accordance with 40 CFR 125.66(b).

Pollutants commonly found in the waste stream of the associated industries are listed below:

- Electroplating and Bumper Repair: copper, nickel, chromium, and cyanide
- Landfill Leachate: low to intermediate weight organic acids, ammonia, BOD, COD, TSS, organic nitrogen, ortho-phosphate, alkalinity, zinc, chromium, nickel, copper, cadmium, 1,1 dichloroethane, 1,2 dichlorobenzene, styrene, vinyl chloride, trichlorofluoromethane, chloroform, methyl ketone, 1,2 dichlorothene, 1,4 dichlorobenzene, 1,2 dichloroethylene, 1,1,1 trichloroethane, tetra hydrofuran, tetra chlorethelyne, trichloroethylene, benzene, xylene, ethylbenzene, and toluene, PFAS, 6PPD-Quinone
- Seafood Processors: BOD, ammonia, nitrates, and phosphates

The Municipality of Anchorage continues to control and monitor sources of toxic pollutants through the following actions:

- Historically, significant industrial users have been identified through surveys, questionnaires, review of utility records, review of state printouts of new businesses, and review of building permits. The most recent industrial waste survey was conducted on September 9, 2024.
- Industrial Wastewater Discharge Permits have been issued to 14 identified SIUs.
- An SIU monitoring and enforcement program has been established. AWWU personnel conduct discharge sampling; if a violation is identified, the discharger is notified by telephone, letter, notice of violation, citation, or administrative order,

depending on the severity and frequency of violations. AWWU then works with the user to achieve compliance.

- A Municipal Sewer Service Ordinance (AMC 26.50) has been adopted to address specific discharge limitations for all users of the sewerage system.
- AWWU personnel conduct investigations of all reports of prohibited discharges to the sewerage system to help identify both industrial and non-industrial sources of pollutants.
- Results of these activities are reported to EPA in the Industrial Pretreatment Program Annual Reports.

2. [no question, see a and b]

a. Are there any known suspected water quality, sediment accumulation, or biological problems related to toxic pollutants or pesticides from your modified discharge(s)?

No.

b. If no, provide the certification required by 40 CFR 125.66(d)(2) together with available supporting data.

Not applicable.

c. If yes, provide a schedule for development and implementation of nonindustrial toxics control programs to meet the requirements of 40 CFR 125.66(d)(3).

Not applicable.

d. Provide a schedule for development and implementation of a nonindustrial toxics control program to meet the requirements of 40 CFR 125.66(d)(3).

The current NPDES permit outlines six requirements for the Non-Industrial Source Control Program (Section I.F). These requirements are:

1. Implement and enforce ordinances to control the introduction of toxic pollutants from non-industrial sources to the wastewater collection system.

2. Develop and publish disposal guidelines specifying what toxic pollutants can and cannot be discharged to the sewer system and identifying alternative disposal methods for prohibited pollutants.

3. Implement the control program for non-industrial sources as contained in the pretreatment program approved by EPA on April 9, 1982. This includes developing a program that defines controls for specific nonindustrial source categories, including enforcement methods, monitoring program requirements, and implementation schedules.

4. Provide alternative disposal methods for non-industrial toxic pollutants such as an annual hazardous waste cleanup program.

5. Implement a hazardous waste management plan for small quantity generators.

6. Submit a report on the non-industrial source control program with each annual pretreatment report. This report shall include, for each of the above activities, its implementation status and its effectiveness in minimizing nonindustrial inputs of toxic pollutants and pesticides.

The progress of the non-industrial source control program is reported to EPA annually in the Pretreatment and Non-Industrial Source Control Program Annual Report. The following items summarize the status of the NPDES requirements. The annual reports discuss the program in greater detail.

- Anchorage Municipal Code (AMC) 26.50 was revised and adopted on November 21, 2000 and amended multiple times since, to include modification of limitations on the discharge of toxic pollutants from industrial and non-industrial sources.
- Several community education programs have been developed that include identification of hazardous materials that should not be discharged into the sewerage system.
- The Sewer Ordinance addresses both industrial and non-industrial sources of pollutants and contains discharge limitations. Industrial source monitoring has been established and any noted prohibited discharges, whether from industrial or non-industrial sources, are investigated.
- AWWU's IPP continues the process of fully implementing the LINKO CTS™ compliance tracking system and the recently acquired add-on modules to develop a stronger industrial pretreatment program. This would enable IPP staff to accurately track compliance activities and enhanced control over FOG-discharging FSE's, liquid waste haulers, and industrial users.
- Implementation of Community Right-To-Know inspections provides an additional control measure for identifying hazardous materials and taking corrective actions to reduce accidental discharges.
- Alternative disposal methods for hazardous waste include a drop-off facility at the Anchorage Regional Landfill (small quantity generators and households) and a second drop-off station at the Central Transfer Facility (households only).
- A FOG reduction program was implemented in 2019 for restaurants, condensed housing, and waste haulers. The program directly reduced flow obstructions and sanitary sewer overflows. The POTW is also developing outreach and guidance materials for car washes to help manage potential issues (increased total suspended solids and oil and grease). A FOG handling facility is also being designed.

3. Describe the public education program you proposed to minimize the entrance of nonindustrial toxic pollutants and pesticides into your treatment system [40 CFR 125.66(d)(1)].

The AWWU has implemented, or is in the process of implementing, the following public outreach programs:

Disposal Guidance
AWWU's Industrial Pretreatment Program (IPP) staff receives inquiries for guidance about disposal from customers regarding various liquid wastes. Staff will then research and identify the appropriate method of disposal for each inquiry and convey these methods to the customer.

FOG Program
AWWU has implemented a FOG outreach program to restaurants, condensed housing,

and waste haulers (completed in 2019). The IPP staff also continues to build on their collaborative working relationship with the Anchorage Municipality's Health and Human Services, food service inspector group. The food services inspectors also augment A WWU's customer outreach and often provide additional fog control oversight on identified non-compliant Food Service Establishments (FSE).

Disposal Directory for Small Quantities of Hazardous Waste

The Municipality of Anchorage Solid Waste Services Department has prepared a 60-page booklet called the Disposal Directory for Small Quantities of Hazardous Waste. This booklet was first printed in August 1985. The booklet has been updated and a third edition was printed in 2001. The booklet contains information about the hazardous waste situation in Anchorage, guidelines for using hazardous products, recommendations for disposal of hazardous waste materials, and contact numbers to receive additional information. The booklet is distributed to users of the solid waste disposal facilities, certain public school and university classes, public meetings, and any resident who requests such information.

DEA National Rx Take Back Initiative

AWWU is one of several agencies that support DEA's National Rx Take Back events, organized, and held in Anchorage annually in April and October. AWWU promotes the safe and legal disposal of unused medication to divert them from entering the environment through the wastewater collection system. The public is notified of the event via Utility messaging and social media platforms. AWWU has promoted DEA's National Rx Take Back initiatives since its inception in 2010.

Permitting and Increased Sampling of Liquid Waste Haulers

Recognizing the environmental risks posed by improper disposal and treatment of liquid waste, AWWU is proposing to enhance the regulatory oversight of liquid waste haulers. The plan involves the introduction of a new permitting process, designed to ensure that all liquid waste haulers operating within our jurisdiction adhere to stringent environmental standards. This permitting process will be complemented by an increase in the frequency and comprehensiveness of sampling and inspection activities.

Creation of an Oils and Grease Deposit Site

To address the challenges associated with the disposal of fats, oils, and grease (FOG), AWWU plans to establish a deposit site specifically designed for the collection and processing of liquid grease. This facility will enable the conversion of liquid grease into a solid form, suitable for safe and efficient transportation to the landfill.

4. Do you have an approved industrial pretreatment program [40 CFR 125.66(c)(1)]?

a. If yes, provide the date of EPA approval.

Yes. The date of EPA approval is April 9, 1982.

All NPDES requirements for the pretreatment program have been implemented. The AWWU has maintained records of discharge characteristics of industrial users, issued industrial waste discharge permits to all significant users, conducted a monitoring program, and taken enforcement actions when violations were identified.

A Pretreatment Enforcement Response Plan was developed and submitted to the EPA in June of 2022. Industrial Pretreatment Program Annual Reports have been prepared and submitted to EPA. These reports provide updated lists of identified industrial users; results of treatment plant monitoring; program modifications; budgets and staffing; identification of POTW upsets; details of the industrial user monitoring and inspections; status of

wastewater discharge permits; a list of notifications sent to businesses; enforcement activities; and planned program changes.

b. If no, and if required by 40 CFR Part 403 to have an industrial pretreatment program, provided a proposed schedule for development and implementation of your industrial pretreatment program to meet the requirements of 40 CFR Part 403.

Not applicable.

5. Urban area pretreatment requirement [40 CFR 125.65] Dischargers serving a population of 50,000 or greater must respond.

a. Provide data on all toxic pollutants introduced into the treatment works from industrial sources (categorical and noncategorical).

Attachment III.H.A includes the self-monitoring requirements and annual sampling events effluent results for the 14 permitted significant industrial users (categorical and noncategorical).

b. Note whether applicable pretreatment requirements are in effect for each toxic pollutant. Are the industrial sources introducing such toxic pollutants in compliance with all of their pretreatment requirements? Are these pretreatment requirements being enforced? [40 CFR 125.65(b)(2)]

AWWU has enforced industrial wastewater discharge pollutant standards, termed "technically based local limits" (TBLLs), since the early 1980s. Federal regulations (40 CFR 403) require all POTWs that receive wastewater from sources subject to national pretreatment standards to implement an industrial pretreatment program and enforce TBLLs. The TBLLs currently enforced by AWWU are listed in Table IIIH-3. Local limits are currently under review in accordance with EPA region 10.

The permitted SIUs have complied with all their pretreatment requirements. These pretreatment requirements are being enforced under the Anchorage Municipal Code 26.50, Sewer Service.

Table IIIH-3: AWPCF Technically Based Local Limits

Pollutant[a]	Limitation (mg/L)
Arsenic	3.7
Beryllium	14.5
Cadmium	0.69
Chromium	2.77
Copper	3.38
Lead	0.69
Mercury	0.2
Nickel	3.88
Silver	2.5
Zinc	5.62
Cyanide	1.7
Total Aromatic Hydrocarbons (TAH)	5
Oil and Grease	250

[a] The limits for metals and cyanide are based on total concentrations.

c. If applicable pretreatment requirements do not exist for each toxic pollutant in the POTW effluent introduced by industrial sources,

- provide a description and a schedule for your development and implementation of applicable pretreatment requirements [40 CFR 125.65(c), or
- describe how you propose to demonstrate secondary removal equivalency for each of those toxic pollutants, including a schedule for compliance, by using a secondary treatment pilot plant. [40 CFR 125.65(d)]

Applicable pretreatment requirements have been established and are in effect for all industries discharging to the POTW.

Treatment requirements have not yet been established to regulate the disposal of PFAS. In their State Memo issued on December 5, 2022 (*Addressing PFAS Discharged in NPDES Permits and Through the Pretreatment Program and Monitoring Programs*), the EPA recommended Best Management Practices (BMPs) for discharges of PFAS as detected by draft method 1633. The BMPs include product substitution, reduction, or elimination of PFAS. EPA recommends that NPDES permits for facilities incorporate the following conditions when the practices are "reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA".

d. BMP conditions based on pollution prevention/source reduction opportunities, which may include:

i. Product elimination or substitution when a reasonable alternative to using PFAS is available in the industrial process.

ii. Accidental discharge minimization by optimizing operations and good housekeeping practices.

iii. Equipment decontamination or replacement (such as in metal finishing facilities) where PFAS products have historically been used to prevent discharge of legacy PFAS following the implementation of the product substitution.

e. Example BMP permit special condition language:

i. *PFAS pollution prevention/source reduction evaluation*: Within 6 months of the effective date of the permit, the facility shall provide an evaluation of whether the facility uses or has historically used any products containing PFAS, whether use of those products or legacy contamination reasonably can be reduced or eliminated, and a plan to implement those steps.

ii. *Reduction or Elimination*: Within 12 months of the effective date of the permit, the facility shall implement the plan in accordance with the PFAS pollution prevention/source reduction evaluation.

iii. *Annual Report*: An annual status report shall be developed which includes a list of potential PFAS sources, summary of actions taken to reduce or eliminate PFAS, any applicable source monitoring results, any applicable effluent results for the previous year, and any relevant adjustments to the plan, based on the findings.

iv. *Reporting*: When EPA's electronic reporting tool for DMRs (called "NetDMR") allows for the permittee to submit the pollution prevention/source reduction evaluation and the annual report, the example permit language can read, "The pollution prevention/source reduction evaluation and annual report shall be submitted to EPA via EPA's electronic reporting tool for DMRs (called "NetDMR").

PERMIT #3-ALSCO

SGS Ref.#	1193048001		
Client Name	American Linen (ALSCO)	**Printed Date/Time**	07/02/2019 16:33
Project Name/#	Manhole Biennial Sample	**Collected Date/Time**	06/13/2019 10:15
Client Sample ID	Manhole	**Received Date/Time**	06/13/2019 11:32
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	**Stephen C. Ede**

Sample Remarks:

200.8 - Metals - Zinc was detected in the MB greater than the LOQ. Sample results are 10 times greater than the level of the MB contamination.

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Metals Department									
Mercury	ND	1.00	ug/L	EP245.1	F		06/20/19	06/20/19	TMA
Metals by ICP/MS									
Arsenic	ND	5.00	ug/L	EP200.8	F		06/17/19	06/19/19	DSH
Beryllium	ND	0.400	ug/L	EP200.8	F		06/17/19	06/19/19	DSH
Cadmium	3.76	0.500	ug/L	EP200.8	F		06/17/19	06/19/19	DSH
Chromium	12.8	2.00	ug/L	EP200.8	F		06/17/19	06/19/19	DSH
Copper	214	1.00	ug/L	EP200.8	F		06/17/19	06/19/19	DSH
Lead	39.1	0.200	ug/L	EP200.8	F		06/17/19	06/19/19	DSH
Nickel	14.3	2.00	ug/L	EP200.8	F		06/17/19	06/19/19	DSH
Silver	ND	1.00	ug/L	EP200.8	F		06/17/19	06/19/19	DSH
Zinc	621	10.0	ug/L	EP200.8	F		06/17/19	06/19/19	DSH
Waters Department									
Oil & Grease HEM	162	4.17	mg/L	EPA 1664B	D			07/02/19	EWW
TPH Silica Gel HEM	37.7	4.17	mg/L	EPA 1664B	D			07/02/19	EWW
Volatile GC/MS									
Benzene	0.600	0.400	ug/L	EPA 602/624	A		06/17/19	06/17/19	FDR
Ethylbenzene	83.3	1.00	ug/L	EPA 602/624	A		06/17/19	06/17/19	FDR
o-Xylene	164	1.00	ug/L	EPA 602/624	A		06/17/19	06/17/19	FDR
P & M -Xylene	365	2.00	ug/L	EPA 602/624	A		06/17/19	06/17/19	FDR
Toluene	303	10.0	ug/L	EPA 602/624	A		06/17/19	06/17/19	FDR
Surrogates									

ANCHORAGE WATER & WASTEWATER UTILITY
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3000 Arctic Boulevard
Anchorage AK 99503-3898
pretreatment@awwu.biz

Dan Sullivan,
Mayor

Owned by the Municipality of Anchorage

REPORT OF LABORATORY ANALYSIS

Report Date: 7.2.2019.

Sample Description: POTW EVENT

Sample Date: 6.12.2019 Sample Collector: SG

This sample was analyzed by standard EPA protocol for wastewater. All results were validated against standard QA procedures. No results exceeded your permit limit.

Analytical Results

Sample Number				
Collection Date				
Parameter	**Method**	**Unit**	**RESULT**	**Limit**
Arsenic (As)	EPA 200.8	mg/L	0.00412	3.7
Beryllium (Be)	EPA 200.8	mg/L	0.00082	14.5
Cadmium (Cd)	EPA 200.8	mg/L	0.0115	0.69
Chromium (Cr)	EPA 200.8	mg/L	0.022	2.77
Copper (Cu)	EPA 200.8	mg/L	0.303	3.38
Lead (Pb)	EPA 200.8	mg/L	0.233	0.69
Mercury (Hg)	EPA 245.1	mg/L	0.00047	0.2
Nickel (Ni)	EPA 200.8	mg/L	0.030	3.88
Silver (Ag)	EPA 200.8	mg/L	0.00126	2.5
Zinc (Zn)	EPA 200.8	mg/L	0.933	5.62
Cyanide (Cn)	SM20 4500-CN C,E	mg/L	0.124	1.7

Sample Number				
Collection Date				
Parameter	**Method**	**Unit**	**RESULT**	**Limit**
Total Suspended Solids (TSS)	SM18 2540 D,E	mg/L	395	No limit
Biochemical Oxygen Demand	SM18 5210B	mg/L	1001	No limit
Biochemical Oxygen Demand, Soluble	SM18 5210B	mg/L	449	No limit
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.306	5.0
Oil and Grease; Total	EPA 1664	mg/L	437	250
pH	SM18 4500H	pH units	10.2	5.0-12.5

If you have any questions regarding these analysis or procedures, please contact:
AWWU Industrial Pretreatment Program
Point Woronzof Wastewater Treatment Facility
Phone: 751-2253 FAX: 751-2207
E-mail: Pete.Jeskie@awwu.biz

"A New Standard of Excellence"

Industrial Discharge Permit Number: 3
Wastewater Monitoring Report

ANCHORAGE WATER & WASTEWATER UTILITY

Mayor Dan Sullivan

Industrial Pretreatment Program

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ALSCO

First Half Monitoring Reports Due by July 15th from monitoring conducted between January - June
Second Half Monitoring Reports Due by January 15th from monitoring conducted between July - December

Sample Date: 10/15/2019 10:35

Pollutant	EPA Method	Units (ug/L, mg/L)	Results	Detection Limit or Level	Discharge Limitation (mg/L)
Arsenic	200.8	mg/L	ND	0.005	3.7
Beryllium	200.8	mg/L	ND	0.0004	14.5
Cadmium	200.8	mg/L	0.000917	0.0005	0.69
Chromium	200.8	mg/L	0.0151	0.002	2.77
Copper	200.8	mg/L	0.159	0.001	3.38
Lead	200.8	mg/L	0.0158	0.002	0.69
Mercury	145.1	mg/L	ND	0.002	0.2
Nickel	200.8	mg/L	0.012199	0.002	3.88
Silver	200.8	mg/L	ND	0.001	2.5
Zinc	200.8	mg/L	0.0349	0.01	5.62
pH		pH units	11.2	0100	5.0 – 12.5
Oil and Grease[1]	1664	mg/L	215	4.00	No limit listed in permit
Oil and Grease of Animal or Vegetable Origin	1664 A	mg/L	19.3	4.00	No limit listed in permit
Total Aromatic Hydrocarbons (TAH)	602/624	mg/L	0.01049	0.0054	5.0

[1] Two separate Oil and Grease samples shall be collected during each biannual monitoring event. One sample must be analyzed using EPA Method 1664A n-hexane extractable material (HEM; Oil and Grease). This method gives a "total" oil and grease result. If the "total" oil and grease result is greater than 250 mg/L, the second oil and grease sample shall be analyzed using EPA Method 1664A silica gel treated n-hexane extractable material (SGT-HEM; Non-polar Material), which gives a result from oil and grease of a hydrocarbon origin.

Mayor Dan Sullivan

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ALSCO

First Half Monitoring Reports Due by July 15th from monitoring conducted between January - June
Second Half Monitoring Reports Due by January 15th from monitoring conducted between July - December

Sample Date: 10/21/20 Time 14:10 PM

Pollutant	EPA Method	Units (ug/L, mg/L)	Results	Detection Limit or Level	Discharge Limitation (mg/L)
Arsenic	200.8	mg/L	ND	0.025	3.7
Beryllium	200.8	mg/L	ND	0.002	14.5
Cadmium	200.8	mg/L	0.00532	0.01	0.69
Chromium	200.8	mg/L	0.0267	0.0192	2.77
Copper	200.8	mg/L	0.238	0.005	3.38
Lead	200.8	mg/L	0.0414	0.01	0.69
Mercury	145.1	mg/L	ND	0.0005	0.2
Nickel	200.8	mg/L	0.012199	0.0226	3.88
Silver	200.8	mg/L	ND	0.005	2.5
Zinc	200.8	mg/L	0.667	0.05	5.62
pH		pH units	11.2	11.5	5.0 – 12.5
Oil and Grease[1]	1664	mg/L	96.5	4.0	No limit listed in permit
Oil and Grease of Animal or Vegetable Origin	1664 A	mg/L	12.0	4.0	No limit listed in permit
Total Aromatic Hydrocarbons (TAH)	602/624	mg/L	ND	50.0	5.0

[1] Two separate Oil and Grease samples shall be collected during each biannual monitoring event. One sample must be analyzed using EPA Method 1664A n-hexane extractable material (HEM; Oil and Grease). This method gives a "total" oil and grease result. If the "total" oil and grease result is greater than 250 mg/L, the second oil and grease sample shall be analyzed using EPA Method 1664A silica gel treated n-hexane extractable material (SGT-HEM; Non-polar Material), which gives a result from oil and grease of a hydrocarbon origin.

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ALSCO

First Half Monitoring Reports Due by July 15th from monitoring conducted between January - June
Second Half Monitoring Reports Due by January 15th from monitoring conducted between July - December

Sample Date: 5/5/20 Time 10:30AM

Pollutant	EPA Method	Units (ug/L, mg/L)	Results	Detection Limit or Level	Discharge Limitation (mg/L)
Arsenic	200.8	mg/L	ND	0.025	3.7
Beryllium	200.8	mg/L	ND	0.002	14.5
Cadmium	200.8	mg/L	0.000917	0.0108	0.69
Chromium	200.8	mg/L	0.0151	0.0192	2.77
Copper	200.8	mg/L	0.159	0.267	3.38
Lead	200.8	mg/L	0.0158	0.102	0.69
Mercury	145.1	mg/L	ND	0.0005	0.2
Nickel	200.8	mg/L	0.012199	0.0226	3.88
Silver	200.8	mg/L	ND	0.005	2.5
Zinc	200.8	mg/L	0.0349	1.1	5.62
pH		pH units	11.2	11.5	5.0 – 12.5
Oil and Grease[1]	1664	mg/L	215	261	No limit listed in permit
Oil and Grease of Animal or Vegetable Origin	1664 A	mg/L	19.3	119	No limit listed in permit
Total Aromatic Hydrocarbons (TAH)	602/624	mg/L	0.01049	0.5314	5.0

[1] Two separate Oil and Grease samples shall be collected during each biannual monitoring event. One sample must be analyzed using EPA Method 1664A n-hexane extractable material (HEM; Oil and Grease). This method gives a "total" oil and grease result. If the "total" oil and grease result is greater than 250 mg/L, the second oil and grease sample shall be analyzed using EPA Method 1664A silica gel treated n-hexane extractable material (SGT-HEM; Non-polar Material), which gives a result from oil and grease of a hydrocarbon origin.

ANCHORAGE WATER & WASTEWATER UTILITY

Dan Sullivan,
Mayor

Industrial Pretreatment Program

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ALSCO

SAMPLE DATE: 8.27.2020 SAMPLED BY POTW ANNUAL SAMPLING EVENT

Pollutant	EPA Method	Units	Results	Detection Limit or Level	Daily Maximum Limit
Arsenic	200.8	mg/L	0.0023	0.0005	3.7
Beryllium	200.8	mg/L	0.0	0.00015	14.5
Cadmium	200.8	mg/L	0.005	0.000088	0.69
Chromium	200.8	mg/L	0.015	0.00088	0.947
Copper	200.8	mg/L	0.22	0.00071	0.405
Lead	200.8	mg/L	0.046	0.00023	0.222
Nickel	200.8	mg/L	0.02	0.00028	3.88
Silver	200.8	mg/L	0.0006	0.000045	2.5
Zinc	200.8	mg/L	0.79	0.0020	5.62
Mercury	EPA 245.1	mg/L	0.00008	0.000027	0.2
Cyanide	SM20 4500 CN C, E	mg/L	0.084	0.0009	1.7
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.41728		5.0
pH	SM20 4500-HB	pH			5 to 12.5
BOD	SM5210 B	mg/L	402.81		
SOLUBLE BOD	SM5210 B	mg/L	397.99		
TSS	SM2540 B	mg/L	204		
Oil & Grease, total (HEM)	1664A	mg/L	101	0.7	
Oil & Grease, nonpolar (SGT-HEM)	1664A	mg/L	25.0	1.4	

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ALSCO

SAMPLE DATE: 3.19.2021 SAMPLED BY SIU 1st Quarter Sampling Event

Pollutant	EPA Method	Units	Results	Limitation
Biochemical Oxygen Demand (BOD)	SM5210 B	mg/L		
BOD soluble (modified method)	SM5210 B	mg/L		
Total Suspended Solids (TSS)	SM2540 B	mg/L	140	
Arsenic	200.8	mg/L	0.0	3.7
Beryllium	200.8	mg/L	0.0	14.5
Cadmium	200.8	mg/L	0.00142	0.69
Chromium	200.8	mg/L	0.0085	2.77
Copper	200.8	mg/L	0.082	3.38
Lead	200.8	mg/L	0.00999	0.69
Nickel	200.8	mg/L	0.0131	3.88
Silver	200.8	mg/L	0.0	2.5
Zinc	200.8	mg/L	0.0131	5.62
Mercury	245.1	mg/L	0.0	0.2
Cyanide	335.4	mg/L		7.7
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.01597	5.0
Oil & Grease HEM	SM 1664A	mg/L	80.2	250.0
TPH Silica Gel HEM	SM 1664A	mg/L	15.4	
pH				

ANCHORAGE WATER & WASTEWATER UTILITY

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ALSCO

SAMPLE DATE: 6.09.2021 SAMPLED BY SIU 2nd Quarter Sampling Event

Pollutant	EPA Method	Units	Results	Limitation
Biochemical Oxygen Demand (BOD)	SM5210 B	mg/L	289	
BOD soluble (modified method)	SM5210 B	mg/L		
Total Suspended Solids (TSS)	SM2540 B	mg/L	136	
Arsenic	200.8	mg/L	0.0	3.7
Beryllium	200.8	mg/L	0.0	14.5
Cadmium	200.8	mg/L	0.00654	0.69
Chromium	200.8	mg/L	0.0	2.77
Copper	200.8	mg/L	0.215	3.38
Lead	200.8	mg/L	0.0675	0.69
Nickel	200.8	mg/L	0.0226	3.88
Silver	200.8	mg/L	0.0	2.5
Zinc	200.8	mg/L	0.972	5.62
Mercury	245.1	mg/L	0.0	0.2
Cyanide	335.4	mg/L		7.7
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.2136	5.0
Oil & Grease HEM	SM 1664A	mg/L	102	250
TPH Silica Gel HEM	SM 1664A	mg/L	57.7	
pH				

Mayor
Ethan Berkowitz

Anchorage Water & Wastewater Utility

Treatment Division

Board Chair
Aaron D. Dotson

REPORT OF LABORATORY ANALYSIS

Report Date: 8.02.2021
Sample Description: GRAB
Sample Date:6.16.2021 Sample Collector: Scott

This sample was analyzed by standard EPA protocol for wastewater. All results were validated against standard QA procedures. No results exceeded your permit limit.

Analytical Results for ALSCO

Sample Number				
Collection Date				
Parameter	**Method**	**Unit**	**Result**	**Limit**
Arsenic (As)	EPA 200.8	mg/L	0.0022	3.7
Beryllium (Be)	EPA 200.8	mg/L	0.00003	14.5
Cadmium (Cd)	EPA 200.8	mg/L	0.00109	0.69
Chromium (Cr)	EPA 200.8	mg/L	0.00804	2.77
Copper (Cu)	EPA 200.8	mg/L	0.128	3.38
Lead (Pb)	EPA 200.8	mg/L	0.0368	0.69
Mercury (Hg)	EPA 245.1	mg/L	0	0.2
Nickel (Ni)	EPA 200.8	mg/L	0.00904	3.88
Silver (Ag)	EPA 200.8	mg/L	0.0004	2.5
Zinc (Zn)	EPA 200.8	mg/L	0.313	5.62
Cyanide (Cn)	SM20 4500-CN C,E	mg/L	0.0009	1.7
Total Suspended Solids (TSS)	SM18 2540 D,E	mg/L	540	No limit
Biochemical Oxygen Demand	SM18 5210B	mg/L	1133	No limit
Biochemical Oxygen Demand, Soluble	SM18 5210B	mg/L	279	No limit
Total Aromatic Hydrocarbons (TAH)	EPA 624 (plus xylenes)	mg/L	0.00152	5.0
Oil and Grease; Total	EPA 1664	mg/L	41.2	250
pH	SM18 4500H	pH	10.57	5.0-12.5

If you have any questions regarding these analysis or procedures, please contact the AWWU Industrial Pretreatment Program.

Industrial Discharge Permit Number: 3
Wastewater Monitoring Report

ANCHORAGE WATER & WASTEWATER UTILITY

Mayor Dan Sullivan

Industrial Pretreatment Program
John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2202

ALSCO

First Quarter Monitoring Reports Due by Mar 30th from monitoring conducted between January - March
Second Quarter Monitoring Reports Due by June 30th from monitoring conducted between April – June
Third Quarter Monitoring Reports Due by September 30th from monitoring conducted between July – September
Fourth Quarter Monitoring Reports Due by June 30th from monitoring conducted between October – December

Sample Date: 03/14/2022 15:17

Pollutant	EPA Method	Units (ug/L, mg/L)	Results	Detection Limit or Level	Discharge Limitation (mg/L)
Arsenic	200.8	mg/L	ND	0.005	3.7
Beryllium	200.8	mg/L	ND	0.0004	14.5
Cadmium	200.8	mg/L	0.0375	0.0005	0.69
Chromium	200.8	mg/L	0.0509	0.002	2.77
Copper	200.8	mg/L	0.424	0.001	3.38
Cyanide	4500_CN C,E	mg/L	0.028	0.010	1.7
Lead	200.8	mg/L	0.154	0.002	0.69
Mercury	145.1	mg/L	0.0005	0.002	0.2
Nickel	200.8	mg/L	0.0279	0.002	3.88
Silver	200.8	mg/L	ND	0.001	2.5
Zinc	200.8	mg/L	1.14	0.005	5.62
pH		pH units	7	0100	5.0 – 12.5
Oil and Grease[1]	1664	mg/L	411	4.00	250
Oil and Grease of Animal or Vegetable Origin	1664 A	mg/L	87.9	4.00	250
Total Aromatic Hydrocarbons (TAH)	602/624	mg/L	ND	0.0084	5.0

[1] Two separate Oil and Grease samples shall be collected during each biannual monitoring event. One sample must be analyzed using EPA Method 1664A n-hexane extractable material (HEM; Oil and Grease). This method gives a "total" oil and grease result. If the "total" oil and grease result is greater than 250 mg/L, the second oil and grease sample shall be analyzed using EPA Method 1664A silica gel treated n-hexane extractable material (SGT-HEM; Non-polar Material), which gives a result from oil and grease of a hydrocarbon origin.

Industrial Discharge Permit Number: 3
Wastewater Monitoring Report

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program
John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2202

Mayor Dan Sullivan

ALSCO

First Quarter Monitoring Reports Due by April 15th from monitoring conducted between January–March
Second Quarter Monitoring Reports Due by July 15th from monitoring conducted between April–June
Third Quarter Monitoring Reports Due by October 15th from monitoring conducted between July–September
Fourth Quarter Monitoring Reports Due by January 15th from monitoring conducted between October–December

Sample Date: 04/13/2022 09:25

Pollutant	EPA Method	Units (ug/L, mg/L)	Results	Detection Limit or Level	Discharge Limitation (mg/L)
Arsenic	200.8	mg/L	ND	0.025	3.7
Beryllium	200.8	mg/L	ND	0.002	14.5
Cadmium	200.8	mg/L	0.000624	0.025	0.69
Chromium	200.8	mg/L	0.0127	0.025	2.77
Copper	200.8	mg/L	0.104	0.0001	3.38
Cyanide	4500_CN C,E	mg/L	0.0000051	0.0002	1.7
Lead	200.8	mg/L	0.0132	0.002	0.69
Mercury	145.1	mg/L	0.005	0.005	0.2
Nickel	200.8	mg/L	0.00819	0.05	3.88
Silver	200.8	mg/L	ND	0.1	2.5
Zinc	200.8	mg/L	0.268	0.2265	5.62
pH		pH units	7		5.0 – 12.5
Oil and Grease[1]	1664	mg/L	ND	4.0	250
Oil and Grease of Animal or Vegetable Origin HEM	1664 B	mg/L	129.0	4.0	250
Total Aromatic Hydrocarbons (TPH)	602/624	mg/L	0.00116	0.0059	5.0
BOD Biochemical Oxygen Demand	SM21 5210B	mg/L	307	2.0	No limit listed in permit

[1] Two separate Oil and Grease samples shall be collected during each biannual monitoring event. One sample must be analyzed using EPA Method 1664A n-hexane extractable material (HEM; Oil and Grease). This method gives a "total" oil and grease result. If the "total" oil and grease result is greater than 250 mg/L, the second oil and grease sample shall be analyzed using EPA Method 1664A silica gel treated n-hexane extractable material (SGT-HEM; Non-polar Material), which gives a result from oil and grease of a hydrocarbon origin.

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

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ALSCO

SAMPLE DATE: 10.18.2022 SAMPLED BY ALSCO 3rd QUARTERLY EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Biochemical Oxygen Demand (BOD)	SM5210 B	mg/L	452	No limit
Total Suspended Solids (TSS)	SM2540 B	mg/L	304	No limit
Arsenic	200.8	mg/L	ND	3.7
Beryllium	200.8	mg/L	ND	14.5
Cadmium	200.8	mg/L	0.00973	0.69
Chromium	200.8	mg/L	0.0174	2.77
Copper	200.8	mg/L	0.209	3.38
Cyanide	SM20 4500 CN C, E	mg/L	0.035	1.7
Lead	200.8	mg/L	0.0573	0.69
Mercury	245.1	mg/L		0.2
Nickel	200.8	mg/L	0.0215	3.88
Silver	200.8	mg/L	ND	2.5
Zinc	200.8	mg/L	0.616	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.285	5.0
Oil and grease of animal or vegetable origin Oil and Grease HEM	EPA 1664B	mg/L	458	No limit
ph				5-12.5

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ALSCO

SAMPLE DATE: 12.5-2022 SAMPLED BY ALSCO 4th QUARTERLY EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Biochemical Oxygen Demand (BOD)	SM5210 B	mg/L	580	No limit
Total Suspended Solids (TSS)	SM2540 B	mg/L	377	No limit
Arsenic	200.8	mg/L	ND	3.7
Beryllium	200.8	mg/L	ND	14.5
Cadmium	200.8	mg/L	0.00505	0.69
Chromium	200.8	mg/L	0.0189	2.77
Copper	200.8	mg/L	0.167	3.38
Cyanide	SM20 4500 CN C. E	mg/L	0.018	1.7
Lead	200.8	mg/L	0.0234	0.69
Mercury	245.1	mg/L	<0.0005	0.2
Nickel	200.8	mg/L	0.0239	3.88
Silver	200.8	mg/L	ND	2.5
Zinc	200.8	mg/L	0.236	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.00372	5.0
Oil and grease of animal or vegetable origin Oil and Grease HEM	EPA 1664B	mg/L	102	No limit
TPH Silica GEL HEM	EPA 1664B	mg/L	85.3	No limit
ph			10.8	5-12.5

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature _____ Date 1-13-23

Don Wirth, General Manager, Alsco

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

ALSCO

SAMPLE DATE:10.4.2022 SAMPLED BY POTW ANNUAL SAMPLING EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.01	3.7
Beryllium	200.8	mg/L	0.0008	14.5
Cadmium	200.8	mg/L	0.00375	0.69
Chromium	200.8	mg/L	0.012	2.77
Copper	200.8	mg/L	0.176	3.38
Cyanide	SM20 4500 CN C, E	mg/L	0.031	1.7
Lead	200.8	mg/L	0.0279	0.69
Mercury	245.1	mg/L		0.2
Nickel	200.8	mg/L	0.0195	3.88
Silver	200.8	mg/L	0.002	2.5
Zinc	200.8	mg/L	0.528	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.00342	5.0
Oil and grease of animal or vegetable origin	SM 1664	mg/L	153	No limit
ph			9.64	5.0-12.5

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

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COMPANY NAME

SAMPLE DATE: 5.16.2023 SAMPLED BY POTW ANNUAL EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Biochemical Oxygen Demand (BOD)	SM5210 B	mg/L		No limit
Total Suspended Solids (TSS)	SM2540 B	mg/L	260	No limit
Arsenic	200.8	mg/L	0.00403	3.7
Beryllium	200.8	mg/L	0.0002	14.5
Cadmium	200.8	mg/L	0.00342	0.69
Chromium	200.8	mg/L	0.0182	2.77
Copper	200.8	mg/L	0.208	3.38
Cyanide	SM20 4500 CN C, E	mg/L	0.023	1.7
Lead	200.8	mg/L	0.0229	0.69
Mercury	245.1	mg/L	ND	0.2
Nickel	200.8	mg/L	0.0208	3.88
Silver	200.8	mg/L	0.000559	2.5
Zinc	200.8	mg/L	0.461	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.64897	5.0
Oil and grease of animal or vegetable origin	SM 1664	mg/L	309	No limit
ph			8.9	5.0-12.5

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Industrial Pretreatment Program

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ALSCO

SAMPLE DATE: 2.15.23 SAMPLED BY ALSCO 1st QUARTERLY EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Biochemical Oxygen Demand (BOD)	SM21 5210 B	mg/L	170	No limit
Total Suspended Solids (TSS)	SM21 2540 B	mg/L	151	No limit
Arsenic	EP 200.8	mg/L	ND	3.7
Beryllium	EP 200.8	mg/L	ND	14.5
Cadmium	EP 200.8	mg/L	.00264	0.69
Chromium	EP 200.8	mg/L	0.0106	2.77
Copper	EP 200.8	mg/L	0.126	3.38
Cyanide	SM20 4500 CN C, E	mg/L	.0062	1.7
Lead	EP 200.8	mg/L	0.0286	0.69
Mercury	245.1	mg/L	<0.0005	0.2
Nickel	EP 200.8	mg/L	0.0123	3.88
Silver	EP 200.8	mg/L	ND	2.5
Zinc	EP 200.8	mg/L	0.439	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.5093	5.0
Oil and grease of animal or vegetable origin Oil and Grease HEM	EPA 1664B	mg/L	159	No limit
TPH Silica GEL HEM	EPA 1664B	mg/L	126	No limit
ph			7.4	5-12.5

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature _____ Date 3-13-2023

Don Wirth, General Manager, Alsco

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
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ALSCO

SAMPLE DATE: 05/18/2023 SAMPLED BY ALSCO 2ND QUARTERLY EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Biochemical Oxygen Demand (BOD)	SM21 5210 B	mg/L	260	Monitor
Total Suspended Solids (TSS)	SM21 2540 B	mg/L	254	Monitor
Arsenic	EP 200.8	mg/L	ND	3.7
Beryllium	EP 200.8	mg/L	ND	14.5
Cadmium	EP 200.8	mg/L	.00370	0.69
Chromium	EP 200.8	mg/L	.00500	2.77
Copper	EP 200.8	mg/L	.167	3.38
Cyanide	SM20 4500 CN C, E	mg/L	.023	1.7
Lead	EP 200.8	mg/L	.0300	0.69
Mercury	245.1	mg/L	< .0005	0.2
Nickel	EP 200.8	mg/L	.0132	3.88
Silver	EP 200.8	mg/L	.00130	2.5
Zinc	EP 200.8	mg/L	.338	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	.00213	5.0
Oil and grease of animal or vegetable origin Oil and Grease HEM	EPA 1664B	mg/L	289	Monitor
TPH Silica GEL HEM	EPA 1664B	mg/L	136	Monitor
ph			9.8	5.0-12.0

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature _____ Date 6-13-23

Don Wirth, General Manager, Alsco

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

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3000 Arctic Boulevard
Anchorage AK 99503-3898
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ALSCO

SAMPLE DATE: 8.21.23 SAMPLED BY ALSCO 3rd QUARTERLY EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Biochemical Oxygen Demand (BOD)	SM21 5210 B	mg/L	143	Monitor
Total Suspended Solids (TSS)	SM21 2540 B	mg/L	164	Monitor
Arsenic	EP 200.8	mg/L	ND	3.7
Beryllium	EP 200.8	mg/L	ND	14.5
Cadmium	EP 200.8	mg/L	.00294	0.69
Chromium	EP 200.8	mg/L	.0112	2.77
Copper	EP 200.8	mg/L	.126	3.38
Cyanide	SM20 4500 CN C, E	mg/L	ND	1.7
Lead	EP 200.8	mg/L	.0179	0.69
Mercury	245.1	mg/L	<.0005	0.2
Nickel	EP 200.8	mg/L	.0147	3.88
Silver	EP 200.8	mg/L	ND	2.5
Zinc	EP 200.8	mg/L	.412	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	.10361	5.0
Oil and grease of animal or vegetable origin Oil and Grease HEM	EPA 1664B	mg/L	270	Monitor
TPH Silica GEL HEM	EPA 1664B	mg/L	145	Monitor
ph			7.5	5.0-12.0

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature _____ Date 9-13-2023

Don Wirth, General Manager, Alsco

PERMIT #9- Anchorage Regional Landfill

Table 2
Municipality of Anchorage - Solid Waste Services
AWWU Industrial Pretreatment Program Historical Data - Anchorage Regional Landfill (ARL202)

Parameter	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Silver	Zinc (Total)	Cyanide	TSS	BOD (Total)	BOD Sol.	Specific Gravity	TAH	O&G	pH
Permit Limit[1]	3.7 mg/L	14.5 mg/L	0.69 mg/L	2.77 mg/L	3.38 mg/L	0.69 mg/L	0.2 mg/L	3.88 mg/L	2.5 mg/L	5.62 mg/L	1.7 mg/L	NA	NA	NA	NA	5.0 mg/L	250 mg/L	NA
09/28/2017	--	--	--	--	--	--	--	--	--	5.22	--	--	--	--	--	--	--	--
10/10/2017	0.032	<0.0002 B	ND	0.068	0.030	0.0045	<0.0002 B	0.31	ND	1.2	0.006	1,290	3,670	3,700	1.008	0.253	2	7.8
11/09/2017	--	--	--	--	--	--	--	--	--	<4.64 B	--	1,120	6,410	6,390	1.008	--	--	7.6
12/12/2017	--	--	--	--	--	--	--	--	--	1.71	--	900	5,470	5,480	1.009	--	--	7.8
01/10/2018	--	--	--	--	--	--	--	--	--	4.6	--	1,040	3,140	3,210	1.011	--	--	8.2
02/07/2018	0.062	ND	0.00087 J	0.12	0.016	0.0048	ND	0.51	ND	6.6	0.02	3,560	6,230	5,930	1.010	2.4 J	3	8.2
03/14/2018	--	--	--	--	--	--	--	--	--	5.99	--	1,340	8,370	8,280	1.010	--	--	8.2
04/02/2018	--	--	--	--	--	--	--	--	--	6.35	--	2,170	4,660	4,700	1.005	--	--	7.9
05/01/2018	0.036	ND	0.00098 J	0.08	ND	0.0044	ND	0.380	ND	5.3	ND	1,990	5,750	5,720	1.005	3.8 J	4	7.8
06/07/2018	--	--	--	--	--	--	--	--	--	1.85	--	645	2,690	2,250	1.008	--	--	8.3
07/03/2018	--	--	--	--	--	--	--	--	--	1.82	--	1,810	1,570*	1,520*	1.008	--	--	8.3
08/07/2018	0.057	ND	0.00057 J	0.10	ND	0.0044	ND	0.390	ND	4.80	ND	1,840	7,060	6,420	1.008	ND[1.93]	0.9 J	8.5
09/06/2018	--	--	--	--	--	--	--	--	--	3.95	--	2,620	1,630	1,470	1.007	--	--	8.3
10/02/2018	--	--	--	--	--	--	--	--	--	3.15	--	1,980	1,890	1,610	1.008	--	--	8.3
11/06/2018	0.040	ND	ND	0.068	ND	0.0027	ND	0.40	ND	3.90	ND	731	4,590	4,750	1.006	0.0182 J	2	8.1
12/06/2018	--	--	--	--	--	--	--	--	--	4.81	--	1,840	3,800	3,600	1.006	--	--	8.2
01/03/2019	--	--	--	--	--	--	--	--	--	6.4	--	2,080	5,940	6,180	1.010	--	--	7.9
02/04/2019	0.070	ND	ND	0.100	ND	0.0090	ND	0.50	ND	7.0	0.007	2,690	6,890	6,650	1.010	ND[1.93]	8	8.1
03/05/2019	--	--	--	--	--	--	--	--	--	6.2	--	522	6,760	6,670	1.009	--	--	8.2
04/01/2019	--	--	--	--	--	--	--	--	--	6.46	--	2,400	3,170	3,090	1.006	--	--	7.9
05/06/2019	0.05	ND	0.0007 J	0.09	ND	0.01	ND	0.40	ND	4.70	0.040	6,820	2,740	2,630	1.008	0.0021 J	2	8.2
06/06/2019	--	--	--	--	--	--	--	--	--	1.53	--	512	2,310	2,150	1.008	--	--	8.2
07/01/2019	--	--	--	--	--	--	--	--	--	2.17 ‡	--	683	1,630	1,550	1.007	--	--	8.2
08/05/2019	0.03	ND	0.0001 J	0.05	0.02	0.001 J	ND	0.4	ND	0.90	ND	395 H	2,440	2,490	1.001	ND [0.02]	2	8.2
09/03/2019	--	--	--	--	--	--	--	--	--	1.45	--	502	2,670	2,630	1.010	--	--	8.1
10/01/2019	--	--	--	--	--	--	--	--	--	1.47	--	231	2,220	2,000	1.006	--	--	8.2
11/05/2019	0.04	ND	ND	0.06	0.01	ND	ND	0.4	ND	2.7	ND	622	4,600	4,810	1.005	0.0070 H	4	7.9
12/02/2019	--	--	--	--	--	--	--	--	--	1.82	--	585	4,120	4,180	1.010	--	--	7.8
01/03/2020	--	--	--	--	--	--	--	--	--	1.82	--	2,590	5,030	4,740	1.011	--	--	8.2
02/04/2020	0.05	ND	ND	0.2	ND	ND	0.0003 J	0.6	ND	8.3	ND	1,200	14,800	12,900	1.011	0.340 H	12	7.4
03/05/2020	--	--	--	--	--	--	--	--	--	0.462	--	1,260	1,800	1,750	1.010	--	--	8.4
04/02/2020	--	--	--	--	--	--	--	--	--	1.240	--	2,190	1,410	1,370	1.009	--	--	8.5
05/07/2020	0.03	ND	0.003	0.07	0.01 J	0.006	ND	0.4	ND	5.10	ND	395	8,640	8,850	1.008	0.052 H	5	7.5
06/04/2020	--	--	--	--	--	--	--	--	--	0.465	--	370	5,590	5,140	1.009	--	--	8.0
07/02/2020	--	--	--	--	--	--	--	--	--	0.761	--	163	ND	ND	1.009	--	--	8.3
08/06/2020	0.03	ND	ND	0.06	0.01 J	0.001	ND	0.4	ND	0.9	ND	205	3,230	3,090	1.008	0.0029 J	3	8.1
09/02/2020	--	--	--	--	--	--	--	--	--	1.060	--	464	3,310	3,070	1.008	--	--	7.9
10/08/2020	--	--	--	--	--	--	--	--	--	1.650	--	1,190	3,140	3,040	1.008	--	--	8.3
11/03/2020	0.02	0.0001 J	0.0001 J	0.04	0.005	ND	ND	0.3	0.00005 J	1.2	ND	423	2,540	2,570	1.007	0.031	ND	8.1
12/01/2020	--	--	--	--	--	--	--	--	--	6.16	--	2,070	3,250	3,060	1.009	--	--	8.2
12/21/2020	--	--	--	--	--	--	--	--	--	3.3	--	--	--	--	--	--	--	--

Notes:

1 Industrial Wastewater Discharge Permit #9 Limits (October 1, 2019 to September 30, 2024)
J Estimated value
mg/L Milligrams per liter
NA Not Applicable
ND Not Detected [parenthesis values are Limit of Detection]
TSS Total Suspended Solids
H Analyzed outside of hold time
8.3 Detected concentration is equal to or greater than the AWWU Industrial Wastewater Discharge Permit #9 Limits
[a] Due to laboratory error, BOD was sampled past hold time. Results for BOD and Soluble BOD may be biased low.
[b] TAH was sampled past hold time during this event. TAH sample was recollected and submitted to the laboratory for analysis; these results were reported with the November (2016) monthly results.
TAH Total Aromatic Hydrocarbon (TAH) result is sum of benzene, toluene, ethylbenzene, & xylenes concentration results; The Limit of Quantitation was substituted for ND results for summation of TAH

> Greater than
< Less than
- Sample not analyzed for this parameter or data not available
Ŧ Method Detection Limit (MDL) is reported when the LOQ is greater than the permit limit
‡ = Higher or primary/duplicate sample listed

Table 2
Municipality of Anchorage - Solid Waste Services
AWWU Industrial Pretreatment Program Historical Data - Anchorage Regional Landfill (ARL202)

Parameter	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Silver	Zinc (Total)	Cyanide	TSS	BOD (Total)	BOD Sol.	Specific Gravity	TAH	O&G	pH
Permit Limit[1]	3.7 mg/L	14.5 mg/L	0.69 mg/L	2.77 mg/L	3.38 mg/L	0.69 mg/L	0.2 mg/L	3.88 mg/L	2.5 mg/L	5.62 mg/L	1.7 mg/L	NA	NA	NA	NA	5.0 mg/L	250 mg/L	NA
11/03/2020	0.02	0.0001 J	0.0001 J	0.04	0.005	ND	ND	0.3	0.00005 J	1.2	ND	423	2,540	2,570	1.007	0.031	ND	8.1
12/01/2020	--	--	--	--	--	--	--	--	--	6.16	--	2,070	3,250	3,060	1.009	--	--	8.2
12/21/2020	--	--	--	--	--	--	--	--	--	3.3	--	--	--	--	--	--	--	--
01/05/2021	--	--	--	--	--	--	--	--	--	3.87	--	2,020	3,010	2,780	1.009	--	--	8.3
02/02/2021	0.05	ND	0.0003 J	0.09	0.007	0.003	ND	0.3	ND	3.0	ND	640	3,740	3,830	1.007	0.0192	12	8.0
03/02/2021	--	--	--	--	--	--	--	--	--	1.93	--	1,400	2,190	1,940	1.008	--	--	8.4
04/08/2021	--	--	--	--	--	--	--	--	--	3.6	--	2,480	2,070	1,710	1.007	--	--	7.9
05/06/2021	0.02	ND	ND	0.04	0.01	0.001	0.00007	0.2	ND	0.6	0.005 J	212	2,470	2,470	1.005	0.020	5	7.7
06/03/2021	--	--	--	--	--	--	--	--	--	1.22	--	602	1,470	1,250	1.008	--	--	8.3
07/08/2021	--	--	--	--	--	--	--	--	--	1.17	--	756	1,590	1,560	1.008	--	--	8.3
08/03/2021	0.05	ND	0.0002 J	0.08	0.01	0.003	0.0002 J	0.3	ND	3.6	0.005	645	1,620	1,250	1.009	0.020	ND	8.4
09/08/2021	--	--	--	--	--	--	--	--	--	0.777	--	731	1,180	1,010*	1.007	--	--	8.1
10/05/2021	--	--	--	--	--	--	--	--	--	0.938	--	950	1,870	1,570	1.007	--	--	7.9
11/02/2021	0.02	ND	ND	0.04	0.004 J	0.0006 J	ND	0.2	ND	0.6	0.005 JH	965	1,610	1,470	1.007	0.021	1 J	8.1
12/07/2021	--	--	--	--	--	--	--	--	--	0.347	--	1,490	1,910	2,030	1.007	--	--	8.3
01/13/2022	--	--	--	--	--	--	--	--	--	2.06	--	1,550	3,460	3,290	1.009	--	--	8.2
02/03/2022	0.05	ND	ND	0.09	ND	ND	ND	0.3	ND	1.6	0.007	677	2,770	2,810	1.009	0.083	3 J	8.1
03/03/2022	--	--	--	--	--	--	--	--	--	0.716	--	238	1,040	849	1.008	--	--	8.4
04/07/2022	--	--	--	--	--	--	--	--	--	0.702	--	454	1,910	1,950	1.012	--	--	8.2
05/05/2022	0.03	ND	0.005	0.06	0.01	0.002	ND	0.3	ND	1.1	ND	250	3,990	3,790	1.007	0.0405	2 J	7.8
06/02/2022	--	--	--	--	--	--	--	--	--	0.594	--	440	4,230	4,800	1.011	--	--	7.1
07/07/2022	--	--	--	--	--	--	--	--	--	2.63	--	460	1,910	1,800	1.002	--	--	8.6
08/04/2022	0.03	ND	0.0005 J	0.07	0.007	0.002	ND	0.4	ND	1.2	ND B	208	3,610	3,720	1.007	0.020	ND	7.9
09/13/2022	--	--	--	--	--	--	--	--	--	1.69	--	460	1,920	1,680	1.006	--	--	8.0
10/06/2022	--	--	--	--	--	--	--	--	--	0.887	--	254	2,270	2,210	1.009	--	--	8.50
11/01/2022	0.04	ND	0.0003 J	0.06	0.01	0.005	ND	0.3	ND	0.7	0.006	177	2,800	2,310	0.9870	0.020	ND	8.70
12/06/2022	--	--	--	--	--	--	--	--	--	0.548	--	88.0	1,990	786	1.008	--	--	8.4
01/05/2023	--	--	--	--	--	--	--	--	--	0.0431	--	213	ND[c]	ND[c]	1.008	--	--	8.7
02/07/2023	0.06	ND	ND	0.07	0.009	0.002	ND	0.3	ND	0.7	0.008	420	ND[c]	ND[c]	1.008	0.020	ND	8.6
03/02/2023	--	--	--	--	--	--	--	--	--	1.4	--	617	738	783	1.006	--	--	8.4
04/06/2023	--	--	--	--	--	--	--	--	--	4.52	--	683	2,530	2,610	1.009	--	--	8.2
05/04/2023	0.03	ND	0.002	0.08	0.01	0.005	ND	0.3	ND	3.7	ND	248	11,600	ND[c]	1.006	0.068	ND	7.6
06/01/2023	--	--	--	--	--	--	--	--	--	3.02	--	220	4290[d]	8970[d]	1.010	--	--	6.8
07/06/2023	--	--	--	--	--	--	--	--	--	0.725	--	1,330	ND[c]	ND[c]	1.006	--	--	8.5
08/03/2023	0.06	ND	0.0005J	0.08	0.02	0.002	ND	0.3	ND	0.9	ND	678	ND[c]	ND[c]	1.006	0.020	2 J	8.6
09/07/2023	--	--	--	--	--	--	--	--	--	1.77	--	990	6,030	ND[c]	1.001	--	--	7.6
10/05/2023	--	--	--	--	--	--	--	--	--	0.262	--	1,300	1,280	804	1.001	--	--	8.2
11/02/2023	0.04	ND	0.0005J	0.1	0.008	0.002	ND	0.3	ND	1	0.004 J	2,340	1,010	607	1.008	0.019	3 J	8.2
12/05/2023	--	--	--	--	--	--	--	--	--	1.050	--	1,970	999	876	1.007	--	--	8.3
01/04/2024	--	--	--	--	--	--	--	--	--	0.243	--	1,370	2,590	2,410	1.019	--	--	8.3

Notes:

1	Industrial Wastewater Discharge Permit #9 Limits (October 1, 2019 to September 30, 2024)
J	Estimated value
mg/L	Milligrams per liter
NA	Not Applicable
ND	Not Detected [parenthesis values are Limit of Detection]
H	Analyzed outside of hold time
B	Compound detected in method blank. The associated sample is assigned non-detect value at the LOQ
6.16	Detected concentration is equal to or greater than the AWWU Industrial Wastewater Discharge Permit #9 Limits
*	Due to laboratory error, BOD was analyzed past hold time. Result may be biased low.
[b]	TAH was analyzed past hold time during this event. TAH sample was recollected and submitted to the laboratory for analysis; these results were reported with the November (2016) monthly results.
[c]	Sample dissolved oxygen result was depleted; therefore, BOD result is estimated.
[d]	Sample method blank depleted; therefore, BOD result may be biased high.
TAH	Total Aromatic Hydrocarbon (TAH) result is sum of benzene, toluene, ethylbenzene, & xylenes concentration results; The LOQ was substituted for ND results for summation of TAH
TSS	Total Suspended Solids
LOQ	Limit of Quantitation
>	Greater than
<	Less than
-	Sample not analyzed for this parameter or data not available
∓	Method Detection Limit (MDL) is reported when the LOQ is greater than the permit limit
‡	primary/duplic

PERMIT #8- Alaska Seafood Ventures (Copper River Seafoods)

ANCHORAGE WATER & WASTEWATER UTILITY

Dan Sullivan,
Mayor

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

Owned by the
Municipality of Anchorage

Copper River Seafoods

SAMPLE DATE: 6.17.2019 SAMPLED BY POTW ANNUAL SAMPLING EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Biochemical Oxygen Demand (BOD)	SM5210 B	mg/L	1760	500
BOD soluble (modified method)	SM5210 B	mg/L	205	500
Total Suspended Solids (TSS)	SM2540 B	mg/L	352	1100
pH			7.09	5.0-12.0

Sampled By	Date Sampled	Outfall	Pollutant	Units	Results	Daily Maximum Limit
SIU	1.3.2019	001	Biochemical Oxygen Demand	mg/L	1640	500
SIU	1.3.2019	001	BOD soluble	mg/L	2280	500
SIU	1.3.2019	001	Total Suspended Solids	mg/L	2380	1100
SIU	1.3.2019	001	pH		7.1	5.0-12.0

POTW	6.17.2019	001	Biochemical Oxygen Demand	mg/L	1760	500
POTW	6.17.2019	001	BOD soluble	mg/L	205	500
POTW	6.17.2019	001	Total Suspended Solids	mg/L	352	1100
POTW	6.17.2019	001	Arsenic	mg/L	0.0061	3.7
POTW	6.17.2019	001	Beryllium	mg/L	0.00	14.5
POTW	6.17.2019	001	Cadmium	mg/L	0.00008	0.69
POTW	6.17.2019	001	Chromium	mg/L	0.0017	2.77
POTW	6.17.2019	001	Copper	mg/L	0.00948	3.38
POTW	6.17.2019	001	Lead	mg/L	0.00094	0.69
POTW	6.17.2019	001	Nickel	mg/L	0.00077	3.88
POTW	6.17.2019	001	Silver	mg/L	0.00001	2.5
POTW	6.17.2019	001	Zinc	mg/L	0.0741	5.62
POTW	6.17.2019	001	Cyanide	mg/L	0.003	1.7
POTW	6.17.2019	001	Mercury	mg/L	0.00005	0.2
POTW	6.17.2019	001	Total Aromatic Hydrocarbons	mg/L		5.0
POTW	6.17.2019	001	Oil & Grease HEM	mg/L	17.2	250
POTW	6.17.2019	001	TPH Silica Gel HEM	mg/L	0.00	

Sampled By	Date Sampled	Outfall	Pollutant	Units	Results	Daily Maximum Limit
SIU	8.6.2020	002	Biochemical Oxygen Demand	mg/L	204	500
SIU	8.6.2020	002	BOD soluble	mg/L	167	500
SIU	8.6.2020	002	Total Suspended Solids	mg/L	62.7	1100
SIU	8.6.2020	002	pH		6.9	5.0-12.0
SIU	8.6.2020	001	Biochemical Oxygen Demand	mg/L	393	500
SIU	8.6.2020	001	BOD soluble	mg/L	214	500
SIU	8.6.2020	001	Total Suspended Solids	mg/L	212	1100
SIU	8.6.2020	001	pH		6.9	5.0-12.0
SIU	12.7.2020	001	Biochemical Oxygen Demand	mg/L	1570	500
SIU	12.7.2020	001	BOD soluble	mg/L	432	500
SIU	12.7.2020	001	Total Suspended Solids	mg/L	1280	1100
SIU	12.7.2020	001	pH		6.9	5.0-12.0
SIU	8.7.2020	001	Arsenic	mg/L	0.005	3.7
SIU	8.7.2020	001	Beryllium	mg/L	0.0004	14.5
SIU	8.7.2020	001	Cadmium	mg/L	0.0005	0.69
SIU	8.7.2020	001	Chromium	mg/L	0.002	2.77
SIU	8.7.2020	001	Copper	mg/L	0.00269	3.38
SIU	8.7.2020	001	Lead	mg/L	0.0002	0.69
SIU	8.7.2020	001	Nickel	mg/L	0.0002	3.88
SIU	8.7.2020	001	Silver	mg/L	0.001	2.5
SIU	8.7.2020	001	Zinc	mg/L	0.0434	5.62
SIU	8.7.2020	001	Oil & Grease HEM	mg/L	20.1	250
SIU	8.7.2020	002	Arsenic	mg/L	0.005	3.7
SIU	8.7.2020	002	Beryllium	mg/L	0.004	14.5
SIU	8.7.2020	002	Cadmium	mg/L	0.005	0.69
SIU	8.7.2020	002	Chromium	mg/L	0.002	2.77
SIU	8.7.2020	002	Copper	mg/L	0.0566	3.38
SIU	8.7.2020	002	Lead	mg/L	0.00143	0.69
SIU	8.7.2020	002	Nickel	mg/L	0.00384	3.88
SIU	8.7.2020	002	Silver	mg/L	0.001	2.5
SIU	8.7.2020	002	Zinc	mg/L	0.0854	5.62
SIU	8.7.2020	002	Oil & Grease HEM	mg/L	20.6	250

Sampled By	Date Sampled	Outfall	Pollutant	Units	Results	Daily Maximum Limit
POTW	7.15.2020	002	Biochemical Oxygen Demand	mg/L	1100	500
POTW	7.15.2020	002	BOD soluble	mg/L	790	500
POTW	7.15.2020	002	Total Suspended Solids	mg/L	450	1100
POTW	7.15.2020	002	pH		6.99	5.0-12.0

ANCHORAGE WATER & WASTEWATER UTILITY

Dan Sullivan,
Mayor

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3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

Owned by the
Municipality of Anchorage

Copper River Seafoods
1400 East 1st AVE.

SAMPLE DATE: 6.17.2021 SAMPLED BY POTW ANNUAL SAMPLING EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Biochemical Oxygen Demand (BOD)	SM5210 B	mg/L	586	500
BOD soluble (modified method)	SM5210 B	mg/L	253	500
Total Suspended Solids (TSS)	SM2540 B	mg/L	310	1100
pH			6.9	5.0-12.0

ANCHORAGE WATER & WASTEWATER UTILITY

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Mayor

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Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

Owned by the
Municipality of Anchorage

Copper River Seafoods
1304 LAONA CIRCLE
OUTFALL 002

SAMPLE DATE: 6.30.2021 SAMPLED BY POTW ANNUAL SAMPLING EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Biochemical Oxygen Demand (BOD)	SM5210 B	mg/L	4424	500
BOD soluble (modified method)	SM5210 B	mg/L	3188	500
Total Suspended Solids (TSS)	SM2540 B	mg/L	5600	1100
pH			6.9	5.0-12.0

Copper River Seafoods, Inc.
1118 East 5th Avenue • Anchorage, AK 99501
Phone: (907) 522-7806 • (888) 622-1197 • Fax: (907) 222-0348
www. CopperRiverSeafood.com

July 12, 2021

TO: Anchorage Waste and Water Utility

RE: Bi-Annual Compliance Report – Outfall 002
Anchorage - West Facility
1304 Laona Circle, Anchorage, AK 99518

To Whom It May Concern:

In compliance with Anchorage Industrial Pretreatment Program Procedures, please accept this document and the respective attachments for the biannual report.

2021 processing operations began on June 22, 2021.

1. FISH WASTE DISCHARGE TO OUTFALL SUMMARY

MONTH	DISCHARGE (LBS)	MONTH	DISCHARGE (LBS)	MONTH	DISCHARGE (LBS)
JAN	FNIO	MAY	FNIO	SEP	
FEB	FNIO	JUN	3,916	OCT	
MAR	FNIO	JUL		NOV	
APR	FNIO	AUG		DEC	

FNIO = Facility Not In Operation

2. ANALYTICAL RESULTS SUMMARY

PARAMETER	RESULTS	LOQ	UNITS
TSS	3900	250	mg/L
pH	7.0	0.100	pH units
BOD	4820	2.00	mg/L
BOD Soluble	3650	2.00	mg/L

3. SPILL EVENTS SUMMARY

DATE	TYPE	QUANTITY	FINAL DISPOSITION
None	N/A	N/A	N/A

I certify under penalty of law, that this document and all attachments were prepared under my direct supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Clancy Niblack
General Manager
Copper River Seafoods, Inc.

Mayor
Dan Sullivan

Anchorage Water & Wastewater Utility

Treatment Division

www.awwu.biz

Board Chair
David M. Richards

DISCHARGE MONITORING REPORT

LABORATORY ANALYSIS

Report Date: 12.15.202

Copper River Seafoods

Sample Date: 11.15.2021

Analytical Results

Sample Number				
Parameter	**Method**	**Unit**	**Result**	**Limit**
Arsenic (As)	EPA 200.8	mg/L	ND	3.7
Beryllium (Be)	EPA 200.8	mg/L	ND	14.5
Cadmium (Cd)	EPA 200.8	mg/L	ND	0.69
Chromium (Cr)	EPA 200.8	mg/L	ND	2.77
Copper (Cu)	EPA 200.8	mg/L	0.00384	3.38
Lead (Pb)	EPA 200.8	mg/L	0.00026	0.69
Mercury (Hg)	EPA 200.8 M	mg/L	0.000521	0.2
Nickel (Ni)	EPA 200.8	mg/L	ND	3.88
Silver (Ag)	EPA 200.8	mg/L	ND	2.5
Zinc (Zn)	EPA 200.8	mg/L	0.0574	5.62
Cyanide (Cn)	SM21 4500-CN C,E	mg/L	ND	1.7

Sample Number				
Parameter	**Method**	**Unit**	**Result**	**Limit**
Total Suspended Solids (TSS)	SM18 2540 D,E	mg/L	23.6	No limit
Biochemical Oxygen Demand	SM18 5210B	mg/L	ND	No limit
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	?	5.0
Oil and Grease; HEM	EPA 1664 B	mg/L	599	250
TPH Silica Gel HEM	EPA 1664 B	mg/L	ND	
pH	SM21 4500-H B	pH units	6.9	5.0-12.5

questions regarding these analysis or procedures, please contact:
AWWU Industrial Pretreatment Program
Point Woronzof Wastewater Treatment Facility
Phone: 751-2253 FAX: 786-5681
E-mail: Pretreatment@awwu.biz

Y:\PretreatmentProgram\REPORTS\blank discharge monitoring report laboratory analysis

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

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3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

COPPER RIVER SEAFOODS 1ST AVE

SAMPLE DATE: 7.29.2022 SAMPLED BY POTW ANNUAL SAMPLING EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.005	3.7
Beryllium	200.8	mg/L	0.0004	14.5
Cadmium	200.8	mg/L	0.0005	0.69
Chromium	200.8	mg/L	0.005	2.77
Copper	200.8	mg/L	0.0034	3.38
Cyanide	335.4	mg/L	0.000005	1.7
Lead	200.8	mg/L	0.002	0.69
Mercury	245.1	mg/L		0.2
Nickel	200.8	mg/L	0.002	3.88
Silver	200.8	mg/L	0.001	2.5
Zinc	200.8	mg/L	0.142	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.010116	5.0
Oil & Grease HEM	SM 1664A	mg/L	20.6	250
pH			?	

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

COPPER RIVER SEAFOODS LAONA DRIVE

SAMPLE DATE: 7.29.2022 SAMPLED BY POTW ANNUAL SAMPLING EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.02	3.7
Beryllium	200.8	mg/L	0.0016	14.5
Cadmium	200.8	mg/L	0.0026	0.69
Chromium	200.8	mg/L	0.02	2.77
Copper	200.8	mg/L	0.0246	3.38
Cyanide	335.4	mg/L	0.00019	1.7
Lead	200.8	mg/L	0.008	0.69
Mercury	245.1	mg/L	0.0005	0.2
Nickel	200.8	mg/L	0.00983	3.88
Silver	200.8	mg/L	0.004	2.5
Zinc	200.8	mg/L	0.302	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.0054	5.0
Oil & Grease HEM	SM 1664A	mg/L	0.08	250
pH			7.51	5.0-12.5

Copper River Seafoods, Inc - Outfall 001

Summary Report, Analytical Results, Self-Monitoring
Analytical Laboratory - SGS

SELF-MONITORING REQUIREMENTS FOR 1400 EAST 1ST AVENUE (001)

			SEMIANNUAL											QUARTERLY			
SAMPLE DATE		POLLUTANT	ARSENIC	BERYLLIUM	CADMIUM	CHROMIUM	COPPER	CYANIDE	LEAD	MERCURY ƀ	NICKEL	SILVER	ZINC	TOTAL AROMATIC HYDROCARBONS ƀ	OIL or GREASE (ANIMAL/VEG ORIG)	pH	BOD	TSS
TARGET	ACTUAL	LIMITATIONS (mg/L)	3.7000	14.50	0.69	2.77	3.38	1.70	0.69	0.20	3.88	2.50	5.62	5.0 [2]	250.0	5.0-12.5	NA	NA
JUL 2022	8/11/2022 (1045 hrs.) *9/01/2022 (1245 hrs.)	Reported as ug/L	3.9400	0.15	0.94	5.75	12.50	0.0036	0.8740	<0.50	2.51	ND	229	*	25.1	6.7	14,000	1,060
		Converted to mg/L	0.0039	0.0002	0.0009	0.0058	0.0125	0.000004	0.0009	<0.0005	0.0025	ND	0.2290	*	25.1	6.7	14,000	1,060
NOV 2022																		
FEB 2023																		
APR 2023		NO SAMPLING REQUIRED																
AUG 2023																		
OCT 2023																		
FEB 2024																		
APR 2024		NO SAMPLING REQUIRED																
AUG 2024																		
OCT 2024																		
FEB 2025																		
APR 2025		NO SAMPLING REQUIRED																
AUG 2025																		
OCT 2025																		
FEB 2026																		
APR 2026		NO SAMPLING REQUIRED																
AUG 2026																		
OCT 2026																		
FEB 2027																		
APR 2027		NO SAMPLING REQUIRED																
AUG 2027																		
OCT 2027																		

* See attached report for all of the TAH data.
ƀ Report updated on 9/26/2022 (Hg and TAH)

Copper River Seafoods, Inc. - Outfall 002

Summary Report, Analytical Results, Self-Monitoring
Analytical Laboratory - SGS

		SELF-MONITORING REQUIREMENTS FOR 1304 LAONA (002)															
			ANNUAL														
SAMPLE DATE ↓		POLLUTANT →	ARSENIC	BERYLLIUM	CADMIUM	CHROMIUM	COPPER	CYANIDE	LEAD	ƀ MERCURY	NICKEL	SILVER	ZINC	ƀ TOTAL AROMATIC HYDROCARBONS	OIL or GREASE (ANIMAL/VEG ORIG)	pH	BOD	TSS
TARGET	ACTUAL	LIMITATIONS (mg/L)	3.7	14.5	0.69	2.77	3.38	1.7	0.69	0.2	3.88	2.5	5.62	5.0 [2]	250	5.0-12.5	NA	NA
JUL 2022	8/10/2022 (1015 hrs.)	Reported as ug/L	ND	ND	19.50	ND	391.00	0.0027	ND	<0.50	ND	7.81	2,260	*	240	6.5	9,630	2,650
	*9/01/2022 (1220 hrs.)	Converted to mg/L	ND	ND	0.0195	ND	0.3910	0.000003	ND	<0.0005	ND	0.01	2.26	*	240	6.5	9,630	2,650
JUL 2023																		
JUL 2024																		
JUL 2025																		
JUL 2026																		
JUL 2027																		

* See attached report for all of the TAH data.

ƀ Report updated on 9/26/2022 (Hg and TAH)

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

COPPER RIVER SEAFOODS

SAMPLE DATE: 8.3.2023 SAMPLED BY POTW ANNUAL SAMPLING EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.00182	3.7
Beryllium	200.8	mg/L	0.0002	14.5
Cadmium	200.8	mg/L	0.00025	0.69
Chromium	200.8	mg/L	0.0025	2.77
Copper	200.8	mg/L	0.00355	3.38
Cyanide	335.4	mg/L	0.0025	1.7
Lead	200.8	mg/L	0.001	0.69
Mercury	245.1	mg/L	0.11	0.2
Nickel	200.8	mg/L	0.00077	3.88
Silver	200.8	mg/L	0.0005	2.5
Zinc	200.8	mg/L	0.0724	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.0025	5.0
Oil & Grease HEM	SM 1664A	mg/L	19.1	250
TSS	SM 1664A	mg/L	360	
BOD		mg/L	428	

Copper River Seafoods, Inc.
1118 East 5th Avenue • Anchorage, AK 99501
Phone: (907) 522-7806 • (888) 622-1197 • Fax: (907) 222-0348
www. CopperRiverSeafood.com

July 15, 2023

TO: Anchorage Waste and Water Utility

RE: Bi-Annual Compliance Report – Outfall 001
Anchorage - East Facility
1400 East 1st Avenue, Anchorage, AK 99501

To Whom It May Concern:

In compliance with Anchorage Industrial Pretreatment Program Procedures, please accept this document and the respective attachments for the biannual report.

This site operates year-round. Activity for the first installment of the biannual report is from January 1, 2023 to June 30, 2023.

1. FISH WASTE DISCHARGE TO OUTFALL SUMMARY

MONTH	DISCHARGE (LBS)	MONTH	DISCHARGE (LBS)	MONTH	DISCHARGE (LBS)
JAN	453,027	MAY	0 (all pet food/landfill)	SEP	
FEB	283,071	JUN	0 (all pet food)	OCT	
MAR	10,092	JUL		NOV	
APR	0 (all pet food/landfill)	AUG		DEC	

2. ANALYTICAL RESULTS SUMMARY

SGS performed the analytical testing for the elements below on April 26 and June 5, 2023.

				SEMIANNUAL												QUARTERLY			
	SAMPLE DATE		POLLUTANT	ARSENIC	BERYLLIUM	CADMIUM	CHROMIUM	COPPER	CYANIDE	LEAD	MERCURY	NICKEL	SILVER	ZINC	TOTAL AROMATIC HYDROCARBONS	OIL or GREASE (ANIMAL/VEG OIL)	pH	BOD	TSS
REF #	Target	Actual	LIMITATIONS (mg/L)	3.7000	14.50	0.69	2.77	3.38	1.70	0.69	0.20	3.88	2.50	5.62	5.0 [2]	250.0	5.0-12.5	NA	NA
2023.1	APR 2023	4/26/2023 (All Other)	Reported as ug/L	ND	ND	ND	ND	5.21	0.06	ND	0.09	0.85	ND	67.00	*	NA	NA	NA	NA
		6/5/2023 (TAH)	Converted to mg/L	ND	ND	ND	ND	0.01	0.00	ND	0.09	0.00	ND	0.07	*	18.6	6.8	ND	282
2023.2	JUL 2023		Reported as ug/L	NO SAMPLING REQUIRED												0.0	0.0	0	0
			Converted to mg/L																
2023.3	SEP 2023		Reported as ug/L													0.0	0.0	0	0
			Converted to mg/L																
2023.4	NOV 2023		Reported as ug/L																
			Converted to mg/L	0.0000	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00	*	0.0	0.0	0	0

* See attached report for all of the TAH data.

3. SPILL EVENTS SUMMARY

DATE	TYPE	QUANTITY	FINAL DISPOSITION
None	N/A	N/A	N/A

I certify under penalty of law, that this document and all attachments were prepared under my direct supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chris LaCroix
Copper River Seafoods, Inc.

TAH = ND

Copper River Seafoods, Inc.
1118 East 5th Avenue • Anchorage, AK 99501
Phone: (907) 522-7806 • (888) 622-1197 • Fax: (907) 222-0348
www. CopperRiverSeafoods.com

January 22, 2024

TO: Anchorage Waste and Water Utility

RE: Annual Compliance Report – Outfall 001
Anchorage - East Facility
1400 East 1st Avenue, Anchorage, AK 99501

To Whom It May Concern:

In compliance with Anchorage Industrial Pretreatment Program Procedures, please accept this document and the respective attachments for the annual report.

1. FISH WASTE DISCHARGE TO OUTFALL SUMMARY

MONTH	DISCHARGE (LBS)	MONTH	DISCHARGE (LBS)	MONTH	DISCHARGE (LBS)
JAN	453,027	MAY	0 (all pet food/landfill)	SEP	0 (all pet food)
FEB	283,071	JUN	0 (all pet food)	OCT	0 (all pet food)
MAR	10,092	JUL	0 (all pet food)	NOV	17,012 (grinder/pet food)
APR	0 (all pet food/landfill)	AUG	0 (all pet food)	DEC	41,422

2. ANALYTICAL RESULTS SUMMARY

SGS performed the analytical testing for the elements below.

PARAMETER	UNITS	LIMIT	Q1	Q2	Q3	Q3 (retest)	Q4
			4/26/23 (0945 hrs.) 6/5/23 (1107 hrs.) [TAH]	7/20/2023 (1125 hrs.)	9/29/23 (0750 hrs.)	10/11/23 (1115 hrs.) [Oil and Grease]	11/27/2023 (1045 hrs.)
Arsenic	mg/L	3.70	0.0039	NTR	NTR	NA	0.0075
Beryllium	mg/L	14.50	0.0002	NTR	NTR	NA	ND
Cadmium	mg/L	0.69	0.0009	NTR	NTR	NA	ND
Chromium	mg/L	2.77	0.0058	NTR	NTR	NA	0.0025
Copper	mg/L	3.38	0.0125	NTR	NTR	NA	0.01
Cyanide	mg/L	1.70	0.000004	NTR	NTR	NA	ND
Lead	mg/L	0.69	0.0009	NTR	NTR	NA	ND
Mercury	mg/L	0.20	<0.0005	NTR	NTR	NA	0.0001
Nickel	mg/L	3.88	0.0025	NTR	NTR	NA	0.0011
Silver	mg/L	2.50	ND	NTR	NTR	NA	ND
Zinc	mg/L	5.62	0.2290	NTR	NTR	NA	0.09
TAH	mg/L	5.0[2]	*	NTR	NTR	NA	*
Oil and Grease	mg/L	250	25.1	105.0	9,420	40.8	21.0
pH	mg/L	5.0-12.5	6.7	6.8	6.8	NA	7.0
BOD	mg/L	Monitoring	14,000	611	3,090	NA	123
TSS	mg/L	Monitoring	1,060	673	10,400	NA	113
LAB REPORT #	NA		1231667, 1232399	1233654	1235403	1235743	1236483
COMMENTS	NONE		TAH was missed on 4/26/23 and sampled on 6/5/23.	NONE	Oil and Grease was out of limit on 9/29/23 and resampled on 10/11/23.	NONE	NONE

NTR = No Testing Required, NA = Not Applicable
*** = See Q1 and Q4 reports for the TAH data due to TAH being a combination of multiple tests.**

3. SPILL EVENTS SUMMARY

DATE	TYPE	QUANTITY	FINAL DISPOSITION
None	N/A	N/A	N/A

I certify under penalty of law, that this document and all attachments were prepared under my direct supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chris LaCroix
Copper River Seafoods, Inc.

TAH = ND

Copper River Seafoods, Inc - Outfall 001

Summary Report, Analytical Results, Self-Monitoring

Analytical Laboratory - SGS

				SEMIANNUAL												QUARTERLY			
	SAMPLE DATE ↓		POLLUTANT →	ARSENIC	BERYLLIUM	CADMIUM	CHROMIUM	COPPER	CYANIDE	LEAD	MERCURY [b]	NICKEL	SILVER	ZINC	TOTAL AROMATIC HYDROCARBONS [b]	OIL or GREASE (ANIMAL/VEG ORIG)	pH	BOD	TSS
REF #	Target	Actual	LIMITATIONS (mg/L)	3.7000	14.50	0.69	2.77	3.38	1.70	0.69	0.20	3.88	2.50	5.62	5.0 [2]	250.0	5.0-12.5	NA	NA
2023.1	APR 2023	4/26/2023 (All Other)	Reported as ug/L	ND	ND	ND	ND	5.21	0.06	ND	0.09	0.85	ND	67.00	*	NA	NA	NA	NA
		6/5/2023 (TAH)	Converted to mg/L	ND	ND	ND	ND	0.01	0.00	ND	0.09	0.00	ND	0.07	*	18.6	6.8	ND	282
2023.2	JUL 2023		Reported as ug/L																
			Converted to mg/L													0.0	0.0	0	0
2023.3	SEP 2023		Reported as ug/L																
			Converted to mg/L													0.0	0.0	0	0
2023.4	NOV 2023		Reported as ug/L																
			Converted to mg/L	0.0000	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00	*	0.0	0.0	0	0

NO SAMPLING REQUIRED

* See attached report for all of the TAH data.

TAH = ND

PERMIT #11- Joint Base Elmendorf Richardson (JBER)

Self-Monitoring Report

First Half Monitoring Reports Due by July 15th from monitoring conducted between January – June
Second Half Monitoring Reports Due by January 15th from monitoring conducted between July – December

Analytical Results

Sample Date: 5/24/2019

Parameter	Method	Unit	MRL	Result	Limit
Lead, Total	EPA 200.8	mg/L	0.0002	0.000303	0.69
Arsenic, Total	EPA 200.8	mg/L	0.005	ND (0.0025)	3.7
Beryllium, Total	EPA 200.8	mg/L	0.0004	ND (0.0002)	14.5
Cadmium, Total	EPA 200.8	mg/L	0.0005	0.000179 J	0.69
Chromium, Total	EPA 200.8	mg/L	0.002	ND (0.001)	2.77
Copper, Total	EPA 200.8	mg/L	0.001	0.00842	3.38
Mercury, Total	EPA 245.1	mg/L	0.0001	ND (0.0005)	0.2
Nickel, Total	EPA 200.8	mg/L	0.002	0.00194 J	3.88
Silver, Total	EPA 200.8	mg/L	0.001	ND (0.0005)	2.5
Zinc, Total	EPA 200.8	mg/L	0.005	0.0565	5.62
Cyanide, Total	4500CN C,E	mg/L	0.005	ND (0.0025)	1.7
pH	SM 4500H	pH units	0.1	7.1	5-12.5

Parameter	Method	Unit	MDL	Result	Limit
Oil and Grease, Total[1]	EPA 1664A	mg/L	1.01	24.4	250
Oil and Grease, animal or vegetable origin		mg/L	1.01	22.08	No Limit
Oil and Grease, non-polar (SGT-HEM) hydrocarbon origin	EPA 1664A	mg/L	1.01	2.32 J	250
Parameter	**Method**	**Unit**	**MDL**	**Result**	**Limit**
Total Aromatic Hydrocarbons	EPA 624	mg/L	0.00167	ND (0.0027)	5.0

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

[1] Two separate Oil and Grease samples shall be collected during each biannual monitoring event. One sample must be analyzed using EPA Method 1664A n-hexane extractable material (HEM; Oil and Grease). This method gives a "total" oil and grease result. If the "total" oil and grease result is greater than 250 mg/L, the second oil and grease sample shall be analyzed using EPA Method 1664A silica gel treated n-hexane extractable material (SGT-HEM; Non-polar Material), which gives a result from oil and grease of a hydrocarbon origin.

3000 Arctic Boulevard • Anchorage, Alaska 99503
Phone 907-751-2217 • Fax 907-751-2207 • www.awwu.biz

Self-Monitoring Report

First Half Monitoring Reports Due by July 15th from monitoring conducted between January – June
Second Half Monitoring Reports Due by January 15th from monitoring conducted between July – December

Analytical Results

Sample Date: 5/24/2019

Parameter	Method	Unit	MRL	Result	Limit
Lead, Total	EPA 200.8	mg/L	0.0002	0.000216	0.69
Arsenic, Total	EPA 200.8	mg/L	0.005	ND (0.0025)	3.7
Beryllium, Total	EPA 200.8	mg/L	0.0004	ND (0.0002)	14.5
Cadmium, Total	EPA 200.8	mg/L	0.0005	ND (0.00025)	0.69
Chromium, Total	EPA 200.8	mg/L	0.002	ND (0.001)	2.77
Copper, Total	EPA 200.8	mg/L	0.001	0.015	3.38
Mercury, Total	EPA 245.1	mg/L	0.001	ND (0.0005)	0.2
Nickel, Total	EPA 200.8	mg/L	0.002	0.00297	3.88
Silver, Total	EPA 200.8	mg/L	0.001	ND (0.0005)	2.5
Zinc, Total	EPA 200.8	mg/L	0.01	0.0399	5.62
Cyanide, Total	4500CN C,E	mg/L	0.005	ND (0.0025)	1.7
pH	SM 4500H	pH units	0.1	7.1	5-12.5

Parameter	Method	Unit	MDL	Result	Limit
Oil and Grease, Total[1]	EPA 1664A	mg/L	1.01	8.89	250
Oil and Grease, animal or vegetable origin		mg/L	1.01	7.48 J	No Limit
Oil and Grease, non-polar (SGT-HEM) hydrocarbon origin	EPA 1664A	mg/L	1.01	1.41 J	250
Parameter	**Method**	**Unit**	**MDL**	**Result**	**Limit**
Total Aromatic Hydrocarbons	EPA 624	mg/L	0.0054	0.185	5.0

B= the result is considered estimated, biased high, due to a detection in a blank sample.
J = the result is estimated; the analyte was detected below the limit of quantitation.

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[1] Two separate Oil and Grease samples shall be collected during each biannual monitoring event. One sample must be analyzed using EPA Method 1664A n-hexane extractable material (HEM; Oil and Grease). This method gives a "total" oil and grease result. If the "total" oil and grease result is greater than 250 mg/L, the second oil and grease sample shall be analyzed using EPA Method 1664A silica gel treated n-hexane extractable material (SGT-HEM; Non-polar Material), which gives a result from oil and grease of a hydrocarbon origin.

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Self-Monitoring Report

First Half Monitoring Reports Due by July 15th from monitoring conducted between January – June
Second Half Monitoring Reports Due by January 15th from monitoring conducted between July – December

Analytical Results

Sample Date: 5/28/2019

Parameter	Method	Unit	MRL	Result	Limit
Lead, Total	EPA 200.8	mg/L	0.0002	0.000643	0.69
Arsenic, Total	EPA 200.8	mg/L	0.005	ND (0.0025)	3.7
Beryllium, Total	EPA 200.8	mg/L	0.0004	ND (0.0002)	14.5
Cadmium, Total	EPA 200.8	mg/L	0.0005	ND (0.00025)	0.69
Chromium, Total	EPA 200.8	mg/L	0.002	ND (0.001)	2.77
Copper, Total	EPA 200.8	mg/L	0.001	0.0235	3.38
Mercury, Total	EPA 245.1	mg/L	0.001	ND (0.0005)	0.2
Nickel, Total	EPA 200.8	mg/L	0.002	0.00294	3.88
Silver, Total	EPA 200.8	mg/L	0.001	ND (0.0005)	2.5
Zinc, Total	EPA 200.8	mg/L	0.01	0.0523	5.62
Cyanide, Total	4500CN C,E	mg/L	0.005	ND (0.0025)	1.7
pH	SM 4500H	pH units	0.1	7.2	5-12.5

Parameter	Method	Unit	MDL	Result	Limit
Oil and Grease, Total[1]	EPA 1664A	mg/L	1.02	21.8	250
Oil and Grease, animal or vegetable origin		mg/L	1.02	19.78	No Limit
Oil and Grease, non-polar (SGT-HEM) hydrocarbon origin	EPA 1664A	mg/L	1.02	2.02 J	250
Parameter	**Method**	**Unit**	**MDL**	**Result**	**Limit**
Total Aromatic Hydrocarbons	EPA 602	mg/L	0.00167	ND (0.0027)	5.0

B= the result is considered estimated, biased high, due to a detection in a blank sample.
J = the result is estimated; the analyte was detected below the limit of quantitation.

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[1] Two separate Oil and Grease samples shall be collected during each biannual monitoring event. One sample must be analyzed using EPA Method 1664A n-hexane extractable material (HEM; Oil and Grease). This method gives a "total" oil and grease result. If the "total" oil and grease result is greater than 250 mg/L, the second oil and grease sample shall be analyzed using EPA Method 1664A silica gel treated n-hexane extractable material (SGT-HEM; Non-polar Material), which gives a result from oil and grease of a hydrocarbon origin.

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Mayor
Dan Sullivan

Anchorage Water & Wastewater Utility

Treatment Division – Water Quality Section

Industrial Pretreatment Program

JBER – Government Hill meter station

Board Chair
Timothy M. Sullivan, Sr.

Self-Monitoring Report

First Half Monitoring Reports Due by July 15th from monitoring conducted between January – June
Second Half Monitoring Reports Due by January 15th from monitoring conducted between July – December

Analytical Results

Sample Date: 11/20/2019

Parameter	Method	Unit	MRL	Result	Limit
Lead, Total	EPA 200.8	mg/L	0.0002	0.00135	0.69
Arsenic, Total	EPA 200.8	mg/L	0.005	ND (0.0025)	3.7
Beryllium, Total	EPA 200.8	mg/L	0.0004	ND (0.0002)	14.5
Cadmium, Total	EPA 200.8	mg/L	0.0005	0.00023 J	0.69
Chromium, Total	EPA 200.8	mg/L	0.002	0.00217	2.77
Copper, Total	EPA 200.8	mg/L	0.001	0.0364	3.38
Mercury, Total	EPA 245.1	mg/L	0.002	ND (0.001)	0.2
Nickel, Total	EPA 200.8	mg/L	0.002	0.00386	3.88
Silver, Total	EPA 200.8	mg/L	0.001	ND (0.0005)	2.5
Zinc, Total	EPA 200.8	mg/L	0.01	0.0793	5.62
Cyanide, Total	4500CN C,E	mg/L	0.005	0.0026 J	1.7
pH	SM 4500H	pH units	0.1	7.4	5-12.5

Parameter	Method	Unit	MDL	Result	Limit
Oil and Grease, Total[1]	EPA 1664B	mg/L	1.05	23.5	250
Oil and Grease, animal or vegetable origin		mg/L	1.05	20.87 J	No Limit
Oil and Grease, non-polar (SGT-HEM) hydrocarbon origin	EPA 1664B	mg/L	1.05	2.63 J	250
Parameter	**Method**	**Unit**	**MDL**	**Result**	**Limit**
Total Aromatic Hydrocarbons	EPA 624	mg/L	0.00167	0.00336 J	5.0

B= the result is considered estimated, biased high, due to a detection in a blank sample.
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[1] Two separate Oil and Grease samples shall be collected during each biannual monitoring event. One sample must be analyzed using EPA Method 1664A n-hexane extractable material (HEM; Oil and Grease). This method gives a "total" oil and grease result. If the "total" oil and grease result is greater than 250 mgIL, the second oil and grease sample shall be analyzed using EPA Method 1664A silica gel treated n-hexane extractable material (SGT-HEM; Non-polar Material), which gives a result from oil and grease of a hydrocarbon origin.

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Mayor
Dan Sullivan

Anchorage Water & Wastewater Utility

Treatment Division – Water Quality Section

Industrial Pretreatment Program

JBER – Ft. Rich meter station

Board Chair
Timothy M. Sullivan, Sr.

Self-Monitoring Report

First Half Monitoring Reports Due by July 15th from monitoring conducted between January – June
Second Half Monitoring Reports Due by January 15th from monitoring conducted between July – December

Analytical Results

Sample Date: 11/20/2019

Parameter	Method	Unit	MRL	Result	Limit
Lead, Total	EPA 200.8	mg/L	0.0002	0.000511	0.69
Arsenic, Total	EPA 200.8	mg/L	0.005	ND (0.0025)	3.7
Beryllium, Total	EPA 200.8	mg/L	0.0004	ND (0.0002)	14.5
Cadmium, Total	EPA 200.8	mg/L	0.0005	0.00015 J	0.69
Chromium, Total	EPA 200.8	mg/L	0.002	0.000873 J	2.77
Copper, Total	EPA 200.8	mg/L	0.001	0.0178	3.38
Mercury, Total	EPA 245.1	mg/L	0.002	ND (0.001)	0.2
Nickel, Total	EPA 200.8	mg/L	0.002	0.00184 J	3.88
Silver, Total	EPA 200.8	mg/L	0.001	ND (0.0005)	2.5
Zinc, Total	EPA 200.8	mg/L	0.01	0.0333	5.62
Cyanide, Total	4500CN C,E	mg/L	0.005	0.0026 J	1.7
pH	SM 4500H	pH units	0.1	7.4	5-12.5

Parameter	Method	Unit	MDL	Result	Limit
Oil and Grease, Total[1]	EPA 1664B	mg/L	1.01	17.1	250
Oil and Grease, animal or vegetable origin		mg/L	1.01	14.68 J	No Limit
Oil and Grease, non-polar (SGT-HEM) hydrocarbon origin	EPA 1664B	mg/L	1.01	2.42 J	250
Parameter	**Method**	**Unit**	**MDL**	**Result**	**Limit**
Total Aromatic Hydrocarbons	EPA 602	mg/L	0.00167	0.00455 J	5.0

B= the result is considered estimated, biased high, due to a detection in a blank sample.
J = the result is estimated; the analyte was detected below the limit of quantitation.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate,

[1] Two separate Oil and Grease samples shall be collected during each biannual monitoring event. One sample must be analyzed using EPA Method 1664A n-hexane extractable material (HEM; Oil and Grease). This method gives a "total" oil and grease result. If the "total" oil and grease result is greater than 250 mg/L, the second oil and grease sample shall be analyzed using EPA Method 1664A silica gel treated n-hexane extractable material (SGT-HEM; Non-polar Material), which gives a result from oil and grease of a hydrocarbon origin.

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Anchorage Water & Wastewater Utility

Treatment Division – Water Quality Section

Industrial Pretreatment Program

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Dan Sullivan

Board Chair
Timothy M. Sullivan, Sr.

JBER – Mt. View meter station

Self-Monitoring Report

First Half Monitoring Reports Due by July 15th from monitoring conducted between January – June
Second Half Monitoring Reports Due by January 15th from monitoring conducted between July – December

Analytical Results

Sample Date: 11/20/2019

Parameter	Method	Unit	MRL	Result	Limit
Lead, Total	EPA 200.8	mg/L	0.0002	0.0003	0.69
Arsenic, Total	EPA 200.8	mg/L	0.005	ND (0.0025)	3.7
Beryllium, Total	EPA 200.8	mg/L	0.0004	ND (0.0002)	14.5
Cadmium, Total	EPA 200.8	mg/L	0.0005	0.000163 J	0.69
Chromium, Total	EPA 200.8	mg/L	0.002	0.00133 J	2.77
Copper, Total	EPA 200.8	mg/L	0.001	0.00913	3.38
Mercury, Total	EPA 245.1	mg/L	0.002	ND (0.001)	0.2
Nickel, Total	EPA 200.8	mg/L	0.002	0.00262	3.88
Silver, Total	EPA 200.8	mg/L	0.001	ND (0.0005)	2.5
Zinc, Total	EPA 200.8	mg/L	0.01	0.0531	5.62
Cyanide, Total	4500CN C,E	mg/L	0.005	0.0021 J	1.7
pH	SM 4500H	pH units	0.1	7.5	5-12.5

Parameter	Method	Unit	MDL	Result	Limit
Oil and Grease, Total[1]	EPA 1664B	mg/L	1.03	23.4	250
Oil and Grease, animal or vegetable origin		mg/L	1.03	21.34 J	No Limit
Oil and Grease, non-polar (SGT-HEM) hydrocarbon origin	EPA 1664B	mg/L	1.03	2.06 J	250
Parameter	**Method**	**Unit**	**MDL**	**Result**	**Limit**
Total Aromatic Hydrocarbons	EPA 624	mg/L	0.00167	0.00368 J	5.0

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JBER – Ft. Rich meter station

Self-Monitoring Report

First Half Monitoring Reports Due by July 15th from monitoring conducted between January - June
Second Half Monitoring Reports Due by January 15th from monitoring conducted between July - December

Analytical Results

Sample Date: 6/11/2020

Parameter	Method	Unit	MRL	Result	Limit
Lead, Total	EPA 200.8	mg/L	0.001	0.0012	0.69
Arsenic, Total	EPA 200.8	mg/L	0.005	ND (0.0025)	3.7
Beryllium, Total	EPA 200.8	mg/L	0.002	ND (0.001)	14.5
Cadmium, Total	EPA 200.8	mg/L	0.0005	0.000248 J	0.69
Chromium, Total	EPA 200.8	mg/L	0.01	ND (0.005)	2.77
Copper, Total	EPA 200.8	mg/L	0.001	0.029	3.38
Mercury, Total	EPA 245.1	mg/L	0.0005	ND (0.0001)	0.2
Nickel, Total	EPA 200.8	mg/L	0.01	0.00466 J	3.88
Silver, Total	EPA 200.8	mg/L	0.005	ND (0.0025)	2.5
Zinc, Total	EPA 200.8	mg/L	0.05	0.0603	5.62
Cyanide, Total	4500CN C,E	mg/L	0.0025	0.0026 J	1.7
pH	SM 4500H	pH units	0.1	7	5-12.5

Parameter	Method	Unit	MDL	Result	Limit
Oil and Grease, Total[1]	EPA 1664A	mg/L	1.02	29.6	250
Oil and Grease, animal, or vegetable origin	EPA 1664A	mg/L	1.02	27.45	No Limit
Oil and Grease, non-polar (SGT-HEM) hydrocarbon origin	EPA 1664A	mg/L	1.02	2.15 J	250
Parameter	**Method**	**Unit**	**MDL**	**Result**	**Limit**
Total Aromatic Hydrocarbons	EPA 602	mg/L	0.00167	0.002905 J	5.0

J = the result is estimated; the analyte was detected below the limit of quantitation.
Reported values are the higher detection (or greater precision for non-detect) of primary and duplicate sample results.

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Treatment Division – Water Quality Section

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Self-Monitoring Report

First Half Monitoring Reports Due by July 15th from monitoring conducted between January – June
Second Half Monitoring Reports Due by January 15th from monitoring conducted between July – December

Analytical Results

Sample Date: 6/11/2020

Parameter	Method	Unit	MRL	Result	Limit
Lead, Total	EPA 200.8	mg/L	0.0002	0.000395	0.69
Arsenic, Total	EPA 200.8	mg/L	0.005	ND (0.0025)	3.7
Beryllium, Total	EPA 200.8	mg/L	0.0004	ND (0.0002)	14.5
Cadmium, Total	EPA 200.8	mg/L	0.0005	ND (0.0025)	0.69
Chromium, Total	EPA 200.8	mg/L	0.002	0.00084 J	2.77
Copper, Total	EPA 200.8	mg/L	0.001	0.0211	3.38
Mercury, Total	EPA 245.1	mg/L	0.0005	ND (0.0001)	0.2
Nickel, Total	EPA 200.8	mg/L	0.002	0.00279	3.88
Silver, Total	EPA 200.8	mg/L	0.001	ND (0.0005)	2.5
Zinc, Total	EPA 200.8	mg/L	0.01	0.0387	5.62
Cyanide, Total	4500CN C,E	mg/L	0.005	0.0026 J	1.7
pH	SM 4500H	pH units	0.1	7	5-12.5

Parameter	Method	Unit	MDL	Result	Limit
Oil and Grease, Total[1]	EPA 1664A	mg/L	1.02	19.6	250
Oil and Grease, animal, or vegetable origin	EPA 1664A	mg/L	1.02	18.27	No Limit
Oil and Grease, non-polar (SGT-HEM) hydrocarbon origin	EPA 1664A	mg/L	1.02	1.33 J	250
Parameter	**Method**	**Unit**	**MDL**	**Result**	**Limit**
Total Aromatic Hydrocarbons	EPA 624	mg/L	0.00167	0.00416	5.0

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Self-Monitoring Report

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Second Half Monitoring Reports Due by January 15th from monitoring conducted between July – December

Analytical Results

Sample Date: 6/11/2020

Parameter	Method	Unit	MRL	Result	Limit
Lead, Total	EPA 200.8	mg/L	0.0002	0.000301	0.69
Arsenic, Total	EPA 200.8	mg/L	0.005	ND (0.0025)	3.7
Beryllium, Total	EPA 200.8	mg/L	0.0004	ND (0.0002)	14.5
Cadmium, Total	EPA 200.8	mg/L	0.005	ND (0.0025)	0.69
Chromium, Total	EPA 200.8	mg/L	0.002	ND (0.001)	2.77
Copper, Total	EPA 200.8	mg/L	0.001	0.00875	3.38
Mercury, Total	EPA 245.1	mg/L	0.0005	ND (0.0001)	0.2
Nickel, Total	EPA 200.8	mg/L	0.002	0.00253	3.88
Silver, Total	EPA 200.8	mg/L	0.001	ND (0.0005)	2.5
Zinc, Total	EPA 200.8	mg/L	0.010	0.0571	5.62
Cyanide, Total	4500CN C,E	mg/L	0.0025	0.0022 J	1.7
pH	SM 4500H	pH units	0.1	7.2	5-12.5

Parameter	Method	Unit	MDL	Result	Limit
Oil and Grease, Total[1]	EPA 1664A	mg/L	1.06	29.9	250
Oil and Grease, animal, or vegetable origin	EPA 1664A	mg/L	1.06	28.4	No Limit
Oil and Grease, non-polar (SGT-HEM) hydrocarbon origin	EPA 1664A	mg/L	1.06	1.49 J	250
Parameter	**Method**	**Unit**	**MDL**	**Result**	**Limit**
Total Aromatic Hydrocarbons	EPA 624	mg/L	0.00167	0.00453	5.0

J = the result is estimated; the analyte was detected below the limit of quantitation.

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JBER – Ft. Rich meter station

Self-Monitoring Report

First Half Monitoring Reports Due by July 15th from monitoring conducted between January – June
Second Half Monitoring Reports Due by January 15th from monitoring conducted between July – December

Analytical Results

Sample Date: 12/18/2020

Parameter	Method	Unit	MRL	Result	Limit
Lead, Total	EPA 200.8	mg/L	0.001	0.000771	0.69
Arsenic, Total	EPA 200.8	mg/L	0.005	ND (0.0025)	3.7
Beryllium, Total	EPA 200.8	mg/L	0.002	ND (0.0002)	14.5
Cadmium, Total	EPA 200.8	mg/L	0.0005	0.000175 J	0.69
Chromium, Total	EPA 200.8	mg/L	0.01	ND (0.001)	2.77
Copper, Total	EPA 200.8	mg/L	0.001	0.0312	3.38
Mercury, Total	EPA 245.1	mg/L	0.0005	ND (0.0005)	0.2
Nickel, Total	EPA 200.8	mg/L	0.01	0.00287	3.88
Silver, Total	EPA 200.8	mg/L	0.005	ND (0.0005)	2.5
Zinc, Total	EPA 200.8	mg/L	0.05	0.0621	5.62
Cyanide, Total	4500CN C,E	mg/L	0.0025	0.0027 J	1.7
pH	SM 4500H	pH units	0.1	7.3	5-12.5

Parameter	Method	Unit	MDL	Result	Limit
Oil and Grease, Total[1]	EPA 1664A	mg/L	1.02	20.1	250
Oil and Grease, animal, or vegetable origin	EPA 1664A	mg/L	1.02	ND (2.06)	No Limit
Oil and Grease, non-polar (SGT-HEM) hydrocarbon origin	EPA 1664A	mg/L	1.02	20.1	250
Parameter	**Method**	**Unit**	**MDL**	**Result**	**Limit**
Total Aromatic Hydrocarbons	EPA 602	mg/L	0.00167	0.002706	5.0

J = the result is estimated; the analyte was detected below the limit of quantitation.
Reported values are the higher detection (or greater precision for non-detect) of primary and duplicate sample results.

[1] Two separate Oil and Grease samples shall be collected during each biannual monitoring event. One sample must be analyzed using EPA Method 1664A n-hexane extractable material (HEM; Oil and Grease). This method gives a "total" oil and grease result. If the "total" oil and grease result is greater than 250 mg/L, the second oil and grease sample shall be analyzed using EPA Method 1664A silica gel treated n-hexane extractable material (SGT-HEM; Non-polar Material), which gives a result from oil and grease of a hydrocarbon origin.

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Analytical Results

Sample Date: 12/18/2020

Parameter	Method	Unit	MRL	Result	Limit
Lead, Total	EPA 200.8	mg/L	0.0002	0.000224	0.69
Arsenic, Total	EPA 200.8	mg/L	0.005	ND (0.0025)	3.7
Beryllium, Total	EPA 200.8	mg/L	0.0004	ND (0.0002)	14.5
Cadmium, Total	EPA 200.8	mg/L	0.0005	ND (0.0025)	0.69
Chromium, Total	EPA 200.8	mg/L	0.002	ND (0.001)	2.77
Copper, Total	EPA 200.8	mg/L	0.001	0.0189	3.38
Mercury, Total	EPA 245.1	mg/L	0.0005	ND (0.0005)	0.2
Nickel, Total	EPA 200.8	mg/L	0.002	0.00172 J	3.88
Silver, Total	EPA 200.8	mg/L	0.001	ND (0.0005)	2.5
Zinc, Total	EPA 200.8	mg/L	0.01	0.0311	5.62
Cyanide, Total	4500CN C,E	mg/L	0.005	0.0030 J	1.7
pH	SM 4500H	pH units	0.1	7.2	5-12.5

Parameter	Method	Unit	MDL	Result	Limit
Oil and Grease, Total[1]	EPA 1664A	mg/L	1.02	14.3	250
Oil and Grease, animal, or vegetable origin	EPA 1664A	mg/L	1.02	ND (2.11)	No Limit
Oil and Grease, non-polar (SGT-HEM) hydrocarbon origin	EPA 1664A	mg/L	1.02	14.3	250
Parameter	**Method**	**Unit**	**MDL**	**Result**	**Limit**
Total Aromatic Hydrocarbons	EPA 624	mg/L	0.00167	0.003068	5.0

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Analytical Results

Sample Date: 12/18/2020

Parameter	Method	Unit	MRL	Result	Limit
Lead, Total	EPA 200.8	mg/L	0.0002	0.000465	0.69
Arsenic, Total	EPA 200.8	mg/L	0.005	ND (0.0025)	3.7
Beryllium, Total	EPA 200.8	mg/L	0.0004	ND (0.0002)	14.5
Cadmium, Total	EPA 200.8	mg/L	0.005	ND (0.0025)	0.69
Chromium, Total	EPA 200.8	mg/L	0.002	ND (0.001)	2.77
Copper, Total	EPA 200.8	mg/L	0.001	0.0105	3.38
Mercury, Total	EPA 245.1	mg/L	0.0005	ND (0.0005)	0.2
Nickel, Total	EPA 200.8	mg/L	0.002	0.00202	3.88
Silver, Total	EPA 200.8	mg/L	0.001	0.000363 J	2.5
Zinc, Total	EPA 200.8	mg/L	0.010	0.0521	5.62
Cyanide, Total	4500CN C,E	mg/L	0.0025	0.0026 J	1.7
pH	SM 4500H	pH units	0.1	7.2	5-12.5

Parameter	Method	Unit	MDL	Result	Limit
Oil and Grease, Total[1]	EPA 1664A	mg/L	1.06	22.0	250
Oil and Grease, animal, or vegetable origin	EPA 1664A	mg/L	1.06	ND (2.13)	No Limit
Oil and Grease, non-polar (SGT-HEM) hydrocarbon origin	EPA 1664A	mg/L	1.06	22.0	250
Parameter	**Method**	**Unit**	**MDL**	**Result**	**Limit**
Total Aromatic Hydrocarbons	EPA 624	mg/L	0.00167	0.003113	5.0

J = the result is estimated; the analyte was detected below the limit of quantitation.

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ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
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Phone (907) 751-2219 FAX 751-2207

COMPANY NAME

SAMPLE DATE: 10.29.2020 SAMPLED BY POTW COVERMENT HILL MS-1

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	ND	3.7
Beryllium	200.8	mg/L	ND	14.5
Cadmium	200.8	mg/L	0.00056	0.69
Chromium	200.8	mg/L	ND	2.77
Copper	200.8	mg/L	0.026	3.38
Cyanide	335.4	mg/L	ND	1.7
Lead	200.8	mg/L	0.00094	0.69
Mercury	245.1	mg/L	ND	0.2
Nickel	200.8	mg/L	0.0016	3.88
Silver	200.8	mg/L	0.00024	2.5
Zinc	200.8	mg/L	0.042	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.00101	5.0
Oil or Grease of Animal or Vegetable Origin	SM 1664A	mg/L	5.4	250
pH			8.2	5.0-12.5

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

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Anchorage AK 99503-3898
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COMPANY NAME

SAMPLE DATE: 10.29.2020 SAMPLED BY POTW MOUNTAIN VIEW MS-2

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	ND	3.7
Beryllium	200.8	mg/L	ND	14.5
Cadmium	200.8	mg/L	0.00023	0.69
Chromium	200.8	mg/L	0.003	2.77
Copper	200.8	mg/L	0.034	3.38
Cyanide	335.4	mg/L	ND	1.7
Lead	200.8	mg/L	0.00038	0.69
Mercury	245.1	mg/L	ND	0.2
Nickel	200.8	mg/L	0.0045	3.88
Silver	200.8	mg/L	0.0026	2.5
Zinc	200.8	mg/L	0.18	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.00399	5.0
Oil or Grease of Animal or Vegetable Origin	SM 1664A	mg/L	18.8	250
pH			7.2	5.0-12.5

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COMPANY NAME

SAMPLE DATE: 10.29.2020 SAMPLED BY POTW FORT RICHARDSON MS-3

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	ND	3.7
Beryllium	200.8	mg/L	ND	14.5
Cadmium	200.8	mg/L	0.00043	0.69
Chromium	200.8	mg/L	0.0012	2.77
Copper	200.8	mg/L	0.031	3.38
Cyanide	335.4	mg/L		1.7
Lead	200.8	mg/L	ND	0.69
Mercury	245.1	mg/L	ND	0.2
Nickel	200.8	mg/L	0.0018	3.88
Silver	200.8	mg/L	0.00041	2.5
Zinc	200.8	mg/L	0.059	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.00061	5.0
Oil or Grease of Animal or Vegetable Origin	SM 1664A	mg/L	1.5	250
pH			7.5	5.0-12.5

Attachment 1 - Laboratory Analytical Data Summary
AWWU Industrial Wastewater Discharge Permit No. 11 - Bi-annual Report - First Half 2021

					Field Sample ID	21JBER-R-MH3-01		21JBER-M99-01		21JBER-E-MH2-01		21JBER-M98-01		21JBER-E-MH1-01		21JBER-M97-01	
					Location ID	Outfall 003 Fort Richardson Meter Station		Outfall 003 Fort Richardson Meter Station		Outfall 002 Mountain View Meter Station		Outfall 002 Mountain View Meter Station		Outfall 001 Government Hill Meter Station		Outfall 001 Government Hill Meter Station	
					Description	Primary		Field duplicate of 21JBER-R-MH3-01		Primary		Field duplicate of 21JBER-E-MH2-01		Primary		Field duplicate of 21JBER-E-MH1-01	
					Pace Laboratory Sample Delivery Group	L1360214		L1360214		L1367798		L1367798		L1367798		L1367798	
					Pace Laboratory Sample ID	L1360214-01		L1360214-02		L1367798-01		L1367798-02		L1367798-03		L1367798-04	
					Sample Collection Date	25-May-2021		25-May-2021		11-Jun-2021		11-Jun-2021		15-Jun-2021		15-Jun-2021	
Analyte	Analytical Method	CASRN	Units	Local Discharge Limitations[1]		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
General Chemistry																	
Oil & Grease (n-Hexane Extractable Material)	E1664A	NS	mg/L	NS		14.6 [2.50]	J	24.9 [2.50]	J	5.63 [2.50]	J	27.1 [2.50]		4.88 [2.50]	J	13.9 [2.50]	
Total Petroleum Hydrocarbons	E1664A	NS	mg/L	NS		8.63 [2.50]	J	15.7 [2.50]	J	5.63 [2.50]	J	3.38 [2.50]	J	4.88 [2.50]	J	1.06 [2.50]	J
Oil or Grease of Animal or Vegetable Origin[3]	Calculation[2]	NS	mg/L	250		5.97 [5.0]	J	9.2 [5.0]	J	ND [5.0]	J	23.7 [5.0]	J	ND [5.0]	J	12.8 [5.0]	J
Volatile Organic Compounds																	
Benzene	E624.1	71-43-2	µg/L	NS		ND [0.500]		ND [0.500]		0.138 [0.500]	J	0.152 [0.500]	J	0.0965 [0.500]	J	ND [0.500]	
Bromodichloromethane	E624.1	75-27-4	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
Bromoform	E624.1	75-25-2	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
Bromomethane	E624.1	74-83-9	µg/L	NS		ND [2.00]		ND [2.00]		ND [2.00]		ND [2.00]		ND [2.00]		ND [2.00]	
Carbon tetrachloride	E624.1	56-23-5	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
Chlorobenzene	E624.1	108-90-7	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
Chlorodibromomethane	E624.1	124-48-1	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
Chloroethane	E624.1	75-00-3	µg/L	NS		ND [2.00]		ND [2.00]		ND [2.00]		ND [2.00]		ND [2.00]		ND [2.00]	
2-chloroethyl vinyl ether	E624.1	110-75-8	µg/L	NS		R		ND [25.0]		ND [25.0]		ND [25.0]		ND [25.0]		ND [25.0]	
Chloroform	E624.1	67-66-3	µg/L	NS		3.56 [2.00]	J	4.48 [2.00]	J	1.11 [2.00]	J	1.36 [2.00]	J	2.53 [2.00]	J	2.45 [2.00]	J
Chloromethane	E624.1	74-87-3	µg/L	NS		ND [1.00]		ND [1.00]		ND [1.00]		ND [1.00]		ND [1.00]		ND [1.00]	
1,2-Dichlorobenzene	E624.1	95-50-1	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
1,3-Dichlorobenzene	E624.1	541-73-1	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
1,4-Dichlorobenzene	E624.1	106-46-7	µg/L	NS		ND [0.500]		ND [0.500]		0.209 [0.500]	J	0.274 [0.500]	J	0.270 [0.500]	J	0.238 [0.500]	J
Dichlorodifluoromethane	E624.1	75-71-8	µg/L	NS		ND [2.00]		ND [2.00]		ND [2.00]		ND [2.00]		ND [2.00]		ND [2.00]	
1,1-Dichloroethane	E624.1	75-34-3	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
1,2-Dichloroethane	E624.1	107-06-2	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
1,1-Dichloroethene	E624.1	75-35-4	µg/L	NS		ND [0.500]	UJ	ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
trans-1,2-Dichloroethene	E624.1	156-60-5	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
1,2-Dichloropropane	E624.1	78-87-5	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
cis-1,3-Dichloropropene	E624.1	10061-01-5	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
trans-1,3-Dichloropropene	E624.1	10061-02-6	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
Ethylbenzene	E624.1	100-41-4	µg/L	NS		ND [0.500]		ND [0.500]		0.306 [0.500]	J	0.370 [0.500]	J	0.362 [0.500]	J	0.318 [0.500]	J
Methylene chloride	E624.1	75-09-2	µg/L	NS		ND [2.00]		ND [2.00]		ND [2.00]		ND [2.00]		ND [2.00]		ND [2.00]	
Methyl tert-butyl ether	E624.1	1634-04-4	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
Naphthalene	E624.1	91-20-3	µg/L	NS		ND [2.00]		ND [2.00]		ND [2.00]		ND [2.00]		ND [2.00]		ND [2.00]	
1,1,2,2-Tetrachloroethane	E624.1	79-34-5	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
Tetrachloroethene	E624.1	127-18-4	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
Toluene	E624.1	108-88-3	µg/L	NS		0.338 [0.500]	J	0.398 [0.500]	J	1.56 [0.500]		1.98 [0.500]		3.84 [0.500]		3.67 [0.500]	
1,1,1-Trichloroethane	E624.1	71-55-6	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
1,1,2-Trichloroethane	E624.1	79-00-5	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
Trichloroethene	E624.1	79-01-6	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	

Attachment 1 - Laboratory Analytical Data Summary
AWWU Industrial Wastewater Discharge Permit No. 11 - Bi-annual Report - First Half 2021

					Field Sample ID	21JBER-R-MH3-01		21JBER-M99-01		21JBER-E-MH2-01		21JBER-M98-01		21JBER-E-MH1-01		21JBER-M97-01	
					Location ID	Outfall 003 Fort Richardson Meter Station		Outfall 003 Fort Richardson Meter Station		Outfall 002 Mountain View Meter Station		Outfall 002 Mountain View Meter Station		Outfall 001 Government Hill Meter Station		Outfall 001 Government Hill Meter Station	
					Description	Primary		Field duplicate of 21JBER-R-MH3-01		Primary		Field duplicate of 21JBER-E-MH2-01		Primary		Field duplicate of 21JBER-E-MH1-01	
					Pace Laboratory Sample Delivery Group	L1360214		L1360214		L1367798		L1367798		L1367798		L1367798	
					Pace Laboratory Sample ID	L1360214-01		L1360214-02		L1367798-01		L1367798-02		L1367798-03		L1367798-04	
					Sample Collection Date	25-May-2021		25-May-2021		11-Jun-2021		11-Jun-2021		15-Jun-2021		15-Jun-2021	
Analyte	Analytical Method	CASRN	Units	Local Discharge Limitations[1]		Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Trichlorofluoromethane	E624.1	75-69-4	µg/L	NS		ND [2.00]		ND [2.00]		ND [2.00]		ND [2.00]		ND [2.00]		ND [2.00]	
Vinyl chloride	E624.1	75-01-4	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
Xylenes, total	E624.1	1330-20-7	µg/L	NS		ND [1.50]		ND [1.50]		1.7 [1.50]	J	1.99 [1.50]	J	0.674 [1.50]	J	0.633 [1.50]	J
Total Aromatic Hydrocarbons[4]	Calculation[2]	NS	µg/L	5,000		1.8 [3.0]		2.5 [3.0]		3.7 [3.0]		4.5 [3.0]		5.0 [3.0]		5.1 [3.0]	
General Chemistry																	
Cyanide	SM4500 CN	57-12-5	µg/L	1,700		ND [2.50]		ND [2.50]		ND [2.50]		ND [2.50]		ND [2.50]		ND [2.50]	
Metals																	
Arsenic	E200.8	7440-38-2	µg/L	3,700		0.221 [0.500]	J	0.387 [0.500]	J	0.265 [0.500]	J	0.345 [0.500]	J	0.571 [0.500]	J	0.512 [0.500]	J
Beryllium	E200.8	7440-41-7	µg/L	14,500		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
Cadmium	E200.8	7440-43-9	µg/L	690		0.172 [0.500]		0.197 [0.500]		ND [0.500]		ND [0.500]		0.376 [0.500]	J	0.376 [0.500]	J
Chromium	E200.8	7440-47-3	µg/L	2,770		ND [10.0]		ND [10.0]		ND [10.0]		ND [10.0]		ND [10.0]		ND [10.0]	
Copper	E200.8	7440-50-8	µg/L	3,380		22.3 [1.00]		26.9 [1.00]		8.26 [1.00]	J	11.7 [1.00]	J	50.6 [1.00]		61.9 [1.00]	
Lead	E200.8	7439-92-1	µg/L	690		ND [0.500]		ND [0.500]		ND [0.500]		0.573 [0.500]	J	4.36 [0.500]		4.50 [0.500]	
Mercury	E245.1	7439-97-6	µg/L	200		ND [0.100]	UJ	ND [0.100]	UJ	ND [0.100]		ND [0.100]		ND [0.100]		ND [0.100]	
Nickel	E200.8	7440-02-0	µg/L	3,880		1.79 [1.00]		1.78 [1.00]		1.62 [1.00]	J	1.61 [1.00]	J	3.18 [1.00]		3.76 [1.00]	
Silver	E200.8	7440-22-4	µg/L	2,500		ND [0.500]		ND [0.500]		0.346 [0.500]	J	0.156 [0.500]	J	0.973 [0.500]	J	1.10 [0.500]	
Zinc	E200.8	7440-66-6	µg/L	5,620		42.2 [12.5]		52.2 [12.5]		50.9 [12.5]		49.7 [12.5]		104 [12.5]		118 [12.5]	

Notes:

[1] Title 26 of the Anchorage Municipal Code (AMC 26.50.060)

[2] ADEC Technical Memorandum (2017) Guidelines for Treatment of Non-detect Values, Data Reduction for Multiple Detections and Comparison of Quantitation Limits to Cleanup Values" April.

[3] Oil or Grease of Animal or Vegetable Origin is the difference Oil & Grease (n-Hexane Extractable Material) and total petroleum hydrocarbons (TPH) - Oil & Grease.

[4] TAH is the sum of the concentrations of individual aromatic benzene, toluene, ethylbenzene, and xylenes.

Results are reported with the limit of detection (LOD) in brackets [ ].

CASRN = Chemical Abstracts Service Registry No.
mg/L = milligram(s) per liter
µg/L = microgram(s) per liter
ND = nondetectable
NC = not calculable
NS = not specified
Q = qualifier
RPD = relative percent difference

Data Qualifiers:

J = The analyte was positively identified; the quantitation is estimated.
R = Results are rejected based on QC failures and considered not usable.
UJ = The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific quality control criteria.

Attachment 1. Water Quality Analytical Data Summary
JBER Semiannual Compliance Report, 2H CY 2021 ; AWWU IWDP No. 11

				Field Sample ID	21JBER-E-MH2-02		21JBER-M99-02		21JBER-R-MH3-02		21JBER-E-MH1-02	
				Location ID	Mountain View Meter Station 02		Mountain View Meter Station 02		Fort Richardson Meter Station 03		Government Hill Meter Station 01	
				Description	Primary		Field duplicate of 21JBER-E-MH2-02		Primary		Primary	
				Sample Collection Date	21-Oct-2021		21-Oct-2021		21-Oct-2021		21-Oct-2021	
Analyte	Analytical Method	CASRN	Units	Local Discharge Limitations[1]	Results	Q	Results	Q	Results	Q	Results	Q
General Chemistry												
Oil & Grease (n-Hexane Extractable Material)	E1664A	NS	mg/L	NS	19.2 [2.50]		10.2 [2.50]		6.78 [2.50]		5.06 [2.50]	J
pH[5]	N/A	NS	S.U.	5.0 - 12.5	7.01 N/A		NS N/A		5.94 N/A		6.69 N/A	
Total Petroleum Hydrocarbons	E1664A	NS	mg/L	NS	1.06 [2.50]	J	ND [2.50]		ND [2.50]		5.06 [2.50]	J
Oil or Grease of Animal or Vegetable Origin[3]	Calculation[2]	NS	mg/L	250	18.1 [5.0]	J	10.2 [5.0]		6.78 [5.0]		ND [5.0]	UJ
Volatile Organic Compounds												
Benzene	E624.1	71-43-2	µg/L	NS	ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
Ethylbenzene	E624.1	100-41-4	µg/L	NS	ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
Toluene	E624.1	108-88-3	µg/L	NS	0.530 [0.500]	J	0.497 [0.500]	J	0.358 [0.500]	J	1.34 [0.500]	
Xylenes, total	E624.1	1330-20-7	µg/L	NS	ND [1.50]		ND [1.50]		ND [1.50]		ND [1.50]	
Total Aromatic Hydrocarbons[4]	Calculation[2]	NS	µg/L	5,000	2.0 [3.0]		2.5 [3.0]		0.4 [3.0]		1.3 [3.0]	
General Chemistry												
Cyanide	SM4500 CN	57-12-5	µg/L	1,700	ND [2.50]		ND [2.50]		ND [2.50]		8.33 [2.50]	
Metals												
Arsenic	E200.8	7440-38-2	µg/L	3,700	0.232 [0.500]	J	0.279 [0.500]	J	0.277 [0.500]	J	0.331 [0.500]	J
Beryllium	E200.8	7440-41-7	µg/L	14,500	ND [0.500]		ND [0.500]		ND [0.500]		ND [0.500]	
Cadmium	E200.8	7440-43-9	µg/L	690	0.443 [0.500]	J	0.402 [0.500]	J	0.251 [0.500]	J	ND [0.500]	
Chromium	E200.8	7440-47-3	µg/L	2,770	ND [10.0]		ND [10.0]		ND [10.0]		ND [10.0]	
Copper	E200.8	7440-50-8	µg/L	3,380	13.2 [1.00]		20 [1.00]		24.5 [1.00]		23.5 [1.00]	J
Lead	E200.8	7439-92-1	µg/L	690	1.62 [0.500]	J	0.941 [0.500]		0.707 [0.500]	J	0.534 [0.500]	J
Mercury	E245.1	7439-97-6	µg/L	200	ND [0.100]		ND [0.100]		ND [0.100]		ND [0.100]	
Nickel	E200.8	7440-02-0	µg/L	3,880	2.31 [1.00]		3.23 [1.00]		1.4 [1.00]	J	1.52 [1.00]	J
Silver	E200.8	7440-22-4	µg/L	2,500	ND [0.500]		0.770 [0.500]		ND [0.500]		0.334 [0.500]	J
Zinc	E200.8	7440-66-6	µg/L	5,620	101 [12.5]		112 [12.5]		49.2 [12.5]		38 [12.5]	

Notes:

[1] Title 26 of the Anchorage Municipal Code (AMC 26.50.060)

[2] ADEC Technical Memorandum (2017) Guidelines for Treatment of Non-detect Values, Data Reduction for Multiple Detections and Comparison of Quantitation Limits to Cleanup Values" April.

[3] Oil or Grease of Animal or Vegetable Origin is the difference Oil & Grease (n-Hexane Extractable Material) and total petroleum hydrocarbons (TPH) - Oil & Grease.

[4] TAH is the sum of the concentrations of individual aromatic benzene, toluene, ethylbenzene, and xylenes.

[5] pH measured using YSI 556 Field Instrument

Results are reported with the limit of detection (LOD) in brackets [ ].

CASRN = Chemical Abstracts Service Registry No.
NC = not calculable

mg/L = milligram(s) per liter
NS = not specified

µg/L = microgram(s) per liter
Q = qualifier

ND = nondetectable
RPD = relative percent difference

Data Qualifiers:

J = The analyte was positively identified; the quantitation is estimated.

UJ = The analyte was not detected; however, the result is estimated due to discrepancies in the associated quality control criteria.

ANCHORAGE WATER & WASTEWATER UTILITY

Dan Sullivan,
Mayor

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

Owned by the
Municipality of Anchorage

JBER METER STATION 001

SAMPLE DATE: 5.4.2021 SAMPLED BY POTW ANNUAL SAMPLING EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.00052	3.7
Beryllium	200.8	mg/L	0.000008	14.5
Cadmium	200.8	mg/L	0.000235	0.69
Chromium	200.8	mg/L	0.00123	2.77
Copper	200.8	mg/L	0.0297	3.38
Cyanide	335.4	mg/L	<0.020	1.7
Lead	200.8	mg/L	0.00106	0.69
Mercury	245.1	mg/L	0.00003	0.2
Nickel	200.8	mg/L	0.00200	3.88
Silver	200.8	mg/L	0.000302	2.5
Zinc	200.8	mg/L	0.0605	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.013740	5.0
Oil & Grease HEM	SM 1664A	mg/L	11.2	250
TPH Silica Gel HEM	SM 1664A	mg/L	1.5	
pH			7.77	

ANCHORAGE WATER & WASTEWATER UTILITY

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Owned by the
Municipality of Anchorage

JBER METER STATION 002

SAMPLE DATE: 5.4.2021 SAMPLED BY POTW ANNUAL SAMPLING EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.00042	3.7
Beryllium	200.8	mg/L	<0.00002	14.5
Cadmium	200.8	mg/L	0.00139	0.69
Chromium	200.8	mg/L	0.00129	2.77
Copper	200.8	mg/L	0.0321	3.38
Cyanide	335.4	mg/L	<0.02	1.7
Lead	200.8	mg/L	0.00106	0.69
Mercury	245.1	mg/L	<0.0002	0.2
Nickel	200.8	mg/L	0.00180	3.88
Silver	200.8	mg/L	0.000091	2.5
Zinc	200.8	mg/L	0.0621	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.000540	5.0
Oil & Grease HEM	SM 1664A	mg/L	15.8	250
TPH Silica Gel HEM	SM 1664A	mg/L	1.6	
pH			7.86	

ANCHORAGE WATER & WASTEWATER UTILITY

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Industrial Pretreatment Program

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Owned by the
Municipality of Anchorage

JBER METER STATION 003

SAMPLE DATE: 5.4.2021 SAMPLED BY POTW ANNUAL SAMPLING EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.00042	3.7
Beryllium	200.8	mg/L	<0.00002	14.5
Cadmium	200.8	mg/L	0.00139	0.69
Chromium	200.8	mg/L	0.00129	2.77
Copper	200.8	mg/L	0.0321	3.38
Cyanide	335.4	mg/L	<0.02	1.7
Lead	200.8	mg/L	0.00106	0.69
Mercury	245.1	mg/L	<0.0002	0.2
Nickel	200.8	mg/L	0.00180	3.88
Silver	200.8	mg/L	0.000091	2.5
Zinc	200.8	mg/L	0.0621	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.000540	5.0
Oil & Grease HEM	SM 1664A	mg/L	15.8	250
TPH Silica Gel HEM	SM 1664A	mg/L	1.6	
pH			7.86	

Attachment 1 - Laboratory Analytical Data Summary
AWWU Industrial Wastewater Discharge Permit No. 11 - Bi-annual Report - First Half 2022

					Field Sample ID	22JBER-E-MH1-01		22JBER-E-MH2-01		22JBER-M99-01		22JBER-R-MH3-01	
					Location ID	Outfall 001 Government Hill Meter Station		Outfall 002 Mountain View Meter Station		Outfall 002 Mountain View Meter Station		Outfall 003 Fort Richardson Meter Station	
					Description	Primary		Primary		Field duplicate of 22JBER-E-MH2-01		Primary	
					Pace Laboratory Sample Delivery Group	L1484871		L1484871		L1484871		L1484871	
					Pace Laboratory Sample ID	L1484871-04		L1484871-01		L1484871-02		L1484871-05	
					Sample Collection Date	20-Apr-2022		20-Apr-2022		20-Apr-2022		20-Apr-2022	
Analyte	Analytical Method	CASRN	Units	Local Discharge Limitations[1]		Results	Q	Results	Q	Results	Q	Results	Q
General Chemistry													
Oil & Grease (n-Hexane Extractable Material)	E1664A	NS	mg/L	NS		7.38 [1.45]		16.9 [1.45]		16.0 [1.36]		18.9 [1.36]	
pH[5]	N/A	NS	S.U.	5.0 - 12.5		6.34	N/A	7.64	N/A	N/A		7.47	N/A
Total Petroleum Hydrocarbons	E1664A	NS	mg/L	NS		ND [0.906]		1.5 [0.906]	J	2.35 [0.853]	J	2.94 [0.853]	J
Oil or Grease of Animal or Vegetable Origin[3]	Calculation [2]	NS	mg/L	250		7.38 [2.36]		15.4 [2.36]	J	13.7 [2.21]	J	16.0 [2.21]	J
Volatile Organic Compounds													
Benzene	E624.1	71-43-2	µg/L	NS		ND [0.0941]		ND [0.0941]		ND [0.0941]		ND [0.0941]	
Bromodichloromethane	E624.1	75-27-4	µg/L	NS		ND [0.136]		ND [0.136]		ND [0.136]		0.145 [0.136]	J
Bromoform	E624.1	75-25-2	µg/L	NS		ND [0.129]		ND [0.129]		ND [0.129]		ND [0.129]	
Bromomethane	E624.1	74-83-9	µg/L	NS		ND [0.605]		ND [0.605]		ND [0.605]		ND [0.605]	
Carbon tetrachloride	E624.1	56-23-5	µg/L	NS		ND [0.128]		ND [0.128]		ND [0.128]		ND [0.128]	
Chlorobenzene	E624.1	108-90-7	µg/L	NS		ND [0.116]		ND [0.116]		ND [0.116]		ND [0.116]	
Chlorodibromomethane	E624.1	124-48-1	µg/L	NS		ND [0.140]		ND [0.140]		ND [0.140]		ND [0.140]	
Chloroethane	E624.1	75-00-3	µg/L	NS		ND [0.192]		ND [0.192]		ND [0.192]		ND [0.192]	
2-chloroethyl vinyl ether	E624.1	110-75-8	µg/L	NS		ND [0.575]		R		R		ND [0.575]	
Chloroform	E624.1	67-66-3	µg/L	NS		2.09 [0.111]	J	1.6 [0.111]	J	1.51 [0.111]	J	2.92 [0.111]	J
Chloromethane	E624.1	74-87-3	µg/L	NS		ND [0.960]		ND [0.960]		ND [0.960]		ND [0.960]	
1,2-Dichlorobenzene	E624.1	95-50-1	µg/L	NS		ND [0.107]		ND [0.107]		ND [0.107]		ND [0.107]	
1,3-Dichlorobenzene	E624.1	541-73-1	µg/L	NS		ND [0.110]		ND [0.110]		ND [0.110]		ND [0.110]	
1,4-Dichlorobenzene	E624.1	106-46-7	µg/L	NS		ND [0.120]		0.132 [0.120]	J	0.148 [0.120]	J	ND [0.120]	
Dichlorodifluoromethane	E624.1	75-71-8	µg/L	NS		ND [0.374]		ND [0.374]		ND [0.374]		ND [0.374]	
1,1-Dichloroethane	E624.1	75-34-3	µg/L	NS		ND [0.100]		ND [0.100]		ND [0.100]		ND [0.100]	
1,2-Dichloroethane	E624.1	107-06-2	µg/L	NS		ND [0.0819]		ND [0.0819]		ND [0.0819]		ND [0.0819]	
1,1-Dichloroethene	E624.1	75-35-4	µg/L	NS		ND [0.188]		ND [0.188]		ND [0.188]		ND [0.188]	
trans-1,2-Dichloroethene	E624.1	156-60-5	µg/L	NS		ND [0.149]		ND [0.149]		ND [0.149]		ND [0.149]	
1,2-Dichloropropane	E624.1	78-87-5	µg/L	NS		ND [0.149]		ND [0.149]		ND [0.149]		ND [0.149]	
cis-1,3-Dichloropropene	E624.1	10061-01-5	µg/L	NS		ND [0.111]		ND [0.111]		ND [0.111]		ND [0.111]	
trans-1,3-Dichloropropene	E624.1	10061-02-6	µg/L	NS		ND [0.118]		ND [0.118]		ND [0.118]		ND [0.118]	
Ethylbenzene	E624.1	100-41-4	µg/L	NS		ND [0.137]		ND [0.137]		ND [0.137]		ND [0.137]	
Methylene chloride	E624.1	75-09-2	µg/L	NS		ND [0.430]		ND [0.430]		ND [0.430]		ND [0.430]	
Methyl tert-butyl ether	E624.1	1634-04-4	µg/L	NS		ND [0.101]		ND [0.101]		ND [0.101]		ND [0.101]	
Naphthalene	E624.1	91-20-3	µg/L	NS		ND [1.00]		ND [1.00]		ND [1.00]		ND [1.00]	
1,1,2,2-Tetrachloroethane	E624.1	79-34-5	µg/L	NS		ND [0.133]		ND [0.133]		ND [0.133]		ND [0.133]	
Tetrachloroethene	E624.1	127-18-4	µg/L	NS		ND [0.300]		ND [0.300]		ND [0.300]		ND [0.300]	
Toluene	E624.1	108-88-3	µg/L	NS		1.52 [0.278]		ND [0.278]		ND [0.278]		0.355 [0.278]	J
1,1,1-Trichloroethane	E624.1	71-55-6	µg/L	NS		ND [0.149]		ND [0.149]		ND [0.149]		ND [0.149]	
1,1,2-Trichloroethane	E624.1	79-00-5	µg/L	NS		ND [0.158]		ND [0.158]		ND [0.158]		ND [0.158]	

Attachment 1 - Laboratory Analytical Data Summary
AWWU Industrial Wastewater Discharge Permit No. 11 - Bi-annual Report - First Half 2022

					Field Sample ID	22JBER-E-MH1-01		22JBER-E-MH2-01		22JBER-M99-01		22JBER-R-MH3-01	
					Location ID	Outfall 001 Government Hill Meter Station		Outfall 002 Mountain View Meter Station		Outfall 002 Mountain View Meter Station		Outfall 003 Fort Richardson Meter Station	
					Description	Primary		Primary		Field duplicate of 22JBER-E-MH2-01		Primary	
					Pace Laboratory Sample Delivery Group	L1484871		L1484871		L1484871		L1484871	
					Pace Laboratory Sample ID	L1484871-04		L1484871-01		L1484871-02		L1484871-05	
					Sample Collection Date	20-Apr-2022		20-Apr-2022		20-Apr-2022		20-Apr-2022	
Analyte	Analytical Method	CASRN	Units	Local Discharge Limitations[1]		Results	Q	Results	Q	Results	Q	Results	Q
Trichloroethene	E624.1	79-01-6	µg/L	NS		ND [0.190]		ND [0.190]		ND [0.190]		ND [0.190]	
Trichlorofluoromethane	E624.1	75-69-4	µg/L	NS		ND [0.160]		ND [0.160]		ND [0.160]		ND [0.160]	
Vinyl chloride	E624.1	75-01-4	µg/L	NS		ND [0.234]		ND [0.234]		ND [0.234]		ND [0.234]	
Xylenes, total	E624.1	1330-20-7	µg/L	NS		ND [0.174]		ND [0.174]		ND [0.174]		ND [0.174]	
Total Aromatic Hydrocarbons[4]	Calculation[2]	NS	µg/L	5,000		1.5 [0.68]		ND [0.68]		ND [0.68]		0.36 [0.68]	
General Chemistry													
Cyanide	SM4500 CN	57-12-5	µg/L	1,700		ND [1.80]		ND [1.80]		ND [1.80]		ND [1.80]	
Metals													
Arsenic	E200.8	7440-38-2	µg/L	3,700		0.436 [0.195]	J	0.416 [0.195]	J	0.411 [0.195]	J	0.377 [0.195]	J
Beryllium	E200.8	7440-41-7	µg/L	14,500		ND [0.201]		ND [0.201]		0.233 [0.201]	J	ND [0.201]	
Cadmium	E200.8	7440-43-9	µg/L	690		ND [0.160]		0.191 [0.160]	J	0.272 [0.160]	J	0.189 [0.160]	J
Chromium	E200.8	7440-47-3	µg/L	2,770		ND [5.60]		ND [5.60]		ND [5.60]		ND [5.60]	
Copper	E200.8	7440-50-8	µg/L	3,380		13.1 [0.670]		7.49 [0.670]		8.32 [0.670]		26.5 [0.670]	
Lead	E200.8	7439-92-1	µg/L	690		ND [0.513]		ND [0.513]		ND [0.513]		1.01 [0.513]	J
Mercury	E245.1	7439-97-6	µg/L	200		ND [0.100]		ND [0.100]		ND [0.100]		ND [0.100]	
Nickel	E200.8	7440-02-0	µg/L	3,880		1.38 [0.514]	J	1.04 [0.514]	J	1.65 [0.514]	J	1.51 [0.514]	J
Silver	E200.8	7440-22-4	µg/L	2,500		ND [0.144]		0.249 [0.144]	J	0.464 [0.144]	J	ND [0.144]	
Zinc	E200.8	7440-66-6	µg/L	5,620		26.2 [7.96]	J	44.1 [7.96]		48.4 [7.96]		60.7 [7.96]	

Notes:

[1] Title 26 of the Anchorage Municipal Code (AMC 26.50.060)

[2] ADEC Technical Memorandum (2017) Guidelines for Treatment of Non-detect Values, Data Reduction for Multiple Detections and Comparison of Quantitation Limits to Cleanup Values" April.

[3] Oil or Grease of Animal or Vegetable Origin is the difference Oil & Grease (n-Hexane Extractable Material) and total petroleum hydrocarbons (TPH) - Oil & Grease.

[4] TAH is the sum of the concentrations of individual aromatic benzene, toluene, ethylbenzene, and xylenes.

[5] pH was measured in the field using a field-calibrated YSI Professional Plus

Results are reported with the limit of detection (LOD) in brackets [ ].

CASRN = Chemical Abstracts Service Registry No.
mg/L = milligram(s) per liter
µg/L = microgram(s) per liter
ND = nondetectable
NC = not calculable
NS = not specified
Q = qualifier
RPD = relative percent difference

Data Qualifiers:

J = The analyte was positively identified; the quantitation is estimated.

R = Results are rejected based on QC failures and considered not usable.

Attachment 1 - Laboratory Analytical Data Summary
AWWU Industrial Wastewater Discharge Permit No. 11 - Bi-annual Report - Second Half 2022

					Field Sample ID	22JBER-E-MH1-02		22JBER-E-MH2-02		22JBER-M98-02			22JBER-R-MH3-02	
					Location ID	Outfall 001 Government Hill Meter Station		Outfall 002 Mountain View Meter Station		Outfall 002 Mountain View Meter Station			Outfall 003 Fort Richardson Meter Station	
					Description	Primary		Primary		Field duplicate of 22JBER-E-MH2-02			Primary	
					Pace Laboratory Sample Delivery Group	L1550107		L1550111		L1550111			L1550107	
					Pace Laboratory Sample ID	L1550107-02		L1550111-01		L1550111-02			L1550107-01	
					Sample Collection Date	21-Oct-2022		21-Oct-2022		21-Oct-2022			21-Oct-2022	
Analyte	Analytical Method	CASRN	Units	Local Discharge Limitations[1]		Results	Q	Results	Q	Results	Q	RPD	Results	Q
General Chemistry														
Oil & Grease (n-Hexane Extractable Material)	E1664A	NS	mg/L	NS		6.51 [2.5]		18.2 [2.5]	J	16.6 [2.5]	J	9%	5.56 [2.5]	J
pH[5]	N/A	NS	S.U.	5.0 - 12.5		6.47 N/A		6.81 N/A		--		N/A	6.64 N/A	
Total Petroleum Hydrocarbons	E1664A	NS	mg/L	NS		2.40 [2.5]	J	1.41 [2.5]	J	2.86 [2.5]	J	68%	1.00 [2.5]	J
Oil or Grease of Animal or Vegetable Origin[3]	Calculation[2]	NS	mg/L	250		4.11 [5.0]	J	16.8 [5.0]	J	13.7 [5.0]	J	20%	4.56 [5.0]	J
Volatile Organic Compounds														
Benzene	E624.1	71-43-2	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		N/A	ND [0.500]	UJ
Ethylbenzene	E624.1	100-41-4	µg/L	NS		ND [0.500]		ND [0.500]		ND [0.500]		N/A	ND [0.500]	UJ
Toluene	E624.1	108-88-3	µg/L	NS		1.56 [0.600]		0.571 [0.600]	J	0.530 [0.600]	J	7%	0.38 [0.600]	J
Xylenes, total	E624.1	1330-20-7	µg/L	NS		ND [1.50]		ND [1.50]		ND [1.50]		N/A	0.305 [1.50]	J
Total Aromatic Hydrocarbons[4]	Calculation[2]	NS	µg/L	5,000		4.06 [3.10]		3.071 [3.10]	J	3.03 [3.10]	J	1%	1.685 [3.10]	J
General Chemistry														
Cyanide	SM4500 CN	57-12-5	µg/L	1,700		ND [5.00]		ND [5.00]		ND [5.00]		N/A	1.83 [5.00]	J
Metals														
Arsenic	E200.8	7440-38-2	µg/L	3,700		0.861 [0.500]	J	0.315 [0.500]	J	0.343 [0.500]	J	9%	0.471 [0.500]	J
Beryllium	E200.8	7440-41-7	µg/L	14,500		ND [0.500]		ND [0.500]		ND [0.500]		N/A	ND [0.500]	
Cadmium	E200.8	7440-43-9	µg/L	690		0.198 [0.500]	J	0.217 [0.500]	J	0.204 [0.500]	J	6%	0.387 [0.500]	J
Chromium	E200.8	7440-47-3	µg/L	2,770		ND [15.0]		ND [15.0]		ND [15.0]		N/A	ND [15.0]	
Copper	E200.8	7440-50-8	µg/L	3,380		34.4 [1.50]	J	9.03 [1.50]		10.9 [1.50]		19%	21.9 [1.5]	
Lead	E200.8	7439-92-1	µg/L	690		1.01 [1.50]	J	0.716 [1.50]	J	0.57 [1.50]	J	23%	1.45 [1.5]	J
Mercury	E245.1	7439-97-6	µg/L	200		ND [0.200]		ND [0.200]		ND [0.200]		N/A	ND [0.200]	
Nickel	E200.8	7440-02-0	µg/L	3,880		2.33 [2.00]	J	1.63 [2.00]	J	1.74 [2.00]	J	7%	4.44 [2.00]	
Silver	E200.8	7440-22-4	µg/L	2,500		ND [0.500]		0.222 [0.500]	J	6.06 [0.500]	J	186%	ND [0.500]	
Zinc	E200.8	7440-66-6	µg/L	5,620		70 [20.0]		58.7 [20.0]		62.4 [20.0]		6%	65 [20]	

Notes:

[1] Title 26 of the Anchorage Municipal Code (AMC 26.50.060)

[2] ADEC Technical Memorandum (2017) Guidelines for Treatment of Non-detect Values, Data Reduction for Multiple Detections and Comparison of Quantitation Limits to Cleanup Values" April.

[3] Oil or Grease of Animal or Vegetable Origin is the difference Oil & Grease (n-Hexane Extractable Material) and total petroleum hydrocarbons (TPH) - Oil & Grease.

[4] The total aromatic hydrocarbons (TAH) are calculated as the sum of benzene, ethylbenzene, toluene, and the xylene isomers (BTEX). LOD values are used to calculated non-detect results. Totals include non-detect results and detects results.

[5] pH was measured in the field using a field-calibrated YSI Professional Plus

Results are reported with the limit of detection (LOD) in brackets [ ].

CASRN = Chemical Abstracts Service Registry No.
mg/L = milligram(s) per liter
µg/L = microgram(s) per liter
ND = nondetectable
NC = not calculable
NS = not specified
Q = qualifier
RPD = relative percent difference

Data Qualifiers:

J = The analyte was positively identified; the quantitation is estimated.

UJ = the analyte was positively identified; the quantitation is estimated because of discrepancies in meeting certain analyte-specific QC criteria.

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

JBER METER STATION #1

SAMPLE DATE: 7.12.2022 SAMPLED BY POTW ANNUAL SAMPLING EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.0025	3.7
Beryllium	200.8	mg/L	0.0002	14.5
Cadmium	200.8	mg/L	0.000218	0.69
Chromium	200.8	mg/L	0.0025	2.77
Copper	200.8	mg/L	0.0344	3.38
Cyanide	335.4	mg/L	0.0025	1.7
Lead	200.8	mg/L	0.000684	0.69
Mercury	245.1	mg/L	0.00001	0.2
Nickel	200.8	mg/L	0.00274	3.88
Silver	200.8	mg/L	0.0005	2.5
Zinc	200.8	mg/L	0.1656.	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.00675	5.0
Oil & Grease HEM	SM 1664A	mg/L	54	250
pH			7.2	5.0-12.5

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JBER METER STATION #2

SAMPLE DATE: 7.12.2022 SAMPLED BY POTW ANNUAL SAMPLING EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.0025	3.7
Beryllium	200.8	mg/L	0.0002	14.5
Cadmium	200.8	mg/L	0.00021	0.69
Chromium	200.8	mg/L	0.0025	2.77
Copper	200.8	mg/L	0.0193	3.38
Cyanide	335.4	mg/L	0.0031	1.7
Lead	200.8	mg/L	0.000588	0.69
Mercury	245.1	mg/L	0.0001	0.2
Nickel	200.8	mg/L	0.00269	3.88
Silver	200.8	mg/L	0.00136	2.5
Zinc	200.8	mg/L	0.158	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.00255	5.0
Oil & Grease HEM	SM 1664A	mg/L	60.0	250
pH			7.7	5.0-12.5

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JBER METERE STATION #3

SAMPLE DATE: 7.12.2022 SAMPLED BY POTW ANNUAL SAMPLING EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.0025	3.7
Beryllium	200.8	mg/L	0.0002	14.5
Cadmium	200.8	mg/L	0.000213	0.69
Chromium	200.8	mg/L	0.0025	2.77
Copper	200.8	mg/L	0.0216	3.38
Cyanide	335.4	mg/L	0.0025	1.7
Lead	200.8	mg/L	0.000645	0.69
Mercury	245.1	mg/L	0.00001	0.2
Nickel	200.8	mg/L	0.0033	3.88
Silver	200.8	mg/L	0.00101	2.5
Zinc	200.8	mg/L	0.17	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.00254	5.0
Oil & Grease HEM	SM 1664A	mg/L	46	250
pH			7.5	5.0-12.5

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

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3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

COMPANY NAME

SAMPLE DATE: 4.26.2023 SAMPLED BY JBER METER STATION 1

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.000333	3.7
Beryllium	200.8	mg/L	ND	14.5
Cadmium	200.8	mg/L	ND	0.69
Chromium	200.8	mg/L	ND	2.77
Copper	200.8	mg/L	0.0148	3.38
Cyanide	335.4	mg/L	ND	1.7
Lead	200.8	mg/L	ND	0.69
Mercury	245.1	mg/L	0.00143	0.2
Nickel	200.8	mg/L	ND	3.88
Silver	200.8	mg/L	ND	2.5
Zinc	200.8	mg/L	0.0304	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.00109	5.0
Oil or Grease of Animal or Vegetable Origin	SM 1664A	mg/L	12.9	250
pH			6.92	5.0-12.5

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

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Phone (907) 751-2219 FAX 751-2207

COMPANY NAME

SAMPLE DATE: 4.13.2023 SAMPLED BY JBER METER STATION 2

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.000397	3.7
Beryllium	200.8	mg/L	ND	14.5
Cadmium	200.8	mg/L	0.000414	0.69
Chromium	200.8	mg/L	ND	2.77
Copper	200.8	mg/L	0.00974	3.38
Cyanide	335.4	mg/L	ND	1.7
Lead	200.8	mg/L	0.00143	0.69
Mercury	245.1	mg/L	0.00199	0.2
Nickel	200.8	mg/L	ND	3.88
Silver	200.8	mg/L	0.00116	2.5
Zinc	200.8	mg/L	0.0649	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.000398	5.0
Oil or Grease of Animal or Vegetable Origin	SM 1664A	mg/L	26.2	250
pH			6.85	5.0-12.5

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

COMPANY NAME

SAMPLE DATE: 4.13.2023 SAMPLED BY JBER METER STATION 3

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.00136	3.7
Beryllium	200.8	mg/L	0.000942	14.5
Cadmium	200.8	mg/L	0.00149	0.69
Chromium	200.8	mg/L	ND	2.77
Copper	200.8	mg/L	0.0489	3.38
Cyanide	335.4	mg/L	ND	1.7
Lead	200.8	mg/L	0.00391	0.69
Mercury	245.1	mg/L	0.00432	0.2
Nickel	200.8	mg/L	ND	3.88
Silver	200.8	mg/L	0.000515	2.5
Zinc	200.8	mg/L	0.12	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.000309	5.0
Oil or Grease of Animal or Vegetable Origin	SM 1664A	mg/L	18.4	250
pH			7.22	5.0-12.5

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

JBER

SAMPLE DATE: 11-1-2023 SAMPLED BY JBER METER STATION 3

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.000268 J	3.7
Beryllium	200.8	mg/L	ND	14.5
Cadmium	200.8	mg/L	0.000185 J	0.69
Chromium	200.8	mg/L	ND	2.77
Copper	200.8	mg/L	0.019	3.38
Cyanide	335.4	mg/L	ND	1.7
Lead	200.8	mg/L	0.000930 J	0.69
Mercury	245.1	mg/L	ND	0.2
Nickel	200.8	mg/L	0.00147 J	3.88
Silver	200.8	mg/L	ND	2.5
Zinc	200.8	mg/L	0.053	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.000523 J	5.0
Oil or Grease of Animal or Vegetable Origin	SM 1664A	mg/L	14.2 J	250
pH			7.22	5.0-12.5

Note: "J" indicates that the result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample. "QH" indicates that the analyte was positively identified; the quantitation is estimated with potential for high bias.

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

JBER

SAMPLE DATE: 11-1-2023 SAMPLED BY JBER METER STATION 2

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.000273 J	3.7
Beryllium	200.8	mg/L	ND	14.5
Cadmium	200.8	mg/L	0.000176 J	0.69
Chromium	200.8	mg/L	ND	2.77
Copper	200.8	mg/L	0.0108	3.38
Cyanide	335.4	mg/L	ND	1.7
Lead	200.8	mg/L	0.00879 J	0.69
Mercury	245.1	mg/L	ND	0.2
Nickel	200.8	mg/L	0.00288 J	3.88
Silver	200.8	mg/L	ND	2.5
Zinc	200.8	mg/L	0.0305	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.000776 J	5.0
Oil or Grease of Animal or Vegetable Origin	SM 1664A	mg/L	19.6 J QH	250
pH			6.27	5.0-12.5

Note: "J" indicates that the result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample. "QH" indicates that the analyte was positively identified; the quantitation is estimated with potential for high bias.

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

JBER

SAMPLE DATE: 11-13-2023 SAMPLED BY JBER METER STATION 1

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.000247 J	3.7
Beryllium	200.8	mg/L	ND	14.5
Cadmium	200.8	mg/L	ND	0.69
Chromium	200.8	mg/L	ND	2.77
Copper	200.8	mg/L	0.0131	3.38
Cyanide	335.4	mg/L	ND	1.7
Lead	200.8	mg/L	ND	0.69
Mercury	245.1	mg/L	ND	0.2
Nickel	200.8	mg/L	0.00132 J	3.88
Silver	200.8	mg/L	ND	2.5
Zinc	200.8	mg/L	0.0336 J	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.00110 J	5.0
Oil or Grease of Animal or Vegetable Origin	SM 1664A	mg/L	20.4 J	250
pH			7.16	5.0-12.5

Note: "J" indicates that the result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample. "QH" indicates that the analyte was positively identified; the quantitation is estimated with potential for high bias.

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

GOVERNMENT HILL

SAMPLE DATE: 6.28.2023 SAMPLED BY JBER METER STATION 1

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.0025	3.7
Beryllium	200.8	mg/L	0.0002	14.5
Cadmium	200.8	mg/L	0.00025	0.69
Chromium	200.8	mg/L	0.0025	2.77
Copper	200.8	mg/L	0.0259	3.38
Cyanide	335.4	mg/L	0.0025	1.7
Lead	200.8	mg/L	0.000795	0.69
Mercury	245.1	mg/L	0.00052	0.2
Nickel	200.8	mg/L	0.00546	3.88
Silver	200.8	mg/L	0.0005	2.5
Zinc	200.8	mg/L	0.0626	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.0120	5.0
Oil or Grease of Animal or Vegetable Origin	SM 1664A	mg/L	14.2	250
pH			7.3	5.0-12.5

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

MT. VIEW

SAMPLE DATE: 6.28.2023 SAMPLED BY JBER METER STATION 2

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.0025	3.7
Beryllium	200.8	mg/L	0.0002	14.5
Cadmium	200.8	mg/L	0.000228	0.69
Chromium	200.8	mg/L	0.0025	2.77
Copper	200.8	mg/L	0.0133	3.38
Cyanide	335.4	mg/L	0.0025	1.7
Lead	200.8	mg/L	0.001	0.69
Mercury	245.1	mg/L	0.054	0.2
Nickel	200.8	mg/L	0.00199	3.88
Silver	200.8	mg/L	0.000928	2.5
Zinc	200.8	mg/L	0.08	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.001643	5.0
Oil or Grease of Animal or Vegetable Origin	SM 1664A	mg/L	21	250
pH			7.5	5.0-12.5

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

FT. RICHARDSON

SAMPLE DATE: 6.28.2023 SAMPLED BY JBER METER STATION 3

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.0025	3.7
Beryllium	200.8	mg/L	0.0002	14.5
Cadmium	200.8	mg/L	0.00025	0.69
Chromium	200.8	mg/L	0.0025	2.77
Copper	200.8	mg/L	0.0191	3.38
Cyanide	335.4	mg/L	0.0025	1.7
Lead	200.8	mg/L	0.000617	0.69
Mercury	245.1	mg/L	0.042	0.2
Nickel	200.8	mg/L	0.0025	3.88
Silver	200.8	mg/L	0.0005	2.5
Zinc	200.8	mg/L	0.0449	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.001899	5.0
Oil or Grease of Animal or Vegetable Origin	SM 1664A	mg/L	29.6	250
pH			7.3	5.0-12.5

PERMIT #4- Matanuska-Susitna Borough Central Landfill

MATANUSKA-SUSITNA BOROUGH
Public Works Department
Solid Waste Division

350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 861-7604 • Fax (907) 861-7609
E-mail: Brett.Olson@matsugov.us

February 15, 2019

To: Anchorage Water & Wastewater Utility, Treatment Division, Pretreatment Section

Attn: Steven Gaither & Mario Croce

From: Matanuska-Susitna Borough, Solid Waste Division

Subject: Monthly Leachate Report – January 2019

1. Monthly Leachate Quantities: Leachate from Central Landfill is transported to the Turpin Street facility by our contractor Shamrock Septic Inc. utilizing a 7000-gallon stainless steel tanker. The tanker is cleaned out before each load of leachate and once leachate is loaded at Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of January, 54 loads of leachate, totaling 353,305.39 gallons, were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2019.xslx.

2. Analytical Results: Vincent Archer collected the leachate sample on January 30, 2019 at 07:52 am by a single grab at the leachate holding lagoon (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS Jan 19.pdf. No leachate was hauled once the sample was taken.

Biochemical Oxygen Demand (BOD)	15,100 mg/L	01/30/19 16:00
Biochemical Oxygen Demand (BOD) Soluble	14,900 mg/L	01/30/19 16:00
Total suspended Solids (TSS)	216 mg/L	02/01/19 11:54
pH	6.6 pH u.	01/31/19 17:06
Zinc	6.01 mg/L	01/31/19 11:18

3. Zinc level of 6.01 mg/L for January exceeded the allowable limit of 5.62 mg/L. Leachate hauling was suspended prior to sampling. No loads of leachate were hauled until results were returned. Hauling was suspended through the AWWU septage study that closed Turpin St. for the first week of February. Hauling continues to be suspended until all constituent concentrations meet permit requirements.

MATANUSKA-SUSITNA BOROUGH
Public Works Department
Solid Waste Division

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March 15, 2019

To: Anchorage Water & Wastewater Utility, Treatment Division, Pretreatment Section

Attn: Steven Gaither & Mario Croce

From: Matanuska-Susitna Borough, Solid Waste Division

Subject: Monthly Leachate Report – March 2019

1. Monthly Leachate Quantities: Leachate from Central Landfill is transported to the Turpin Street facility by our contractor Shamrock Septic Inc. utilizing a 7000-gallon stainless steel tanker. The tanker is cleaned out before each load of leachate and once leachate is loaded at Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of February, 2 loads of leachate, totaling 12,991.62 gallons, were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2019.xslx.

2. Analytical Results: Vincent Archer collected the leachate sample on February 21, 2019 at 08:00 am by a single grab at the leachate holding lagoon (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS Feb19.pdf. No leachate was hauled once the sample was taken.

Biochemical Oxygen Demand (BOD)	23,000 mg/L	02/22/19 14:55
Biochemical Oxygen Demand (BOD) Soluble	20,400 mg/L	02/22/19 14:55
Total suspended Solids (TSS)	59.0 mg/L	02/22/19 16:09
pH	6.6 pH u.	02/22/19 12:55
Zinc	5.25 mg/L	02/21/19 18:42

3. Zinc level of 5.25 mg/L for February did not exceed the allowable limit of 5.62 mg/L. Leachate hauling was suspended prior to sampling. No loads of leachate were hauled until results were returned. Hauling was suspended through the AWWU septage study that closed Turpin St. for the first week of February.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Shannon And Wilson Inc
Client Sample ID: 101709-L
Project: Central Landfill Leachate
Matrix: Aqueous

Lab ID: B19031833-001
Collection Date: 03/19/19 14:30
DateReceived: 03/22/19
Report Date: 04/08/19

Analyses	Result	Units	QUAL	LOQ	LOD	DL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
INORGANICS													
Cyanide, Total	ND	mg/L		0.005	0.0025	0.002	Kelada-01	03/25/19 13:30 / ma			SFA-201-B_190325B	35	R317307
METALS, TOTAL													
Arsenic	0.003	mg/L		0.001	0.0005	0.0002	E200.8	03/29/19 18:11 / jdl	03/27/19 11:18	E200.2	ICPMS206-B_190329A	46	131353
Beryllium	ND	mg/L		0.001	0.0005	0.0003	E200.8	04/05/19 22:20 / car	03/27/19 11:18	E200.2	ICPMS207-B_190405A	121	131353
Cadmium	0.00013	mg/L	J	0.001	0.0005	0.00006	E200.8	03/29/19 18:11 / jdl	03/27/19 11:18	E200.2	ICPMS206-B_190329A	46	131353
Chromium	0.012	mg/L		0.005	0.0025	0.0005	E200.8	03/29/19 18:11 / jdl	03/27/19 11:18	E200.2	ICPMS206-B_190329A	46	131353
Copper	0.035	mg/L		0.005	0.0025	0.002	E200.8	04/03/19 17:48 / car	03/27/19 11:18	E200.2	ICPMS207-B_190403A	69	131353
Lead	0.0004	mg/L	J	0.001	0.0005	0.0002	E200.8	03/29/19 18:11 / jdl	03/27/19 11:18	E200.2	ICPMS206-B_190329A	46	131353
Mercury	ND	mg/L		0.0001	0.00005	0.00005	E245.1	04/03/19 10:17 / trc	04/02/19 10:43	E245.1	HGCV202-B_190403A	43	131557
Nickel	0.059	mg/L		0.005	0.0025	0.002	E200.8	03/29/19 18:11 / jdl	03/27/19 11:18	E200.2	ICPMS206-B_190329A	46	131353
Silver	ND	mg/L		0.001	0.0005	0.00007	E200.8	03/29/19 18:11 / jdl	03/27/19 11:18	E200.2	ICPMS206-B_190329A	46	131353
VOLATILE ORGANIC COMPOUNDS													
Benzene	7.3	ug/L		5.0	2.5	0.86	E624.1	03/28/19 20:24 / sbd			SV5972.I_190328A	18	R317683
Ethylbenzene	7.0	ug/L		5.0	2.5	0.37	E624.1	03/28/19 20:24 / sbd			SV5972.I_190328A	18	R317683
Toluene	71	ug/L		5.0	2.5	0.35	E624.1	03/28/19 20:24 / sbd			SV5972.I_190328A	18	R317683
m+p-Xylenes	20	ug/L		5.0	2.5	0.95	E624.1	03/28/19 20:24 / sbd			SV5972.I_190328A	18	R317683
o-Xylene	7.8	ug/L		5.0	2.5	0.35	E624.1	03/28/19 20:24 / sbd			SV5972.I_190328A	18	R317683
Xylenes, Total	28	ug/L		5.0	2.5	0.35	E624.1	03/28/19 20:24 / sbd			SV5972.I_190328A	18	R317683
BETX, Total	112	ug/L		5.0	2.5	0.35	E624.1	03/28/19 20:24 / sbd			SV5972.I_190328A	18	R317683
Surr: 1,2-Dichloroethane-d4	86.0	%REC		71-139			E624.1	03/28/19 20:24 / sbd			SV5972.I_190328A	18	R317683
Surr: p-Bromofluorobenzene	94.0	%REC		80-127			E624.1	03/28/19 20:24 / sbd			SV5972.I_190328A	18	R317683
Surr: Toluene-d8	101	%REC		80-123			E624.1	03/28/19 20:24 / sbd			SV5972.I_190328A	18	R317683

Report Definitions:
RL - Analyte reporting limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
J - Estimated value. The analyte was present but less than the reporting limit.

MATANUSKA-SUSITNA BOROUGH
Public Works Department
Solid Waste Division

350 East Dahlia Avenue • Palmer, AK 99645
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E-mail: Brett.Olson@matsugov.us

May 15, 2019

To: Anchorage Water & Wastewater Utility, Treatment Division, Pretreatment Section

Attn: Steven Gaither & Mario Croce

From: Matanuska-Susitna Borough, Solid Waste Division

Subject: Monthly Leachate Report – April 2019

1. Monthly Leachate Quantities: Leachate from Central Landfill is transported to the Turpin Street facility by our contractor Shamrock Septic Inc. utilizing a 7000-gallon stainless steel tanker. The tanker is cleaned out before each load of leachate and once leachate is loaded at Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of April, 36 loads of leachate, totaling 241,755.69 gallons, were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2019.xslx.

2. Analytical Results: Brett Olson collected the leachate sample on April 26, 2019 at 07:14 am by a single grab at the leachate holding lagoon (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS April 19.pdf. No leachate was hauled once the sample was taken.

Biochemical Oxygen Demand (BOD)	667 mg/L	04/26/19 15:30
Biochemical Oxygen Demand (BOD) Soluble	628 mg/L	04/26/19 15:30
Total suspended Solids (TSS)	30.6 mg/L	05/01/19 14:58
pH	7.7 pH u.	04/30/19 17:22
Zinc	. 206 mg/L	04/27/19 10:18

3. Zinc level of .206 mg/L for April did not exceed the allowable limit of 5.62 mg/L. Leachate hauling was suspended prior to sampling. No loads of leachate were hauled until results were returned.

4. Spill Events: Central Landfill did not have any spill events during the month of April.

5. Pollutants: Pollutants other than Zinc are not monitored more frequently by Central Landfill than required by this permit.

MATANUSKA-SUSITNA BOROUGH
Public Works Department
Solid Waste Division

350 East Dahlia Avenue • Palmer, AK 99645
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June 14, 2019

To: Anchorage Water & Wastewater Utility, Treatment Division, Pretreatment Section

Attn: Steven Gaither & Mario Croce

From: Matanuska-Susitna Borough, Solid Waste Division

Subject: Monthly Leachate Report – May 2019

1. Monthly Leachate Quantities: Leachate from Central Landfill is transported to the Turpin Street facility by our contractor Shamrock Septic Inc. utilizing a 7000-gallon stainless steel tanker. The tanker is cleaned out before each load of leachate and once leachate is loaded at Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of May, 29 loads of leachate, totaling 196,835.93 gallons, were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2019.xslx.

2. Analytical Results: Brett Olson collected the leachate sample on May 22, 2019 at 07:123 am by a single grab at the leachate holding lagoon (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS May 19.pdf. No leachate was hauled once the sample was taken.

Biochemical Oxygen Demand (BOD)	870 mg/L	05/23/19 13:00
Biochemical Oxygen Demand (BOD) Soluble	816 mg/L	05/23/19 13:00
Total suspended Solids (TSS)	145 mg/L	05/24/19 17:24
pH	8.0 pH u.	05/24/19 11:37
Zinc	.348 mg/L	05/23/19 11:59

3. Zinc level of .348 mg/L for May did not exceed the allowable limit of 5.62 mg/L. Leachate hauling was suspended prior to sampling. No loads of leachate were hauled until results were returned.

4. Spill Events: Central Landfill did not have any spill events during the month of May.

5. Pollutants: Pollutants other than Zinc are not monitored more frequently by Central Landfill than required by this permit.

MATANUSKA-SUSITNA BOROUGH
Public Works Department
Solid Waste Division

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September 13, 2019

To: Anchorage Water & Wastewater Utility, Treatment Division, Pretreatment Section

Attn: Steven Gaither & Mario Croce

From: Matanuska-Susitna Borough, Solid Waste Division

Subject: Monthly Leachate Report – August 2019

1. Monthly Leachate Quantities: Leachate from Central Landfill is transported to the Turpin Street facility by our contractor Shamrock Septic Inc. utilizing a 7000-gallon stainless steel tanker. The tanker is cleaned out before each load of leachate and once leachate is loaded at Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of July, 21 loads of leachate, totaling 140,330.54 gallons, were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2019.xslx.

2. Analytical Results: Brett Olson collected the leachate sample on August 8, 2019 at 07:17 am by a single grab at the leachate holding lagoon (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS August 19.pdf. No leachate was hauled once the sample was taken.

Biochemical Oxygen Demand (BOD)	13,200 mg/L	08/08/19 17:30
Biochemical Oxygen Demand (BOD) Soluble	12,300 mg/L	08/08/19 17:30
Total suspended Solids (TSS)	176 mg/L	08/09/19 12:16
pH	6.8 pH u.	08/12/19 12:43
Zinc	4.36 mg/L	08/08/19 18:59

3. Zinc level of 4.36 mg/L for August did not exceed the allowable limit of 5.62 mg/L. Leachate hauling was suspended prior to sampling. No loads of leachate were hauled until results were returned.

4. Spill Events: Central Landfill did not have any spill events during the month of August.

5. Pollutants: Pollutants other than Zinc are not monitored more frequently by Central Landfill than required by this permit.

Sample Description: **MSB Central Landfill, Permit # 4**

Sample Date: 9/10/2019

Report Date: 1/2/2020

Sample Collector: Judy Hepner

This sample was analyzed by standard EPA protocol for wastewater. All results were validated against standard QA procedures.

Analytical Results

Sample Number					
Collection Date 9/10/2019					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Arsenic (As)	EPA 200.8	mg/L	.005	.02	3.7
Beryllium (Be)	EPA 200.8	mg/L	.001	ND	14.5
Cadmium (Cd)	EPA 200.8	mg/L	.001	.0002 J	0.69
Chromium (Cr)	EPA 200.8	mg/L	.005	.2	2.77
Copper (Cu)	EPA 200.8	mg/L	.005	.01	3.38
Lead (Pb)	EPA 200.8	mg/L	.001	.003	0.69
Mercury (Hg)	EPA 245.1	mg/L	.0003	ND	0.2
Nickel (Ni)	EPA 200.8	mg/L	.005	.7	3.88
Silver (Ag)	EPA 200.8	mg/L	.001	.0001 J	2.5
Zinc (Zn)	EPA 200.8	mg/L	.05	4.36	5.62
Cyanide (Cn)	EPA 335.4	mg/L	.006	.007	1.7

Sample Number					
Collection Date 9/10/2019					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Total Suspended Solids (TSS)	SM21 2540 D	mg/L	13.3	132	No limit
Biochemical Oxygen Demand	SM21 5210B	mg/L	2.0	11,900	No limit
Biochemical Oxygen Demand, Soluble	SM21 5210B	mg/L	2.0	12,300	No limit
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	.02	.162	5.0
Oil and Grease; Total	EPA 1664	mg/L	4.0	6.50	250
pH	SM21 4500HB	pH units	.10	6.8	5.0-12.5

If you have any questions regarding these analysis or procedures, please contact:
AWWU Industrial Pretreatment Program
Point Woronzof Wastewater Treatment Facility
Phone: 751-2253 FAX: 751-2207
E-mail: Pete.Jeskie@awwu.biz

MATANUSKA-SUSITNA BOROUGH
Public Works Department
Solid Waste Division

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November 15, 2019

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither & Mario Croce

From: Matanuska-Susitna Borough, Solid Waste Division

Subject: Monthly Leachate Report – October 2019

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports Leachate from Central Landfill to the Turpin Street facility. The tanker is cleaned out before each load of leachate and once leachate is loaded at Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of October, 73 loads of leachate, totaling 542,392.81 gallons, were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2019.xslx.

2. Analytical Results: Casey Dresnek collected the first leachate sample on October 30, 2019 at 7:32am at the leachate holding lagoon (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS October 19 (1).pdf. No leachate was hauled once the sample was taken.

Biochemical Oxygen Demand (BOD)	3,290 mg/L	10/30/19 18:25
Biochemical Oxygen Demand (BOD) Soluble	3,450 mg/L	10/30/19 18:25
Total suspended Solids (TSS)	260.0 mg/L	10/30/19 18:35
pH	7.0 pH u.	11/01/19 13:47
Zinc	19.9 mg/L	10/30/19 21:12

On November 5, 2019, a follow up sample was taken due to the zinc exceedance in the first sample. Casey Dresnek and Brett Olson collected the follow up sample at 07:58am. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS October 19 (2).pdf.

Biochemical Oxygen Demand (BOD)	11,400 mg/L	11/06/19 12:55
Biochemical Oxygen Demand (BOD) Soluble	11,200 mg/L	11/06/19 12:55
Total suspended Solids (TSS)	108 mg/L	11/06/19 15:25
pH	7.0 pH u.	11/08/19 15:09
Zinc	5.84 mg/L	11/06/19 14:30

3. Zinc levels of 19.9 mg/L 5.84 mg/L for October exceeded the allowable limit of 5.62 mg/L. Leachate hauling was suspended prior to sampling. No loads of leachate were hauled until results were returned. Leachate hauling will continue to be suspended until zinc levels return to permitted concentrations.

4. Spill Events: Central Landfill did not have any spill events during the month of October.

5. Pollutants: Pollutants other than Zinc are not monitored more frequently by Central Landfill than required by this permit.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel."



Brett Olson
Environmental Section Supervisor
Matanuska-Susitna Borough
907-861-7604

Attachments:
1. Monthly Leachate 2014-2019.xlsx.
2. SGS October 19 (1).pdf
3. SGS October 19 (2).pdf
4. MSB October 19 (1) Linkopipe.xslx.
5. MSB October 19 (2) Linkopipe.xslx

MATANUSKA-SUSITNA BOROUGH
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Solid Waste Division

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December 12, 2019

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither & Mario Croce

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – November 2019

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports Leachate from Central Landfill to the Turpin Street facility. The tanker is cleaned out before each load of leachate and once leachate is loaded at Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of November, 16 loads of leachate, totaling 107,398.80 gallons, were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2019.xslx.

2. Analytical Results: Casey Dresnek collected the first leachate sample on November 5, 2019 at 7:58am at the leachate holding lagoon (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS November 19 (1).pdf. No leachate was hauled once the sample was taken.

Biochemical Oxygen Demand (BOD)	11,400 mg/L	11/06/19 12:55
Biochemical Oxygen Demand (BOD) Soluble	11,200 mg/L	11/06/19 12:55
Total suspended Solids (TSS)	108.0 mg/L	11/06/19 15:25
pH	7.0 pH u.	11/08/19 15:09
Zinc	5.84 mg/L	11/06/19 14:30

On November 19, 2019, a follow up sample was taken due to the zinc exceedance in the first sample. Casey Dresnek collected the follow up sample at 08:30am. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS November 19 (2).pdf.

Biochemical Oxygen Demand (BOD)	10,400 mg/L	11/20/19 19:48
Biochemical Oxygen Demand (BOD) Soluble	10,600 mg/L	11/20/19 19:48
Total suspended Solids (TSS)	204 mg/L	11/20/19 15:11
pH	7.0 pH u.	11/21/19 14:52
Zinc	5.09 mg/L	11/20/19 14:14

3. The first sample zinc level of 5.84 mg/L exceeded the allowable limit of 5.62 mg/L while the second sample was below the permitted level. Leachate hauling was suspended prior to sampling. No loads of leachate were hauled until results were returned. Leachate hauling only continued after zinc levels returned to permitted levels.

4. Spill Events: Central Landfill did not have any spill events during the month of November.

5. Pollutants: Pollutants other than zinc are not monitored more frequently by Central Landfill than required by this permit.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel."



Brett Olson
Environmental Section Supervisor
Matanuska-Susitna Borough
907-861-7604

Attachments:
1. Monthly Leachate 2014-2019.xlsx.
2. SGS November 19 (1).pdf
3. SGS November 19 (2).pdf
4. MSB November 19 (1) Linkopipe.xslx.
5. MSB November 19 (2) Linkopipe.xslx

MATANUSKA-SUSITNA BOROUGH
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February 14, 2020

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither & Mario Croce

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – January 2020

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports Leachate from Central Landfill to the Turpin Street facility. The tanker is cleaned out before each load of leachate and once leachate is loaded at Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of January, no loads of leachate were transported to the Turpin Street facility due to low generation rates and excess capacity. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2020.xslx.

2. Analytical Results: Brett Olson collected the leachate sample on January 29, 2020 at 7:25am at the leachate pumping cabinent (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS December 19 (1).pdf. No leachate was hauled once the sample was taken.

Biochemical Oxygen Demand (BOD)	6,650 mg/L	01/29/20 14:20
Biochemical Oxygen Demand (BOD) Soluble	6,390 mg/L	01/29/20 14:20
Total suspended Solids (TSS)	119 mg/L	01/29/20 11:48
pH	7.4 pH u.	02/01/20 17:42
Zinc	4.13 mg/L	01/30/20 14:35

3. The zinc concentration of 4.13 mg/L is below the permitted limit of 5.62 mg/L. No loads of leachate are hauled until results are returned. Leachate hauling only resumes after zinc levels have returned to permitted levels.

4. Spill Events: Central Landfill did not have any spill events during the month of January.

5. Pollutants: Pollutants other than zinc are not monitored more frequently by Central Landfill than required by this permit.

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March 12, 2020

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither & Mario Croce

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – February 2020

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports Leachate from Central Landfill to the Turpin Street facility. The tanker is cleaned out before each load of leachate and once leachate is loaded at Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of February, no loads of leachate were transported to the Turpin Street facility due to low generation rates and excess capacity. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2020.xslx.

2. Analytical Results: Casey Dresnek collected the leachate sample on February 27, 2020 at 7:20am at the leachate pumping cabinent (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS February 20.pdf. Leachate hauling was suspended prior to sampling.

Biochemical Oxygen Demand (BOD)	3,940 mg/L	02/28/20 15:15
Biochemical Oxygen Demand (BOD) Soluble	3,820 mg/L	02/28/20 15:15
Total suspended Solids (TSS)	53.7 mg/L	02/28/20 17:49
pH	7.8 pH u.	02/28/20 13:48
Zinc	1.18 mg/L	03/03/20 11:08

3. The zinc concentration of 1.18 mg/L is below the permitted limit of 5.62 mg/L. No loads of leachate are hauled until results are returned. Leachate hauling only resumes after zinc levels have returned to permitted levels.

4. Spill Events: Central Landfill did not have any spill events during the month of January.

5. Pollutants: Pollutants other than zinc are not monitored more frequently by Central Landfill than required by this permit.

Mayor
Ethan Berkowitz

Anchorage Water & Wastewater Utility

Treatment Division

Board Chair
David M. Richards

Sample Description: **MSB Central Landfill, Permit # 4**

Sample Date: 3/10/2020

Report Date: 7/13/2020

Sample Collector: Alena Voigt

This sample was analyzed by standard EPA protocol for wastewater. All results were validated against standard QA procedures.

Analytical Results

Sample Number					
Collection Date 3/10/2020					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Arsenic (As)	EPA 200.8	mg/L	.0002	.054	3.7
Beryllium (Be)	EPA 200.8	mg/L	.0009	ND	14.5
Cadmium (Cd)	EPA 200.8	mg/L	.0001	.0009 J	0.69
Chromium (Cr)	EPA 200.8	mg/L	.002	.193	2.77
Copper (Cu)	EPA 200.8	mg/L	.002	.257	3.38
Lead (Pb)	EPA 200.8	mg/L	.00008	.01	0.69
Mercury (Hg)	EPA 245.1	mg/L	.00005	.0007 D	0.2
Nickel (Ni)	EPA 200.8	mg/L	.002	1.08	3.88
Silver (Ag)	EPA 200.8	mg/L	.00007	.0002 J	2.5
Zinc (Zn)	EPA 200.8	mg/L	.0775	1.14	5.62
Cyanide (Cn)	EPA 335.4	mg/L	.003	ND	1.7

Sample Number					
Collection Date 3/10/2020					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Total Suspended Solids (TSS)	SM21 2540 D	mg/L	0.775	22.5	No limit
Biochemical Oxygen Demand	SM21 5210B	mg/L	2.0	5,240	No limit
Biochemical Oxygen Demand, Soluble	SM21 5210B	mg/L	2.0	5,560	No limit
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	.000091	.322	5.0
Oil and Grease; Total	EPA 1664	mg/L	1.02	4.69	250
pH	SM18 4500H	pH units	.10	7.8	5.0-12.5

If you have any questions regarding these analysis or procedures, please contact:
AWWU Industrial Pretreatment Program
Point Woronzof Wastewater Treatment Facility
Phone: 751-2253 FAX: 751-2207
E-mail: Pete.Jeskie@awwu.biz

MATANUSKA-SUSITNA BOROUGH
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May 14, 2020

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither & Mario Croce

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – April 2020

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports Leachate from Central Landfill to the Turpin Street facility. The tanker is cleaned out before each load of leachate and once leachate is loaded at Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of March, 80 loads of leachate were transported to the Turpin Street facility, totaling 538,153.29 gallons. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2020.xslx.

2. Analytical Results: Casey Dresnek collected the leachate sample on April 29, 2020 at 7:50am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS April 20.pdf. Leachate hauling was suspended prior to sampling.

Biochemical Oxygen Demand (BOD)	Less than 710 mg/L	04/30/20 14:50
Biochemical Oxygen Demand (BOD) Soluble	Less than 820 mg/L	04/30/20 14:20
Total suspended Solids (TSS)	39.5 mg/L	05/05/20 09:36
pH	7.6 pH u.	05/01/20 10:29
Zinc	.456 mg/L	04/30/20 08:05

3. The zinc concentration of .456 mg/L is below the permitted limit of 5.62 mg/L. No loads of leachate are hauled until results are returned. Leachate hauling only resumes after zinc levels have returned to permitted levels.

4. Spill Events: Central Landfill did not have any spill events during the month of April.

5. Pollutants: Pollutants other than zinc are not monitored more frequently by Central Landfill than required by this permit.

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June 10, 2020

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither & Mario Croce

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – May 2020

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports Leachate from Central Landfill to the Turpin Street facility. The tanker is cleaned out before each load of leachate and once leachate is loaded at Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of May, 39 loads of leachate were transported to the Turpin Street facility, totaling 259,635.93 gallons. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2020.xslx.

2. Analytical Results: Casey Dresnek collected the leachate sample on May 28, 2020 at 7:40am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS May 20.pdf. Leachate hauling was suspended prior to sampling.

Biochemical Oxygen Demand (BOD)	Less than 990 mg/L	05/28/20 15:45
Biochemical Oxygen Demand (BOD) Soluble	2,000 mg/L	05/29/20 19:56
Total suspended Solids (TSS)	15.8 mg/L	06/01/20 14:17
pH	7.8 pH u.	05/29/20 15:26
Zinc	.904 mg/L	05/29/20 12:33

3. The zinc concentration of .904 mg/L is below the permitted limit of 5.62 mg/L. No loads of leachate are hauled until results are returned. Leachate hauling only resumes after zinc levels have returned to permitted levels.

4. Spill Events: Central Landfill did not have any spill events during the month of May.

5. Pollutants: Pollutants other than zinc are not monitored more frequently by Central Landfill than required by this permit.

MATANUSKA-SUSITNA BOROUGH
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July 15, 2020

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither & Mario Croce

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – June 2020

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports Leachate from Central Landfill to the Turpin Street facility. The tanker is cleaned out before each load of leachate and once leachate is loaded at Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of June, 29 loads of leachate were transported to the Turpin Street facility, totaling 193,029.94 gallons. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2020.xslx.

2. Analytical Results: Casey Dresnek collected the leachate sample on June 26, 2020 at 7:15am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS June 20.pdf. Leachate hauling was suspended prior to sampling.

Biochemical Oxygen Demand (BOD)	963 mg/L	06/26/20 16:03
Biochemical Oxygen Demand (BOD) Soluble	945 mg/L	06/26/20 16:03
Total suspended Solids (TSS)	18.7 mg/L	06/26/20 17:08
pH	7.9 pH u.	07/01/20 11:30
Zinc	.905 mg/L	06/29/20 14:17

3. The zinc concentration of .905 mg/L is below the permitted limit of 5.62 mg/L. No loads of leachate are hauled until results are returned. Leachate hauling only resumes after zinc levels have returned to permitted levels.

4. Spill Events: Central Landfill did not have any spill events during the month of June.

5. Pollutants: Pollutants other than zinc are not monitored more frequently by Central Landfill than required by this permit.

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September 11, 2020

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither & Mario Croce

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – August 2020

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports Leachate from Central Landfill to the Turpin Street facility. The tanker is cleaned out before each load of leachate and once leachate is loaded at Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of August, 26 loads of leachate were transported to the Turpin Street facility, totaling 176,649.10 gallons. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2020.xslx.

2. Analytical Results: Casey Dresnek collected the leachate sample on August 27, 2020 at 7:30 am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS August 20.pdf. Leachate hauling was suspended prior to sampling.

Biochemical Oxygen Demand (BOD)	158 mg/L	08/28/20 13:36
Biochemical Oxygen Demand (BOD) Soluble	110 mg/L	08/28/20 13:36
Total suspended Solids (TSS)	18.3 mg/L	08/28/20 15:14
pH	8.1 pH u.	08/28/20 15:39
Zinc	.954 mg/L	08/28/20 13:42

3. The zinc concentration of .954 mg/L is below the permitted limit of 5.62 mg/L. No loads of leachate are hauled until results are returned. Leachate hauling only resumes after zinc levels have returned to permitted levels.

4. Spill Events: Central Landfill did not have any spill events during the month of August.

5. Pollutants: Pollutants other than zinc are not monitored more frequently by Central Landfill than required by this permit.

MATANUSKA-SUSITNA BOROUGH
Public Works Department
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October 15, 2020

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither & Mario Croce

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – September 2020

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports Leachate from Central Landfill to the Turpin Street facility. The tanker is cleaned out before each load of leachate and once leachate is loaded at Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of September, 20 loads of leachate were transported to the Turpin Street facility, totaling 135,844.31 gallons. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2020.xslx.

2. Analytical Results: Casey Dresnek collected the leachate sample on September 16, 2020 at 7:30 am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS September 2020.pdf. Leachate hauling was suspended prior to sampling.

Biochemical Oxygen Demand (BOD)	123 mg/L	09/16/20 17:27
Biochemical Oxygen Demand (BOD) Soluble	113 mg/L	09/16/20 17:27
Total suspended Solids (TSS)	44.8 mg/L	09/22/20 14:51
pH	8.2 pH u.	09/17/20 15:25
Zinc	.812 mg/L	09/16/20 17:19

3. The zinc concentration of .812 mg/L is below the permitted limit of 5.62 mg/L. No loads of leachate are hauled until results are returned. Leachate hauling only resumes after zinc levels have returned to permitted levels.

4. Spill Events: Central Landfill did not have any spill events during the month of September.

5. Pollutants: Pollutants other than zinc are not monitored more frequently by Central Landfill than required by this permit.

Sample Description: **MSB Central Landfill, Permit # 4**

Sample Date: 9/9/2020

Report Date: 1/15/2021

Sample Collector: Zach Thorn

This sample was analyzed by standard EPA protocol for wastewater. All results were validated against standard QA procedures.

Analytical Results

Sample Number					
Collection Date 9/9/20					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Arsenic (As)	EPA 200.8	mg/L	.000005	.04	3.7
Beryllium (Be)	EPA 200.7	mg/L	.000001	ND	14.5
Cadmium (Cd)	EPA 200.8	mg/L	.000001	.0007 J	0.69
Chromium (Cr)	EPA 200.8	mg/L	..000005	.2	2.77
Copper (Cu)	EPA 200.8	mg/L	.000005	.2	3.38
Lead (Pb)	EPA 200.8	mg/L	.000001	.005	0.69
Mercury (Hg)	EPA 245.1	mg/L	.0004	.0015 D	0.2
Nickel (Ni)	EPA 200.8	mg/L	.000005	.7	3.88
Silver (Ag)	EPA 200.8	mg/L	.001	.0002 J	2.5
Zinc (Zn)	EPA 200.8	mg/L	.025	.138	5.62
Cyanide (Cn)	Kelada-01	mg/L	.005	.003 J	1.7

Sample Number					
Collection Date 9/9/20					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Total Suspended Solids (TSS)	SM21 2540 D	mg/L	3.33	17.7	No limit
Biochemical Oxygen Demand	SM21 5210B	mg/L	2.0	135	No limit
Biochemical Oxygen Demand, Soluble	SM21 5210B	mg/L	2.0	117	No limit
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	.02	.0354	5.0
Oil and Grease; Total	EPA 1664	mg/L	4.04	2.02 U	250
pH	SM21 4500HB	pH units	.10	8	5.0-12.5

If you have any questions regarding these analysis or procedures, please contact:
AWWU Industrial Pretreatment Program
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Solid Waste Division

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November 15, 2020

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither & Mario Croce

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – October 2020

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports Leachate from Central Landfill to the Turpin Street facility. The tanker is cleaned out before each load of leachate and once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of October, 182.971.69 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2020.xslx.

2. Analytical Results: Casey Dresnek collected the leachate sample on October 29, 2020 at 7:10 am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS October 2020.pdf. Leachate hauling was suspended prior to sampling.

Biochemical Oxygen Demand (BOD)	101 mg/L	10/30/20 12:45
Biochemical Oxygen Demand (BOD) Soluble	91.2 mg/L	10/30/20 12:45
Total suspended Solids (TSS)	9.0 mg/L	11/04/20 14:50
pH	8.2 pH u.	11/03/20 13:29
Zinc	.872 mg/L	10/30/20 08:10

3. The zinc concentration of .872 mg/L is below the permitted limit of 5.62 mg/L. No loads of leachate are hauled until results are returned. Leachate hauling only resumes after zinc levels have returned to permitted levels.

4. Spill Events: Central Landfill did not have any spill events during the month of October.

5. Pollutants: Pollutants other than zinc are not monitored more frequently by Central Landfill than required by this permit.

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December 10, 2020

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither & Mario Croce

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – November 2020

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports Leachate from Central Landfill to the Turpin Street facility. The tanker is cleaned out before each load of leachate and once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of November, 96,452.69 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2020.xslx.

2. Analytical Results: Brett Olson collected the leachate sample on November 30, 2020 at 7:28am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS November 2020.pdf. Leachate hauling was suspended prior to sampling.

Biochemical Oxygen Demand (BOD)	159 mg/L	12/01/20 20:21
Biochemical Oxygen Demand (BOD) Soluble	164 mg/L	12/01/20 20:21
Total suspended Solids (TSS)	12.4 mg/L	11/30/20 15:48
pH	8.12 pH u.	12/01/20 20:21
Zinc	1.32 mg/L	12/01/20 10:41

3. The zinc concentration of 1.32 mg/L is below the permitted limit of 5.62 mg/L. No loads of leachate are hauled until results are returned. Leachate hauling only resumes after zinc levels have returned to permitted levels.

4. Spill Events: Central Landfill did not have any spill events during the month of November.

5. Pollutants: Pollutants other than zinc are not monitored more frequently by Central Landfill than required by this permit.

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January 15, 2021

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither & Mario Croce

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – December 2020

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports Leachate from Central Landfill to the Turpin Street facility. The tanker is emptied before each load of leachate and once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of December, 257,022.75 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2020.xslx.

2. Analytical Results: Brett Olson collected the leachate sample on December 30, 2020 at 7:43am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS December 2020.pdf.

Biochemical Oxygen Demand (BOD)	345 mg/L	12/30/20 13:42
Biochemical Oxygen Demand (BOD) Soluble	328 mg/L	12/30/20 13:42
Total suspended Solids (TSS)	61.0 mg/L	01/05/21 15:59
pH	8.2 pH u.	01/04/21 15:03

3. Zinc: Zinc concentrations were not measured in this sampling round. The next zinc sample is scheduled for the quarterly sampling event in March.

4. Spill Events: Central Landfill did not have any spill events during the month of December.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

ANCHORAGE WATER & WASTEWATER UTILITY

Dan Sullivan,
Mayor

Industrial Pretreatment Program
John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

Owned by the
Municipality of Anchorage

MBCL

SAMPLE DATE: 7.29.2020 SAMPLED BY POTW ANNUAL SAMPLING EVENT

Pollutant	EPA Method	Units	Results	Detection Limit or Level	Daily Maximum Limit
Arsenic	200.8	mg/L	0.0363	0.00109	3.7
Beryllium	200.8	mg/L	0.000524	0.00029	14.5
Cadmium	200.8	mg/L	0.000581	0.00041	0.69
Chromium	200.8	mg/L	0.189	0.0026	0.947
Copper	200.8	mg/L	0.129	0.00288	0.405
Lead	200.8	mg/L	0.00576	0.0004	0.222
Nickel	200.8	mg/L	0.691	0.00211	3.88
Silver	200.8	mg/L	0.00079	0.00079	2.5
Zinc	200.8	mg/L	1.30	0.0249	5.62
Mercury	EPA 245.1	mg/L	0.0000642	0.00004	0.2
Cyanide	SM20 4500 CN C, E	mg/L	0.01	0.0009	1.7
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.11291		5.0
pH	SM20 4500-HB	pH	8.09		5 to 12.5
BOD	SM5210 B	mg/L	725.23		
SOLUBLE BOD	SM5210 B	mg/L	728.23		
TSS	SM2540 B	mg/L	22		
Oil & Grease, total (HEM)	1664A	mg/L	3.7	0.7	
Oil & Grease, nonpolar (SGT-HEM)	1664A	mg/L	0	1.4	

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February 11, 2021

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither & Mario Croce

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – January 2021

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports Leachate from Central Landfill to the Turpin Street facility. The tanker is emptied before each load of leachate and once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of January, 49,257.49 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2021.xslx.

2. Analytical Results: Casey Dresnek collected the leachate sample on January 29, 2021 at 7:30am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS January 2021.pdf.

Biochemical Oxygen Demand (BOD)	76.2 mg/L	01/29/21 16:20
Biochemical Oxygen Demand (BOD) Soluble	66.0 mg/L	01/29/21 16:20
Total suspended Solids (TSS)	22.7 mg/L	01/29/21 13:45
pH	8.1 pH u.	02/03/21 18:26

3. Zinc: Zinc concentrations were not measured in this sampling round. The next zinc sample is scheduled for the quarterly sampling event in March.

4. Spill Events: Central Landfill did not have any spill events during the month of January.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

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March 15, 2021

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither & Mario Croce

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – February 2021

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports Leachate from Central Landfill to the Turpin Street facility. The tanker is emptied before each load of leachate and once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of February, 158,174.85 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2021.xslx.

2. Analytical Results: Casey Dresnek collected the leachate sample on February 28, 2021 at 7:30am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS February 2021.pdf.

Biochemical Oxygen Demand (BOD)	215.0 mg/L	3/1/2021 16:51
Biochemical Oxygen Demand (BOD) Soluble	194.0 mg/L	3/1/2021 16:51
Total suspended Solids (TSS)	48.0 mg/L	3/1/2021 15:36
pH	8.1 pH u.	3/2/2021 9:26

3. Zinc: Zinc concentrations were not measured in this sampling round. The next zinc sample is scheduled for the quarterly sampling event in March.

4. Spill Events: Central Landfill did not have any spill events during the month of February.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

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April 15, 2021

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither & Mario Croce

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – March 2021

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports Leachate from Central Landfill to the Turpin Street facility. The tanker is emptied before each load of leachate and once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of March, 165,817.96 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2021.xslx.

2. Analytical Results: Casey Dresnek collected the leachate sample on March 3rd, 2021 at 7:00am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS March 2021.pdf.

Biochemical Oxygen Demand (BOD)	199.0 mg/L	03/04/21 15:33
Biochemical Oxygen Demand (BOD) Soluble	195.0 mg/L	03/04/21 15:33
Total suspended Solids (TSS)	18.0 mg/L	03/05/21 15:24
pH	8.0 pH u.	03/08/21 14:11

3. Zinc: Zinc concentrations were not measured in this sampling round. The next zinc sample is scheduled for the quarterly sampling event.

4. Spill Events: Central Landfill did not have any spill events during the month of March.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

Sample Description: **MSB Central Landfill, Permit # 4**

Sample Date: 3/3/2021

Report Date: 7/15/2021

Sample Collector: Chris Pek

This sample was analyzed by standard EPA protocol for wastewater. All results were validated against standard QA procedures.

Analytical Results

Sample Number					
Collection Date 3/3/2021					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Arsenic (As)	EPA 200.8	mg/L	.0002	.036	3.7
Beryllium (Be)	EPA 200.8	mg/L	.0003	ND	14.5
Cadmium (Cd)	EPA 200.8	mg/L	.00005	.0004 J	0.69
Chromium (Cr)	EPA 200.8	mg/L	.0005	.211	2.77
Copper (Cu)	EPA 200.8	mg/L	.0005	.061	3.38
Lead (Pb)	EPA 200.8	mg/L	.00007	.007	0.69
Mercury (Hg)	EPA 245.1	mg/L	.00005	.00006 J	0.2
Nickel (Ni)	EPA 200.8	mg/L	.002	0.864	3.88
Silver (Ag)	EPA 200.8	mg/L	.00005	.0001 J	2.5
Zinc (Zn)	EPA 200.8	mg/L	.003	1.01	5.62
Cyanide (Cn)	EPA 335.4	mg/L	.002	ND	1.7

Sample Number					
Collection Date 3/3/2021					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Total Suspended Solids (TSS)	SM21 2540 D	mg/L	0.775	13.2	No limit
Biochemical Oxygen Demand	SM21 5210B	mg/L	2.0	219	No limit
Biochemical Oxygen Demand, Soluble	SM21 5210B	mg/L	2.0	202	No limit
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	.0005	.0019	5.0
Oil and Grease; Total	EPA 1664	mg/L	1.02	1.90 J	250
pH	SM18 4500H	pH units	.10	8.0	5.0-12.5

If you have any questions regarding these analysis or procedures, please contact:
AWWU Industrial Pretreatment Program
Point Woronzof Wastewater Treatment Facility
Phone: 751-2253 FAX: 751-2207
E-mail: Pete.Jeskie@awwu.biz

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May 13, 2021

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither & Mario Croce

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – April 2021

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports Leachate from Central Landfill to the Turpin Street facility. The tanker is emptied before each load of leachate and once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of March, 359,008.38 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2021.xslx.

2. Analytical Results: Casey Dresnek collected the leachate sample on April 30, 2021 at 7:20am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS April 2021.pdf.

Biochemical Oxygen Demand (BOD)	2.31 mg/L	4/30/2021 17:29
Biochemical Oxygen Demand (BOD) Soluble	2.0 mg/L	4/30/2021 17:29
Total suspended Solids (TSS)	3.66 mg/L	5/5/2021 17:45
pH	8.1 pH u.	5/4/2021 17:12

3. Zinc: Zinc concentrations were not measured in this sampling round. The next zinc sample is scheduled for the June quarterly sampling event.

4. Spill Events: Central Landfill did not have any spill events during the month of April.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

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June 15, 2021

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – May 2021

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports Leachate from Central Landfill to the Turpin Street facility. The tanker is emptied before each load of leachate and once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of May, 203,873.05 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2021.xslx.

2. Analytical Results: Casey Dresnek collected the leachate sample on May 27, 2021 at 7:30am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS May 2021.pdf. Due to laboratory error, BOD Soluble was not analyzed during this event, BOD soluble will be analyzed during the June event.

Biochemical Oxygen Demand (BOD)	64.9 mg/L	05/28/21 21:00
Biochemical Oxygen Demand (BOD) Soluble	-	-
Total suspended Solids (TSS)	9.67 mg/L	06/01/21 14:15
pH	8.2 pH u.	06/01/21 14:15

3. Zinc: Zinc concentrations were not measured in this sampling round. The next zinc sample is scheduled for the June quarterly sampling event.

4. Spill Events: Central Landfill did not have any spill events during the month of May.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

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July 15, 2021

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – June 2021

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports Leachate from Central Landfill to the Turpin Street facility. The tanker is emptied before each load of leachate and once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of June, 311,171.26 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2021.xslx.

2. Analytical Results: Brett Olson collected the leachate sample on June 29, 2021 at 7:45am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS June 2021.pdf.

Biochemical Oxygen Demand (BOD)	58.0 mg/L	06/29/21 15:03
Biochemical Oxygen Demand (BOD) Soluble	41.0 mg/L	06/29/21 15:03
Total suspended Solids (TSS)	36.5 mg/L	07/04/21 23:39
pH	8.3 pH u.	07/01/21 12:57

3. Zinc: Zinc concentrations were not measured in this sampling round. The next zinc sample is scheduled for the September quarterly sampling event.

4. Spill Events: Central Landfill did not have any spill events during the month of June.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

Anchorage Water & Wastewater Utility

Treatment Division

Mayor
Ethan Berkowitz

Board Chair
David M. Richards

Sample Description: **MSB Central Landfill, Permit # 4**

Sample Date: 6/10/2021

Report Date: 7/15/2021

Sample Collector: Chris Pek

This sample was analyzed by standard EPA protocol for wastewater. All results were validated against standard QA procedures.

Analytical Results

Sample Number					
Collection Date 6/10/2021					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Arsenic (As)	EPA 200.8	mg/L	.00006	.027	3.7
Beryllium (Be)	EPA 200.8	mg/L	.0008	ND	14.5
Cadmium (Cd)	EPA 200.8	mg/L	.00002	.00049 J	0.69
Chromium (Cr)	EPA 200.8	mg/L	.0001	.134	2.77
Copper (Cu)	EPA 200.8	mg/L	.0006	.187	3.38
Lead (Pb)	EPA 200.8	mg/L	.00004	.008	0.69
Mercury (Hg)	EPA 245.1	mg/L	.00001	.00007 J	0.2
Nickel (Ni)	EPA 200.8	mg/L	.0006	0.658	3.88
Silver (Ag)	EPA 200.8	mg/L	.00002	.0001 J	2.5
Zinc (Zn)	EPA 200.8	mg/L	.008	1.80	5.62
Cyanide (Cn)	EPA 335.4	mg/L	.005	.002 J	1.7

Sample Number					
Collection Date 6/10/2021					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Total Suspended Solids (TSS)	SM21 2540 D	mg/L	0.775	12.9	No limit
Biochemical Oxygen Demand	SM21 5210B	mg/L	2.0	61.8	No limit
Biochemical Oxygen Demand, Soluble	SM21 5210B	mg/L	2.0	55.0	No limit
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	.0005	ND	5.0
Oil and Grease; Total	EPA 1664	mg/L	1.02	2.02 U	250
pH	SM18 4500H	pH units	.10	8.2	5.0-12.5

If you have any questions regarding these analysis or procedures, please contact:
AWWU Industrial Pretreatment Program
Point Woronzof Wastewater Treatment Facility
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August 12, 2021

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – July 2021

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports Leachate from Central Landfill to the Turpin Street facility. The tanker is emptied before each load of leachate and once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of July, 60,263.47 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2021.xslx.

2. Analytical Results: Brett Olson collected the leachate sample on July 28, 2021 at 7:38 am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS July 2021.pdf.

Biochemical Oxygen Demand (BOD)	14.1 mg/L	07/29/21 14:56
Biochemical Oxygen Demand (BOD) Soluble	15.3 mg/L	07/29/21 14:56
Total suspended Solids (TSS)	10.2 mg/L	08/02/21 01:47
pH	8.4 pH u.	07/30/21 15:17

3. Zinc: Zinc concentrations were not measured in this sampling round. The next zinc sample is scheduled for the September quarterly sampling event.

4. Spill Events: Central Landfill did not have any spill events during the month of July.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

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Public Works Department
Solid Waste Division

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September 14, 2021

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – August 2021

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports leachate from Central Landfill to the Turpin Street facility. The tanker is emptied before each load of leachate and once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of August, 183,458.68 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2021.xslx.

2. Analytical Results: Brett Olson collected the leachate sample on August 27, 2021 at 7:45 am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS August 2021.pdf.

Biochemical Oxygen Demand (BOD)	40.8 mg/L	08/28/21 14:45
Biochemical Oxygen Demand (BOD) Soluble	23.1 mg/L	08/28/21 14:45
Total suspended Solids (TSS)	114 mg/L	09/02/21 19:28
pH	7.9 pH u.	09/01/21 17:27

3. Zinc: Zinc concentrations were not measured in this sampling round. The next zinc sample is scheduled for the September quarterly sampling event.

4. Spill Events: Central Landfill did not have any spill events during the month of August.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

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October 12, 2021

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – September 2021

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports leachate from Central Landfill to the Turpin Street facility. The tanker is emptied before each load of leachate and once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of September, 218,016.77 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2021.xslx.

2. Analytical Results: Brett Olson collected the leachate sample on September 29, 2021 at 7:50 am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS September 2021.pdf.

Biochemical Oxygen Demand (BOD)	93.3 mg/L	9/30/2021 15:18
Biochemical Oxygen Demand (BOD) Soluble	76.0 mg/L	9/30/2021 15:18
Total suspended Solids (TSS)	44.4 mg/L	10/5/2021 12:41
pH	7.8 pH u.	10/4/2021 12:11

3. Zinc: Zinc concentrations were not measured in this sampling round. The next zinc sample is scheduled for the December quarterly sampling event.

4. Spill Events: Central Landfill did not have any spill events during the month of September.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

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November 10, 2021

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – October 2021

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports leachate from Central Landfill to the Turpin Street facility. The tanker is emptied before each load of leachate and once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of October, 535,901.80 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2021.xslx.

2. Analytical Results: Brett Olson collected the leachate sample on October 26, 2021 at 7:42 am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS October 2021.pdf.

Biochemical Oxygen Demand (BOD)	37.3 mg/L	10/27/21 15:04
Biochemical Oxygen Demand (BOD) Soluble	18.7 mg/L	10/27/21 15:04
Total suspended Solids (TSS)	10.6 mg/L	10/27/21 18:28
pH	7.6 pH u.	10/29/21 12:16

3. Zinc: Zinc concentrations were not measured in this sampling round. The next zinc sample is scheduled for the December quarterly sampling event.

4. Spill Events: Central Landfill did not have any spill events during the month of October.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

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December 6, 2021

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – November 2021

1. Monthly Leachate Quantities: our contractor Shamrock Septic Inc., utilizing a 7000-gallon aluminum tanker transports leachate from Central Landfill to the Turpin Street facility. The tanker is emptied before each load of leachate and once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of November, 465,429.94 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2021.xslx.

2. Analytical Results: Yannick Watkins collected the leachate sample on November 30, 2021 at 7:10 am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS November 2021.pdf.

Biochemical Oxygen Demand (BOD)	66.0 mg/L	12/01/21 14:20
Biochemical Oxygen Demand (BOD) Soluble	49.0 mg/L	12/01/21 14:20
Total suspended Solids (TSS)	48.0 mg/L	12/03/21 13:10
pH	7.8 pH u.	12/02/21 13:02

3. Zinc: Zinc concentrations were not measured in this sampling round. The next zinc sample is scheduled for the December quarterly sampling event.

4. Spill Events: Central Landfill did not have any spill events during the month of November.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

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December 30, 2021

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – December 2021

1. Monthly Leachate Quantities: Shamrock Septic Inc., utilizing a 7,000 gallon aluminum tanker and MSB staff, utilizing a 6,000 gallon tanker, transport leachate from Central Landfill to the Turpin Street facility. The tankers are emptied before each load of leachate and once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of December, 284,558 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2021.xslx.

2. Analytical Results: Alec Rizzo collected the leachate sample on December 10, 2021 at 10:15 am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS December 2021.pdf.

Biochemical Oxygen Demand (BOD)	63.0 mg/L	12/10/21 11:41
Biochemical Oxygen Demand (BOD) Soluble	36.0 mg/L	12/10/21 11:41
Total suspended Solids (TSS)	14.4 mg/L	12/10/21 11:41
pH	7.6 pH u.	12/10/21 11:41

3. Zinc: Zinc concentrations were not measured in this sampling round. The next zinc sample is scheduled for the December quarterly sampling event and will be included in the 2nd semi-annual report.

4. Spill Events: Central Landfill did not have any spill events during the month of December.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

ANCHORAGE WATER & WASTEWATER UTILITY

Dan Sullivan,
Mayor

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

Owned by the
Municipality of Anchorage

COMPANY NAME

SAMPLE DATE: 5.18.2021 SAMPLED BY POTW ANNUAL SAMPLING EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.0252	3.7
Beryllium	200.8	mg/L	0.00001	14.5
Cadmium	200.8	mg/L	0.00045	0.69
Chromium	200.8	mg/L	0.119	2.77
Copper	200.8	mg/L	0.716	3.38
Cyanide	335.4	mg/L	0.013	1.7
Lead	200.8	mg/L	0.0157	0.69
Mercury	245.1	mg/L	0.00045	0.2
Nickel	200.8	mg/L	0.547	3.88
Silver	200.8	mg/L	0.00005	2.5
Zinc	200.8	mg/L	0.992	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.001	5.0
Oil & Grease HEM	SM 1664A	mg/L	0	250
TPH Silica Gel HEM	SM 1664A	mg/L	2	
Priority Pollutants		mg/L	See excel	
pH			8.30	

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February 9, 2022

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – January 2022

1. Monthly Leachate Quantities: Shamrock Septic Inc., utilizing a 7,000 gallon aluminum tanker and MSB staff, utilizing a 6,000 gallon tanker, transport leachate from Central Landfill to the Turpin Street facility. The tankers are emptied before each load of leachate and once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of January, 191,164 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2022.xslx.

2. Analytical Results: Yannick Watkins collected the leachate sample on January 28, 2022 at 07:00am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS January 2022.pdf.

Biochemical Oxygen Demand (BOD)	319.0 mg/L	01/28/22 14:30
Biochemical Oxygen Demand (BOD) Soluble	309.0 mg/L	01/28/22 14:30
Total suspended Solids (TSS)	24.0 mg/L	02/02/22 15:22
pH	8.0 pH u.	01/31/22 14:36

3. Zinc: Zinc concentrations were not measured in this sampling round. The most recent zinc sample was scheduled for the December quarterly sampling event and were included in the 2nd semi-annual report.

4. Spill Events: Central Landfill did not have any spill events during the month of January.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

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March 14, 2022

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – February 2022

1. Monthly Leachate Quantities: Shamrock Septic Inc., utilizing a 7,000 gallon aluminum tanker and MSB staff, utilizing a 6,000 gallon tanker, transport leachate from Central Landfill to the Turpin Street facility. The tankers are emptied before each load of leachate and once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of January, 264,570.06 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2022.xslx.

2. Analytical Results: Yannick Watkins collected the leachate sample on February 24, 2022 at 07:00am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS February 2022.pdf.

Biochemical Oxygen Demand (BOD)	95.0 mg/L	02/24/22 15:18
Biochemical Oxygen Demand (BOD) Soluble	157.0 mg/L	02/24/22 15:18
Total suspended Solids (TSS)	26.5 mg/L	03/01/22 15:09
pH	7.8 pH u.	02/28/22 12:15

3. Zinc: Zinc concentrations were not measured in this sampling round. The most recent zinc sample was collected March 11th. Those results are not yet available but will be included in the June semi-annual report.

4. Spill Events: Central Landfill did not have any spill events during the month of February.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

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April 1, 2022

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – March 2022

1. Monthly Leachate Quantities: MSB staff, utilizing a 6,000 gallon tanker, transport leachate from Central Landfill to the Turpin Street facility. The tanker is emptied before each load of leachate and once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of March, 523,183.23 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2022.xslx.

2. Analytical Results: Zach Thon collected the leachate sample on March 9, 2022 at 01:40 PM at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS March 2022.pdf.

Biochemical Oxygen Demand (BOD)	354.0 mg/L	03/10/22 10:06
Biochemical Oxygen Demand (BOD) Soluble	291.0 mg/L	03/10/22 10:06
Total suspended Solids (TSS)	18.3 mg/L	03/14/22 15:27
pH	7.2 pH u.	03/11/22 13:08

3. Zinc: The most recent zinc sample was collected March 11th. Those results are not yet available but will be included in the June semi-annual report.

4. Spill Events: Central Landfill did not have any spill events during the month of March.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

Mayor
Ethan Berkowitz

Anchorage Water & Wastewater Utility

Treatment Division

Board Chair
David M. Richards

Sample Description: **MSB Central Landfill, Permit # 4**

Sample Date: 3/9/2022

Report Date: 7/6/2022

Sample Collector: Zack Thon

This sample was analyzed by standard EPA protocol for wastewater. All results were validated against standard QA procedures.

Analytical Results

Sample Number					
Collection Date 3/9/2022					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Arsenic (As)	EPA 200.8	mg/L	.0002	.01	3.7
Beryllium (Be)	EPA 200.8	mg/L	.0002	ND	14.5
Cadmium (Cd)	EPA 200.8	mg/L	.00006	.0002 J	0.69
Chromium (Cr)	EPA 200.8	mg/L	.001	.04	2.77
Copper (Cu)	EPA 200.8	mg/L	.0006	.03	3.38
Lead (Pb)	EPA 200.8	mg/L	.0001	.002	0.69
Mercury (Hg)	EPA 245.1	mg/L	.00004	ND	0.2
Nickel (Ni)	EPA 200.8	mg/L	.0006	0.2	3.88
Silver (Ag)	EPA 200.8	mg/L	.00007	.ND	2.5
Zinc (Zn)	EPA 200.8	mg/L	.003	0.2	5.62
Cyanide (Cn)	EPA 335.4	mg/L	.002	ND	1.7

Sample Number					
Collection Date 3/9/2022					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Total Suspended Solids (TSS)	SM21 2540 D	mg/L	1.03	18.3	No limit
Biochemical Oxygen Demand	SM21 5210B	mg/L	2.0	354	No limit
Biochemical Oxygen Demand, Soluble	SM21 5210B	mg/L	2.0	291	No limit
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	.0002	.0027	5.0
Oil and Grease; Total	EPA 1664	mg/L	1.03	2.06 U	250
pH	SM18 4500H	pH units	.10	7.2	5.0-12.5

If you have any questions regarding these analysis or procedures, please contact:
AWWU Industrial Pretreatment Program
Point Woronzof Wastewater Treatment Facility
Phone: 751-2253 FAX: 751-2207
E-mail: Pete.Jeskie@awwu.biz

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May 10, 2022

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

Attn: Steven Gaither

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – April 2022

1. Monthly Leachate Quantities: MSB staff and Shamrock Septic transport leachate from Central Landfill to the Turpin Street facility utilizing 6,000 and 7,000 gallon tankers, respectively. The tankers are emptied before each load of leachate and once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of April, 600,352.10 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2022.xslx.

2. Analytical Results: Casey Dresnek collected the leachate sample on April 26, 2022 at 07:29 AM at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS April 2022.pdf.

Biochemical Oxygen Demand (BOD)	565 mg/L	04/26/22 18:55
Biochemical Oxygen Demand (BOD) Soluble	544 mg/L	04/26/22 18:55
Total suspended Solids (TSS)	61.3 mg/L	04/29/22 16:27
pH	7.1 pH u.	04/28/22 16:33

3. Zinc: Zinc results are reported in semi-annual reports, the next semi-annual report will be submitted in July.

4. Spill Events: Central Landfill did not have any spill events during the month of April.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

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June 14, 2022

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – May 2022

1. Monthly Leachate Quantities: MSB staff and Shamrock Septic transport leachate from Central Landfill to the Turpin Street facility utilizing 6,000 and 7,000 gallon tankers, respectively. The tankers are emptied before each load of leachate and once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of May 724,241.92 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2022.xslx.

2. Analytical Results: Yannick Watkins collected the leachate sample on May 25, 2022 at 07:15 AM at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS May 2022.pdf.

Biochemical Oxygen Demand (BOD)	1,090 mg/L	05/26/22 10:19
Biochemical Oxygen Demand (BOD) Soluble	915 mg/L	05/26/22 11:11
Total suspended Solids (TSS)	9.5 mg/L	05/31/22 19:13
pH	7.3 pH u.	05/27/22 12:59

3. Zinc: Zinc results are reported in semi-annual reports, the next semi-annual report will be submitted in July.

4. Spill Events: Central Landfill did not have any spill events during the month of May.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

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July 6, 2022

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – June 2022

1. Monthly Leachate Quantities: MSB staff, utilizing a 6,000-gallon aluminum tanker transports leachate from Central Landfill to the Turpin Street facility. Once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of June, 219,758.08 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2022.xslx.

2. Analytical Results:Alec Rizzo collected the leachate sample on June 7, 2022 at 4:00pm at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS June 2022.pdf.

Biochemical Oxygen Demand (BOD)	1,590.0 mg/L	06/07/22 19:34
Biochemical Oxygen Demand (BOD) Soluble	1,620.0 mg/L	06/07/22 19:34
Total suspended Solids (TSS)	79.3 mg/L	06/13/22 22:13
pH	7.7 pH u.	06/14/22 08:28

3. Zinc: Zinc concentrations were measured at 1.69 mg/L during the June sampling event. This result is included in the latest semi-annual monitoring report.

4. Spill Events: Central Landfill did not have any spill events during the month of June.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

Mayor
Ethan Berkowitz

Anchorage Water & Wastewater Utility

Treatment Division

Board Chair
David M. Richards

Sample Description: **MSB Central Landfill, Permit # 4**

Sample Date: 6/6/2022

Report Date: 7/6/2022

Sample Collector: Alec Rizzo

This sample was analyzed by standard EPA protocol for wastewater. All results were validated against standard QA procedures.

Analytical Results

Sample Number					
Collection Date 6/6/2022					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Arsenic (As)	EPA 200.8	mg/L	.0004	.018	3.7
Beryllium (Be)	EPA 200.8	mg/L	.0005	ND	14.5
Cadmium (Cd)	EPA 200.8	mg/L	.00001	.0003 J	0.69
Chromium (Cr)	EPA 200.8	mg/L	.004	.17	2.77
Copper (Cu)	EPA 200.8	mg/L	.002	.09	3.38
Lead (Pb)	EPA 200.8	mg/L	.0003	.0095 J	0.69
Mercury (Hg)	EPA 245.1	mg/L	.00005	.00008 J	0.2
Nickel (Ni)	EPA 200.8	mg/L	.001	0.48	3.88
Silver (Ag)	EPA 200.8	mg/L	.0002	ND	2.5
Zinc (Zn)	EPA 200.8	mg/L	.007	1.69	5.62
Cyanide (Cn)	EPA 335.4	mg/L	.002	ND	1.7

Sample Number					
Collection Date 6/6 /2022					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Total Suspended Solids (TSS)	SM21 2540 D	mg/L	2.07	79.3	No limit
Biochemical Oxygen Demand	SM21 5210B	mg/L	2.0	1,590	No limit
Biochemical Oxygen Demand, Soluble	SM21 5210B	mg/L	2.0	1,620	No limit
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	.002	ND	5.0
Oil and Grease; Total	EPA 1664	mg/L	1.06	8.51	250
pH	SM18 4500H	pH units	.10	7.7	5.0-12.5

If you have any questions regarding these analysis or procedures, please contact:
AWWU Industrial Pretreatment Program
Point Woronzof Wastewater Treatment Facility
Phone: 751-2253 FAX: 751-2207
E-mail: Pete.Jeskie@awwu.biz

MATANUSKA-SUSITNA BOROUGH
Public Works Department
Solid Waste Division

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E-mail: Brett.Olson@matsugov.us

August 17, 2022

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – July 2022

1. Monthly Leachate Quantities: MSB staff, utilizing a 6,000-gallon aluminum tanker transports leachate from Central Landfill to the Turpin Street facility. Once leachate is loaded at the Central Landfill it is transported directly to the Turpin Street AWWU facility. During the month of July, 193,657.49 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2022.xslx.

2. Analytical Results: Casey Dresnek collected the leachate sample on July 27, 2022 at 8:10am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc., in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS July 2022.pdf.

Biochemical Oxygen Demand (BOD)	2,830.0 mg/L	07/27/22 18:20
Biochemical Oxygen Demand (BOD) Soluble	2,710.0 mg/L	07/27/22 18:20
Total suspended Solids (TSS)	133.0 mg/L	07/28/22 17:17
pH	7.0 pH u.	08/05/22 13:00

3. Zinc: Zinc concentrations were not measured during this event. The next zinc sample will be collected in September.

4. Spill Events: Central Landfill did not have any spill events during the month of July.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

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September 14, 2022

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – August 2022

1. Monthly Leachate Quantities: MSB staff, utilizing a 6,000-gallon aluminum tanker transports leachate from Central Landfill to the Turpin Street facility. A contractor, Shamrock Septic, also provides hauling support using a 7,000-gallon tanker. Leachate is loaded at the Central Landfill and is transported directly to the AWWU Turpin Street facility. During the month of August, 660,349.70 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2022.xslx.

2. Analytical Results: Julian De La Cruz collected the leachate sample on August 24, 2022 at 7:20am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc. in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS August 2022.pdf.

Biochemical Oxygen Demand (BOD)	4,970.0 mg/L	08/24/22 19:13
Biochemical Oxygen Demand (BOD) Soluble	4,980.0 mg/L	08/24/22 19:13
Total suspended Solids (TSS)	94.0 mg/L	08/29/22 13:06
pH	6.3 pH u.	09/02/22 13:47

3. Zinc: Zinc concentrations were not measured during this event. The next zinc sample will be collected in September.

4. Spill Events: Central Landfill did not have any spill events during the month of August.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

Mayor
Ethan Berkowitz

Anchorage Water & Wastewater Utility

Treatment Division

Board Chair
David M. Richards

Sample Description: **MSB Central Landfill, Permit # 4**

Sample Date: 9/28/2022

Report Date: 10/31/2022

Sample Collector: Brett Olson

This sample was analyzed by standard EPA protocol for wastewater. All results were validated against standard QA procedures.

Analytical Results

Sample Number					
Collection Date 9/28/2022					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Arsenic (As)	EPA 200.8	mg/L	.001	.36	3.7
Beryllium (Be)	EPA 200.7	mg/L	.001	.0008 U	14.5
Cadmium (Cd)	EPA 200.8	mg/L	.001	.0037 J	0.69
Chromium (Cr)	EPA 200.8	mg/L	.001	.185	2.77
Copper (Cu)	EPA 200.8	mg/L	.001	.0614	3.38
Lead (Pb)	EPA 200.8	mg/L	.001	.0108	0.69
Mercury (Hg)	EPA 245.1	mg/L	.0005	.00015 J	0.2
Nickel (Ni)	EPA 200.8	mg/L	.001	.422	3.88
Silver (Ag)	EPA 200.8	mg/L	.001	.002 J	2.5
Zinc (Zn)	EPA 200.7	mg/L	.001	2.74	5.62
Cyanide (Cn)	Kelada-01	mg/L	.001	.007	1.7

Sample Number					
Collection Date 9/28/2022					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Total Suspended Solids (TSS)	SM21 2540 D	mg/L	10.0	70.0	No limit
Biochemical Oxygen Demand	SM21 5210B	mg/L	6,000.0	6,480.0	No limit
Biochemical Oxygen Demand, Soluble	SM21 5210B	mg/L	6,000.0	7,530.0	No limit
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	.005	.13109	5.0
Oil and Grease; Total	EPA 1664	mg/L	4.08	1.53 J	250
pH	SM21 4500HB	pH units	.10	6.1	5.0-12.5

If you have any questions regarding these analysis or procedures, please contact:
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E-mail: Pete.Jeskie@awwu.biz

MATANUSKA-SUSITNA BOROUGH
Public Works Department
Solid Waste Division

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October 14, 2022

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – September 2022

1. Monthly Leachate Quantities: MSB staff, utilizing a 6,000-gallon aluminum tanker transports leachate from Central Landfill to the Turpin Street facility. A contractor, Shamrock Septic, also provides hauling support using a 7,000-gallon tanker. Leachate is loaded at the Central Landfill and is transported directly to the AWWU Turpin Street facility. During the month of September, 626,383.23 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2022.xslx.

2. Analytical Results: Brett Olson collected the leachate sample on September 28, 2022 at 7:32am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc. in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS September 2022.pdf.

Biochemical Oxygen Demand (BOD)	6,480.0 mg/L	09/29/22 14:47
Biochemical Oxygen Demand (BOD) Soluble	7,530.0 mg/L	09/29/22 14:18
Total suspended Solids (TSS)	70.0 mg/L	10/03/22 18:25
pH	6.1 pH u.	10/05/22 20:16

3. Zinc: A Zinc sample was collected during this event but results are not available as of the date of this report. Zinc concentrations will be included with the October monthly report (November 2022).

4. Spill Events: Central Landfill did not have any spill events during the month of September.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

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November 14, 2022

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – October 2022

1. Monthly Leachate Quantities: MSB staff, utilizing a 6,000-gallon aluminum tanker transports leachate from Central Landfill to the Turpin Street facility. A contractor, Shamrock Septic, also provides hauling support using a 7,000-gallon tanker. Leachate is loaded at the Central Landfill and is transported directly to the AWWU Turpin Street facility. During the month of October, 413,736.53 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2022.xslx.

2. Analytical Results: Brett Olson collected the leachate sample on October 31, 2022 at 7:34am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc. in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS October 2022.pdf.

Biochemical Oxygen Demand (BOD)	4,940.0 mg/L	11/01/22 14:20
Biochemical Oxygen Demand (BOD) Soluble	5,960.0 mg/L	11/01/22 14:03
Total suspended Solids (TSS)	176.0 mg/L	10/31/22 15:50
pH	7.3 pH u.	10/31/22 13:22

3. Zinc: A Zinc sample was not collected during this sampling event. The next zinc sample is scheduled for December 2022.

4. Spill Events: Central Landfill did not have any spill events during the month of October.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

MATANUSKA-SUSITNA BOROUGH
Public Works Department
Solid Waste Division

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December 6, 2022

To: Anchorage Water & Wastewater Utility, Treatment Division - Pretreatment Section

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report – November 2022

1. Monthly Leachate Quantities: MSB staff, utilizing a 6,000-gallon aluminum tanker transports leachate from Central Landfill to the Turpin Street facility. A contractor, Shamrock Septic, also provides hauling support using a 7,000-gallon tanker as needed. Shamrock was not utilized during the month of November. Leachate is loaded at the Central Landfill and is transported directly to the AWWU Turpin Street facility. During the month of November, 201,465.87 gallons of leachate were transported to the Turpin Street facility. Leachate quantities are detailed in the attached spreadsheet: Monthly Leachate 2014-2022.xslx.

2. Analytical Results: Casey Dresnek collected the leachate sample on November 15, 2022 at 6:52am at the leachate pumping cabinet (Outfall 001) located at the Central Landfill. The sample was then transported to SGS North America Inc. in Anchorage, Alaska. The sample was analyzed on the dates and times shown next to the results listed below. Complete analysis report by SGS is attached as SGS November 2022.pdf.

Biochemical Oxygen Demand (BOD)	3,610.0 mg/L	11/15/22 14:53
Biochemical Oxygen Demand (BOD) Soluble	3,620.0 mg/L	11/15/22 14:53
Total suspended Solids (TSS)	39.0 mg/L	11/18/22 16:26
pH	7.0 pH u.	11/18/22 10:46

3. Zinc: A Zinc sample was not collected during this sampling event. The next zinc sample is scheduled for December 2022.

4. Spill Events: Central Landfill did not have any spill events during the month of November.

5. Pollutants: Pollutants are not monitored more frequently by Central Landfill than required by this permit.

Anchorage Water & Wastewater Utility

Treatment Division

Mayor
Ethan Berkowitz

Board Chair
David M. Richards

Sample Description: **MSB Central Landfill, Permit # 4**

Sample Date: 12/27/2022

Report Date: 2/6/2022

Sample Collector: Brett Olson

This sample was analyzed by standard EPA protocol for wastewater. All results were validated against standard QA procedures.

Analytical Results

Sample Number					
Collection Date 12/27/2022					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Arsenic (As)	EPA 200.8	mg/L	.001	.0192 J	3.7
Beryllium (Be)	EPA 200.7	mg/L	.001	.0008 U	14.5
Cadmium (Cd)	EPA 200.8	mg/L	.001	.000962 J	0.69
Chromium (Cr)	EPA 200.8	mg/L	.001	.478	2.77
Copper (Cu)	EPA 200.8	mg/L	.001	.0882	3.38
Lead (Pb)	EPA 200.8	mg/L	.001	.0208	0.69
Mercury (Hg)	EPA 245.1	mg/L	.0005	.000191	0.2
Nickel (Ni)	EPA 200.8	mg/L	.001	.657	3.88
Silver (Ag)	EPA 200.8	mg/L	.001	.002 U	2.5
Zinc (Zn)	EPA 200.7	mg/L	.001	0.999	5.62
Cyanide (Cn)	Kelada-01	mg/L	.001	.015	1.7

Sample Number					
Collection Date 9/28/2022					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Total Suspended Solids (TSS)	SM21 2540 D	mg/L	1.0	124.0	No limit
Biochemical Oxygen Demand	SM21 5210B	mg/L	4,000.0	21,100.0	No limit
Biochemical Oxygen Demand, Soluble	SM21 5210B	mg/L	4,000.0	21,500.0	No limit
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	.05	.17574	5.0
Oil and Grease; Total	EPA 1664	mg/L	4.08	1.53 J	250
pH	SM21 4500HB	pH units	.10	5.5	5.0-12.5

If you have any questions regarding these analysis or procedures, please contact:
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Phone: 751-2253 FAX: 751-2207
E-mail: Pete.Jeskie@awwu.biz

ANCHORAGE WATER & WASTEWATER UTILITY

Dan Sullivan,
Mayor

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

Owned by the
Municipality of Anchorage

MSBCL

SAMPLE DATE: 7.27.2022 SAMPLED BY POTW ANNUAL SAMPLING EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.00959	3.7
Beryllium	200.8	mg/L	0.0002	14.5
Cadmium	200.8	mg/L	0.000184	0.69
Chromium	200.8	mg/L	0.0497	2.77
Copper	200.8	mg/L	0.103	3.38
Cyanide	335.4	mg/L	0.0058	1.7
Lead	200.8	mg/L	0.0473	0.69
Mercury	245.1	mg/L	0.00017	0.2
Nickel	200.8	mg/L	0.13	3.88
Silver	200.8	mg/L	0.0005	2.5
Zinc	200.8	mg/L	0.587	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.004716	5.0
Oil & Grease HEM	SM 1664A	mg/L	1.33	250
pH			7.13	

MATANUSKA-SUSITNA BOROUGH

Public Works Department

Solid Waste Division

350 East Dahlia Avenue • Palmer, AK 99645
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Date: 2/9/23

To: Anchorage Water and Wastewater Utility - Treatment Division, Pretreatment Section

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report

Monthly Leachate Report: January 2023

1. Monthly Leachate Quantities
    a. Monthly Leachate Hauled by MSB Staff to AWWU: 202,788 gallons
    b. Monthly Leachate Hauled by Contractors to AWWU: 0 gallons
    c. Total Monthly Leachate Hauled to AWWU: 202,788 gallons
2. Analytical Results
    a. Laboratory: SGS
    b. Sampler Collector: Casey Dresnek
    c. Sample Date: 1/25/23
    d. Sample Time: 7:10AM
    e. Results:
        i. BOD: 6,000 mg/l (U flag)
        ii. BOD Soluble: 4,030 mg/l
        iii. Total Suspended Solids: 54.0 mg/l
        iv. pH: 7.1
3. Zinc Results
    a. Zinc was not tested during this monitoring period
    b. Zinc concentration during this monitoring period was: N/A
    c. The next scheduled zinc test is scheduled for: February 2023

4. The MSB did/did not have any spill during this monitoring period.

5. Pollutants are not monitored more frequently than required by this permit.

MATANUSKA-SUSITNA BOROUGH

Public Works Department
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Date: 3/7/23

To: Anchorage Water and Wastewater Utility - Treatment Division, Pretreatment Section

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report

Monthly Leachate Report: February 2023

1. Monthly Leachate Quantities
    a. Monthly Leachate Hauled by MSB Staff to AWWU: 143,470.66
    b. Monthly Leachate Hauled by Contractors to AWWU: 175,168.86
    c. Total Monthly Leachate Hauled to AWWU: 318,639.52
2. Analytical Results
    a. Laboratory: SGS
    b. Sampler Collector: Casey Dresnek
    c. Sample Date: 2/15/23
    d. Sample Time: 7:20AM
    e. Results:
        i. BOD: 4,880 mg/l
        ii. BOD Soluble: 4,230 mg/l
        iii. Total Suspended Solids: 76.0 mg/l
        iv. pH: 7.2
3. Zinc Results
    a. Zinc was tested during this monitoring period
    b. Zinc concentration during this monitoring period was: 1.04 mg/l
    c. The next scheduled zinc test is scheduled for: May 2023

4. The MSB did/did not have any spill during this monitoring period.

5. Pollutants are not monitored more frequently than required by this permit.

Sample Description: **MSB Central Landfill, Permit # 4**

Sample Date: 02/15/2023

Report Date: 06/20/2023

Sample Collector: Casey Dresnek

This sample was analyzed by standard EPA protocol for wastewater. All results were validated against standard QA procedures.

Analytical Results

Sample Number					
Collection Date 02/15/2023					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Arsenic (As)	EPA 200.8	mg/L	.01	.0365	3.7
Beryllium (Be)	EPA 200.7	mg/L	.0008	.0008 U	14.5
Cadmium (Cd)	EPA 200.8	mg/L	.001	.00129 J	0.69
Chromium (Cr)	EPA 200.8	mg/L	.01	.242	2.77
Copper (Cu)	EPA 200.8	mg/L	.006	.152	3.38
Lead (Pb)	EPA 200.8	mg/L	.004	.0288	0.69
Mercury (Hg)	EPA 245.1	mg/L	.0002	.00034	0.2
Nickel (Ni)	EPA 200.8	mg/L	.004	.725	3.88
Silver (Ag)	EPA 200.8	mg/L	.002	.002 U	2.5
Zinc (Zn)	EPA 200.7	mg/L	.02	1.04	5.62
Cyanide (Cn)	Kelada-01	mg/L	.005	.014	1.7

Sample Number					
Collection Date 02/15/2023					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Total Suspended Solids (TSS)	SM21 2540 D	mg/L	1.0	124.0	No limit
Biochemical Oxygen Demand	SM21 5210B	mg/L	1,500.0	4,880.0	No limit
Biochemical Oxygen Demand, Soluble	SM21 5210B	mg/L	2,000.0	4,230.0	No limit
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	.05	.09527	5.0
Oil and Grease; Total	EPA 1664	mg/L	20.0	25.0 J	250
pH	SM21 4500HB	pH units	.10	7.2	5.0-12.5

If you have any questions regarding these analysis or procedures, please contact:
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MATANUSKA-SUSITNA BOROUGH

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Solid Waste Division

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Date: 4/1/23

To: Anchorage Water and Wastewater Utility - Treatment Division, Pretreatment Section

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report

Monthly Leachate Report: March 2023

1. Monthly Leachate Quantities
    a. Monthly Leachate Hauled by MSB Staff to AWWU: 302,603.59
    b. Monthly Leachate Hauled by Contractors to AWWU: 213,734.13
    c. Total Monthly Leachate Hauled to AWWU: 516,337.72
2. Analytical Results
    a. Laboratory: SGS
    b. Sampler Collector: Casey Dresnek
    c. Sample Date: 3/15/23
    d. Sample Time: 6:55AM
    e. Results:
        i. BOD: 4,160 mg/l
        ii. BOD Soluble: 5,100 mg/l
        iii. Total Suspended Solids: 100.0 mg/l
        iv. pH: 6.9
3. Zinc Results
    a. Zinc was not tested during this monitoring period
    b. Zinc concentration during this monitoring period was: N/A
    c. The next scheduled zinc test is scheduled for: May 2023

4. The MSB did not have any spill during this monitoring period.

5. Pollutants are not monitored more frequently than required by this permit.

MATANUSKA-SUSITNA BOROUGH

Public Works Department

Solid Waste Division

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Date: 5/8/23

To: Anchorage Water and Wastewater Utility - Treatment Division, Pretreatment Section

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report

Monthly Leachate Report: April 2023

1. Monthly Leachate Quantities
    a. Monthly Leachate Hauled by MSB Staff to AWWU: 272,538.92
    b. Monthly Leachate Hauled by Contractors to AWWU: 315,585.63
    c. Total Monthly Leachate Hauled to AWWU: 588,124.55
2. Analytical Results
    a. Laboratory: SGS
    b. Sampler Collector: Casey Dresnek
    c. Sample Date: 4/12/23
    d. Sample Time: 6:50AM
    e. Results:
        i. BOD: 2,800 mg/l
        ii. BOD Soluble: 2,400 mg/l
        iii. Total Suspended Solids: 22.0 mg/l
        iv. pH: 7.3
3. Zinc Results
    a. Zinc was not tested during this monitoring period
    b. Zinc concentration during this monitoring period was: N/A
    c. The next scheduled zinc test is scheduled for: May 2023

4. The MSB did not have any spill during this monitoring period.

5. Pollutants are not monitored more frequently than required by this permit.

MATANUSKA-SUSITNA BOROUGH

Public Works Department
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E-mail: Brett.Olson@matsugov.us

Date: 6/8/23

To: Anchorage Water and Wastewater Utility - Treatment Division, Pretreatment Section

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report

Monthly Leachate Report: May 2023

1. Monthly Leachate Quantities
    a. Monthly Leachate Hauled by MSB Staff to AWWU: 117,202.40
    b. Monthly Leachate Hauled by Contractors to AWWU: 382,491.01
    c. Total Monthly Leachate Hauled to AWWU: 499,693.41
2. Analytical Results
    a. Laboratory: SGS
    b. Sampler Collector: Brett Olson
    c. Sample Date: 5/24/23
    d. Sample Time: 7:40AM
    e. Results:
        i. BOD: 2,930 mg/l
        ii. BOD Soluble: 2,830 mg/l
        iii. Total Suspended Solids: 128.0 mg/l
        iv. pH: 6.9
3. Zinc Results
    a. Zinc was not tested during this monitoring period
    b. Zinc concentration during this monitoring period was: N/A
    c. The next scheduled zinc test is scheduled for: June 2023

4. The MSB did not have any spill during this monitoring period.

5. Pollutants are not monitored more frequently than required by this permit.

MATANUSKA-SUSITNA BOROUGH

Public Works Department
Solid Waste Division

350 East Dahlia Avenue • Palmer, AK 99645
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Date: 7/10/23

To: Anchorage Water and Wastewater Utility - Treatment Division, Pretreatment Section

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report

June

Monthly Leachate Report: ~~May~~ 2023

1. Monthly Leachate Quantities
    a. Monthly Leachate Hauled by MSB Staff to AWWU: 100,730.54
    b. Monthly Leachate Hauled by Contractors to AWWU: 203,726.95
    c. Total Monthly Leachate Hauled to AWWU: 304,457.49
2. Analytical Results
    a. Laboratory: SGS
    b. Sampler Collector: Casey Dresnek
    c. Sample Date: 6/28/23
    d. Sample Time: 7:21AM
    e. Results:
        i. BOD: 2,930 mg/l
        ii. BOD Soluble: 12,600 mg/l
        iii. Total Suspended Solids: 12,900 mg/l
        iv. pH: 6.8
3. Zinc Results
    a. Zinc was not tested during this monitoring period
    b. Zinc concentration during this monitoring period was: N/A
    c. The next scheduled zinc test is scheduled for: Quarter 1 2023

4. The MSB did not have any spill during this monitoring period.

5. Pollutants are not monitored more frequently than required by this permit.

ANCHORAGE WATER & WASTEWATER UTILITY

Dan Sullivan,
Mayor

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

Owned by the
Municipality of Anchorage

COMPANY NAME

SAMPLE DATE: 6.5.2023 SAMPLED BY POTW ANNUAL SAMPLING EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.0310	3.7
Beryllium	200.8	mg/L	0.0002	14.5
Cadmium	200.8	mg/L	0.0004	0.69
Chromium	200.8	mg/L	0.212	2.77
Copper	200.8	mg/L	0.033	3.38
Cyanide	335.4	mg/L	0.0025	1.7
Lead	200.8	mg/L	0.0017	0.69
Mercury	245.1	mg/L	0.001	0.2
Nickel	200.8	mg/L	0.504	3.88
Silver	200.8	mg/L	0.0005	2.5
Zinc	200.8	mg/L	0.439	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.15196	5.0
Oil & Grease HEM	SM 1664A	mg/L	7.04	250
pH			7.4	5.0-12.5
BOD	SM21 5210B	mg/L	1150	
SBOD	SM21 5210B	mg/L	1100	
TSS	SM21 2540D	mg/L	70.0	

MATANUSKA-SUSITNA BOROUGH

Public Works Department
Solid Waste Division

350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 861-7604 • Fax (907) 861-7609
E-mail: Brett.Olson@matsugov.us

Date: 8/8/23

To: Anchorage Water and Wastewater Utility - Treatment Division, Pretreatment Section

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report

Monthly Leachate Report: ~~May~~ July 2023

1. Monthly Leachate Quantities
    a. Monthly Leachate Hauled by MSB Staff to AWWU: 0.00
    b. Monthly Leachate Hauled by Contractors to AWWU: 0.00
    c. Total Monthly Leachate Hauled to AWWU: 0.00
2. Analytical Results
    a. Laboratory: SGS
    b. Sampler Collector: Brett Olson
    c. Sample Date: 7/26/23
    d. Sample Time: 7:12AM
    e. Results:
        i. BOD: 16,100 mg/l
        ii. BOD Soluble: 17,200 mg/l
        iii. Total Suspended Solids: 150 mg/l
        iv. pH: 6.9
3. Zinc Results
    a. Zinc was tested during this monitoring period.
    b. Zinc concentration during this monitoring period was: Results Pending
    c. The next scheduled zinc test is scheduled for: July 2023

4. The MSB did not have any spill during this monitoring period.

5. Pollutants are not monitored more frequently than required by this permit.

Anchorage Water & Wastewater Utility

Treatment Division

Mayor
Ethan Berkowitz

Board Chair
David M. Richards

Sample Description: **MSB Central Landfill, Permit # 4**

Sample Date: 7/26/2023

Report Date: 1/15/2024

Sample Collector: Brett Olson

This sample was analyzed by standard EPA protocol for wastewater. All results were validated against standard QA procedures.

Analytical Results

Sample Number					
Collection Date 12/12/2023					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Arsenic (As)	EPA 200.8	mg/L	.0015	.0325	3.7
Beryllium (Be)	EPA 200.8	mg/L	.00325	.0002 U	14.5
Cadmium (Cd)	EPA 200.8	mg/L	.0005	.0021	0.69
Chromium (Cr)	EPA 200.8	mg/L	.005	.332	2.77
Copper (Cu)	EPA 200.8	mg/L	.005	.432	3.38
Lead (Pb)	EPA 200.8	mg/L	.001	.0105	0.69
Mercury (Hg)	EPA 245.1	mg/L	.0000125	.0000728	0.2
Nickel (Ni)	EPA 200.8	mg/L	.0062	.000723	3.88
Silver (Ag)	EPA 200.8	mg/L	.00031	.0005 U	2.5
Zinc (Zn)	EPA 200.7	mg/L	.0031	5.51	5.62
Cyanide (Cn)	SM21 4500	mg/L	.002	.0011	1.7

Sample Number					
Collection Date 12/12/2023					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Total Suspended Solids (TSS)	SM21 2540 D	mg/L	10.0	150.0	No limit
Biochemical Oxygen Demand	SM21 5210B	mg/L	6,000.0	16100	No limit
Biochemical Oxygen Demand, Soluble	SM21 5210B	mg/L	6,000.0	17200	No limit
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	.005	.0556	5.0
Oil and Grease; Total	EPA 1664	mg/L	6.67	77.3	250
pH	SM21 4500HB	pH units	.10	6.9	5.0-12.5

If you have any questions regarding these analysis or procedures, please contact:
AWWU Industrial Pretreatment Program
Point Woronzof Wastewater Treatment Facility
Phone: 751-2253 FAX: 751-2207
E-mail: Pete.Jeskie@awwu.biz

MATANUSKA-SUSITNA BOROUGH

Public Works Department
Solid Waste Division

350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 861-7604 • Fax (907) 861-7609
E-mail: Brett.Olson@matsugov.us

Date: 9/13/23

To: Anchorage Water and Wastewater Utility - Treatment Division, Pretreatment Section

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report

Monthly Leachate Report: August 2023

1. Monthly Leachate Quantities
    a. Monthly Leachate Hauled by MSB Staff to AWWU: 0.00
    b. Monthly Leachate Hauled by Contractors to AWWU: 211,219.16
    c. Total Monthly Leachate Hauled to AWWU: 211,219.16
2. Analytical Results
    a. Laboratory: SGS
    b. Sampler Collector: Casey Dresnek
    c. Sample Date: 8/29/23
    d. Sample Time: 7:20AM
    e. Results:
        i. BOD: 9,600 mg/l
        ii. BOD Soluble: 7,320 mg/l
        iii. Total Suspended Solids: 80 mg/l
        iv. pH: 6.8
3. Zinc Results
    a. Zinc was not tested during this monitoring period.
    b. Zinc concentration during this monitoring period was: N/A
    c. The next scheduled zinc test is scheduled for: October 2023

4. The MSB did not have any spill during this monitoring period.

5. Pollutants are not monitored more frequently than required by this permit.

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350 East Dahlia Avenue • Palmer, AK 99645
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E-mail: Brett.Olson@matsugov.us

Date: 10/10/23

To: Anchorage Water and Wastewater Utility - Treatment Division, Pretreatment Section

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report

Monthly Leachate Report: September 2023

1. Monthly Leachate Quantities
    a. Monthly Leachate Hauled by MSB Staff to AWWU: 106,275.24
    b. Monthly Leachate Hauled by Contractors to AWWU: 263,449.31
    c. Total Monthly Leachate Hauled to AWWU: 369,724.55
2. Analytical Results
    a. Laboratory: SGS
    b. Sampler Collector: Brett Olson
    c. Sample Date: 9/25/23
    d. Sample Time: 7:14AM
    e. Results:
        i. BOD: 10,100 mg/l
        ii. BOD Soluble: 10,400 mg/l
        iii. Total Suspended Solids: 74.3 mg/l
        iv. pH: 6.5
3. Zinc Results
    a. Zinc was not tested during this monitoring period.
    b. Zinc concentration during this monitoring period was: N/A
    c. The next scheduled zinc test is scheduled for: October 2023

4. The MSB did not have any spill during this monitoring period.

5. Pollutants are not monitored more frequently than required by this permit.

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350 East Dahlia Avenue • Palmer, AK 99645
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E-mail: Brett.Olson@matsugov.us

Date: 11/7/23

To: Anchorage Water and Wastewater Utility - Treatment Division, Pretreatment Section

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report

Monthly Leachate Report: October 2023

1. Monthly Leachate Quantities
    a. Monthly Leachate Hauled by MSB Staff to AWWU: 256,455.09
    b. Monthly Leachate Hauled by Contractors to AWWU: 309,525.75
    c. Total Monthly Leachate Hauled to AWWU: 565,980.84
2. Analytical Results
    a. Laboratory: SGS
    b. Sampler Collector: Brett Olson
    c. Sample Date: 10/26/23
    d. Sample Time: 7:14AM
    e. Results:
        i. BOD: 17,800 mg/l
        ii. BOD Soluble: 14,000 mg/l
        iii. Total Suspended Solids: 104 mg/l
        iv. pH: 6.2
3. Zinc Results
    a. Zinc was not tested during this monitoring period.
    b. Zinc concentration during this monitoring period was: N/A
    c. The next scheduled zinc test is scheduled for: November 2023

4. The MSB did not have any spill during this monitoring period.

5. Pollutants are not monitored more frequently than required by this permit.

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E-mail: Brett.Olson@matsugov.us

Date: 12/12/23

To: Anchorage Water and Wastewater Utility - Treatment Division, Pretreatment Section

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report

Monthly Leachate Report: November 2023

1. Monthly Leachate Quantities
    a. Monthly Leachate Hauled by MSB Staff to AWWU: 133,698.20
    b. Monthly Leachate Hauled by Contractors to AWWU: 181,707.79
    c. Total Monthly Leachate Hauled to AWWU: 315,405.99
2. Analytical Results
    a. Laboratory: SGS
    b. Sampler Collector: Casey Dresnek
    c. Sample Date: 11/29/23
    d. Sample Time: 7:20 AM
    e. Results:
        i. BOD: 13,200 mg/l
        ii. BOD Soluble: 10,700 mg/l
        iii. Total Suspended Solids: 313 mg/l
        iv. pH: 6.8
3. Zinc Results
    a. Zinc was not tested during this monitoring period.
    b. Zinc concentration during this monitoring period was: N/A
    c. The next scheduled zinc test is scheduled for: December 2023

4. The MSB did not have any spill during this monitoring period.

5. Pollutants are not monitored more frequently than required by this permit.

Anchorage Water & Wastewater Utility
Treatment Division
Mayor
Ethan Berkowitz
Board Chair
David M. Richards

Sample Description: **MSB Central Landfill, Permit # 4**

Sample Date: 12/12/2023

Report Date: 1/15/2024

Sample Collector: Brett Olson

This sample was analyzed by standard EPA protocol for wastewater. All results were validated against standard QA procedures.

Analytical Results

Sample Number					
Collection Date 12/12/2023					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Arsenic (As)	EPA 200.8	mg/L	.0375	.0625 U	3.7
Beryllium (Be)	EPA 200.8	mg/L	.00325	.005 U	14.5
Cadmium (Cd)	EPA 200.8	mg/L	.00375	.00625 U	0.69
Chromium (Cr)	EPA 200.8	mg/L	.0625	.304	2.77
Copper (Cu)	EPA 200.8	mg/L	.025	.190	3.38
Lead (Pb)	EPA 200.8	mg/L	.0125	.025 U	0.69
Mercury (Hg)	EPA 245.1	mg/L	.0000125	.000183	0.2
Nickel (Ni)	EPA 200.8	mg/L	.0155	.929	3.88
Silver (Ag)	EPA 200.8	mg/L	.00775	.0125 U	2.5
Zinc (Zn)	EPA 200.7	mg/L	.0775	6.68	5.62
Cyanide (Cn)	SM21 4500	mg/L	.002	.0094	1.7

Sample Number					
Collection Date 12/12/2023					
Parameter	**Method**	**Unit**	**MRL**	**Result**	**Limit**
Total Suspended Solids (TSS)	SM21 2540 D	mg/L	10.0	157.0	No limit
Biochemical Oxygen Demand	SM21 5210B	mg/L	6,000.0	16300	No limit
Biochemical Oxygen Demand, Soluble	SM21 5210B	mg/L	6,000.0	27100	No limit
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	.005	.2138	5.0
Oil and Grease; Total	EPA 1664	mg/L	4.08	29.2	250
pH	SM21 4500HB	pH units	.10	6.1	5.0-12.5

If you have any questions regarding these analysis or procedures, please contact:
AWWU Industrial Pretreatment Program
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350 East Dahlia Avenue • Palmer, AK 99645
Phone (907) 861-7604 • Fax (907) 861-7609
E-mail: Brett.Olson@matsugov.us

Date: 1/2/24

To: Anchorage Water and Wastewater Utility - Treatment Division, Pretreatment Section

From: Matanuska-Susitna Borough Solid Waste Division

Subject: Monthly Leachate Report

Monthly Leachate Report: December 2023

1. Monthly Leachate Quantities
    a. Monthly Leachate Hauled by MSB Staff to AWWU: 66,301.80
    b. Monthly Leachate Hauled by Contractors to AWWU: 136.428.70
    c. Total Monthly Leachate Hauled to AWWU: 202,730.50
2. Analytical Results
    a. Laboratory: SGS
    b. Sampler Collector: Brett Olson
    c. Sample Date: 12/12/23
    d. Sample Time: 7:12 AM
    e. Results:
        i. BOD: 16,300 mg/l
        ii. BOD Soluble: 27,100 mg/l
        iii. Total Suspended Solids: 157 mg/l
        iv. pH: 6.1
3. Zinc Results
    a. Zinc was not tested during this monitoring period.
    b. Zinc concentration during this monitoring period was: N/A
    c. The next scheduled zinc test is scheduled for: December 2023

4. The MSB did not have any spill during this monitoring period.

5. Pollutants are not monitored more frequently than required by this permit.

PERMIT #1-Merrill Field Landfill

Table 3

Anchorage Water Wastewater Utility (AWWU) Industrial Pretreatment Program Historical Data - Merrill Field Landfill (MFL202)

Parameter	Arsenic	Beryllium	BOD	BOD Sol	Cadmium	Chromium	Copper	Cyanide	Lead	Mercury	Nickel	O&G	pH	Silver	TAH*	TSS	Zinc
Permit Limit	3.7 mg/L	14.5 mg/L	NA	NA	0.69 mg/L	2.77 mg/L	3.38 mg/L	1.7 mg/L	0.69 mg/L	0.2 mg/L	3.88 mg/L	250 mg/L	-	2.5 mg/L	5.0 mg/L	NA	5.62 mg/L
4/9/2002	0.0105	-	115	-	ND	ND	0.0017	ND	0.001	ND	0.021	-	6.90	-	0.013	54	0.113
9/19/2002	0.0106	-	108	-	ND	ND	0.0015	ND	0.0005	ND	0.0192	ND	6.81	-	0.020	48	0.0791
3/4/2003	0.0132	-	94.5	-	ND	ND	ND	ND	0.0008	ND	0.0199	7.4	7.60	-	0.023	64	0.137
9/4/2003	0.0108	-	109	-	ND	0.0035	0.0016	ND	0.0007	ND	0.0193	ND	6.67	-	0.022	50	0.0744
3/25/2004	0.0119	-	89	-	ND	0.0036	0.0016	0.0088	0.0006	ND	0.021	5.1	6.53	-	0.0049	54.8	0.108
9/14/2004	0.0083	-	71.4	-	ND	0.0038	ND	ND	0.0005	ND	0.0162	ND	7.03	ND	0.0199	38.0	0.0455
3/8/2005	0.0112	-	123	97.5	ND	0.00436	0.00161	0.0060	0.000624	0.000222	0.0202	ND	5.83	ND	0.0307	48.9	0.0543
9/13/2005	ND	-	76.8	70.5	ND	ND	ND	ND	0.585	ND	0.017	ND	6.8	ND	0.02876	15.0	0.0395
4/12/2006	ND	-	70.3	56.9	ND	ND	ND	ND	ND	ND	0.0197	ND	6.87	ND	0.03352	53.5	0.0368
9/15/2006	ND	-	459	482	ND	ND	ND	ND	ND	ND	0.0293	4.58	6.63	ND	0.05644	130.0	0.691
4/13/2007	ND	-	26.8	13.5	ND	0.00135	0.00157	ND	0.000450	ND	0.0177	ND	6.67	ND	0.00834	25.0	0.0268
9/7/2007	0.0118	-	161	148	ND	0.00295	0.00144	ND	0.000737	ND	0.0195	ND	6.71	ND	0.0163	75.5	0.0645
5/5/2008	0.00967	-	15.6	ND	ND	0.0038	0.0021	ND	0.000556	ND	0.0190	ND	6.59	ND	0.01582	52.0	0.0076
9/2/2008	0.00969	-	11.6	4.14	ND	0.0031	ND	0.021	0.000447	ND	0.0153	ND	6.39	ND	0.01128	37.1	ND
5/8/2009	0.00994	-	12.8	4.17	ND	0.00329	0.00103	ND	0.000475	ND	0.0175	ND	6.5	ND	0.01927	60.0	0.0053
9/10/2009	0.0105	-	13.0	4.8	ND	0.00356	0.00206	ND	0.000703	ND	0.0174	ND	6.71	ND	0.01946	45.9	0.00791
5/12/2010	0.0110	-	16.0	9.88	ND	0.00347	ND	ND	0.000516	ND	0.0164	33.0	6.87	ND	0.03196	100	0.00516
10/5/2010	0.0688	-	12.7	6.55	ND	0.00658	0.00109	ND	0.000504	ND	0.0215	ND	6.63	ND	0.01493	460	0.00586
6/24/2011	0.0105	ND	11.1	2.56	ND	0.00342	0.00108	ND	0.000444	ND	0.0186	ND	6.90	ND	0.01790	38.0	ND
10/21/2011	0.1120	-	13.0	6.03	ND	0.0180	0.00556	ND	0.00165	ND	0.0221	ND	6.30	ND	0.01321	473.0	0.0689
5/24/2012	0.0109	-	5.00	24.0	ND	0.00428	0.00141	ND	0.000765	ND	0.0196	ND	6.80	ND	0.03955	90.0[A]	0.0258
10/4/2012	0.0104	-	4.25	2.4	ND	0.00321	0.00107	ND	0.000434	ND	0.0161	ND	7.00	ND	0.02395	51.5	0.00703
6/3/2013	0.00892	-	11.9	8.97	ND	0.00424	0.00438	ND	0.000669	0.000176 J	0.0176	2.54 J	6.70	ND	0.04411	41.0	0.0261
9/13/2013	0.01160	-	12.9	10.7	ND	0.00165 J	0.00149	ND	0.000442	ND	0.0166	2.00 J	6.90	ND	0.02005	85.0	0.00512
5/6/2014	0.01030	ND	14.4	11.3	ND	0.00297	0.00102	ND	0.000536	ND	0.0169	2.00 J	6.80	ND	0.02040	57.0	0.00698
9/11/2014	0.02110	-	[B]4.51	[B]4.21	ND	0.00567	0.00144	ND	0.000507	ND	0.0212	ND	6.40	-	0.01884	118.0	0.0243
6/4/2015	0.01210	-	15.3	10.7	ND	0.00386	0.00118	ND	0.000509	ND	0.0287	3.72J	6.90	-	0.01640	34.0	0.00678
10/7/2015	0.01040	ND	36.4	39.7	ND	0.00292	0.00119	0.0043 J	0.000608	ND	0.0180	2.66J	6.90	ND	0.02100	56.0	0.023
6/17/2016	0.01110	ND	[C]10.4	[C]5.1	ND	0.00290	0.00147	0.0022 J	0.000462	ND	0.0161	ND	7.78	ND	0.01483J	114.0	0.00426 J
10/14/2016	0.0093	ND	15.3	12.2	ND	0.00136 J	0.00108	0.0022 J	0.000525	ND	0.0154	ND	7.10	ND	0.01891 J	76.0	0.00435 J
06/28/2017	0.0095	ND	7.5	10.5	ND	ND	0.018	<0.005 B	0.00067 J	0.000013 J	0.015	ND	6.80	ND	0.0136	68	0.0079 J
09/11/2017	0.011	ND	12.3	7.80	ND	0.0039 J	0.0029 J	0.003 J	0.00062 J	0.0000009 J	0.014	1.40 J	6.8	ND	0.0204	57	0.0077 J
05/09/2018	0.0063	ND [0.0010] B	17.4	11.0	0.000057 J	0.0033 J	ND [0.0050] B	ND	0.00048 J	ND	0.011	ND	6.7	ND	0.0213	63	0.0068 J
09/04/2018	0.0074	ND	8.76	6.15	ND	0.0029 J	0.0096	ND	0.00035 J	ND	0.012	ND	6.9	ND	0.0146	55	0.011
05/06/2019	0.009	ND	11.6	8.58	ND	0.003 J	0.002 J	0.004 J, B	0.0005 J	ND	0.01	ND	6.7	ND	0.0237	60	0.04
09/17/2019	0.008	ND	18.9	16.6	0.00005 J	0.002 J	0.002 J	ND	0.0004 J	ND	0.01	ND	6.9	ND	0.0127	55	0.01
10/28/2019	-	-	16.1	12.5	-	-	-	-	-	-	-	-	-	-	-	45.3	-
11/12/2019	-	-	12.3	10.2	-	-	-	-	-	-	-	-	-	-	-	57.3	-
12/02/2019	0.01	ND	11.9	9.12	ND	0.003 J	0.002 J	ND	0.0004 J	ND	0.01	ND	7.1	ND	0.019	49	0.005 J
01/03/2020	-	-	13.7	12.2	-	-	-	-	-	-	-	-	-	-	-	50.5	-
02/04/2020	-	-	13.2	10.3	-	-	-	-	-	-	-	-	-	-	-	47	
03/05/2020	0.008	ND	16.1	11.9	ND	0.002 J	ND	0.003 J	0.004 J	ND	0.02	ND	7.0	ND	0.0142 J	43	ND
04/01/2020	-	-	13.6	9.75	-	-	-	-	-	-	-	-	-	-	-	40.8	-
05/07/2020	-	-	16.6	11.2	-	-	-	-	-	-	-	-	-	-	-	32.4	-
06/04/2020	0.01	ND	14.7	11.4	ND	0.003 J	0.0008 J	ND	0.0006 J	ND	0.01	ND	6.9	ND	0.0140 J	49	0.004 J
07/02/2020	-	-	10.7	9.09	-	-	-	-	-	-	-	-	-	-	-	44	-
08/06/2020	-	-	9.03	6.12	-	-	-	-	-	-	-	-	-	-	-	43	-
09/2&15/2020	0.009	ND	13.9	11.5	ND	0.002 J	0.0003 J	0.003 J	0.0003 J	0.0005	0.01	ND	6.8	ND	0.0105	43	ND
10/08/2020	-	-	10.6	8.04	-	-	-	-	-	-	-	-	-	-	-	33.2	-
11/03/2020	-	-	17.2	15.3	-	-	-	-	-	-	-	-	-	-	-	49.5	-
12/01/2020	0.009	0.0004 J	9.12	7.02	ND	0.003 J	0.007	ND	0.0004 J	0.00006 J	0.01	ND	6.9	ND	0.015	46	0.007 J

See Notes on Page 2

Table 3

Anchorage Water Wastewater Utility (AWWU) Industrial Pretreatment Program Historical Data - Merrill Field Landfill (MFL202)

Parameter	Arsenic	Beryllium	BOD	BOD Sol	Cadmium	Chromium	Copper	Cyanide	Lead	Mercury	Nickel	O&G	pH	Silver	TAH*	TSS	Zinc
Permit Limit	3.7 mg/L	14.5 mg/L	NA	NA	0.69 mg/L	2.77 mg/L	3.38 mg/L	1.7 mg/L	0.69 mg/L	0.2 mg/L	3.88 mg/L	250 mg/L	-	2.5 mg/L	5.0 mg/L	NA	5.62 mg/L
01/05/2021	-	-	8.19	6.63	-	-	-	-	-	-	-	-	-	-	-	27.5	-
02/02/2021	-	-	18.6	18.0	-	-	-	-	-	-	-	-	-	-	-	46	-
03/02/2021	0.01	ND	7.17	6.39	ND	0.003 J	0.0004 J	ND	0.0004 J	ND	0.01	ND	7.0	ND	0.011	28	0.002 J
04/08/2021	-	-	16.8	15.8	-	-	-	-	-	-	-	-	-	-	-	38.0	-
05/06/2021	-	-	16.1	13.1	-	-	-	-	-	-	-	-	-	-	-	45.6	-
06/03/2021	0.007	ND	11.1	8.91	ND	0.002 J	0.0004 J	ND	0.0003 J	ND	0.01	ND	6.7	ND	0.021	35	0.005 J
07/08/2021	-	-	9.78	-	-	-	-	-	-	-	-	-	-	-	-	43.5	-
07/20/2021	-	-	11.1	8.52	-	-	-	-	-	-	-	-	-	-	-	62.5	-
08/03/2021	-	-	9.75	7.08	-	-	-	-	-	-	-	-	-	-	-	53.0	-
09/08/2021	0.008	ND	9.21	[D]ND	ND	ND	0.0008 J	ND	0.0003 J	ND	0.01	ND	6.7	ND	0.014	25	ND
10/05/2021	-	-	8.82	4.54	-	-	-	-	-	-	-	-	-	-	-	58.5	-
11/02/2021	-	-	7.59	82.8	-	-	-	-	-	-	-	-	-	-	-	44.0	-
12/07/2021	0.007	ND	14.1	11.9	ND	0.002 J	0.0005 J	ND	0.0003 J	0.00003 J	0.01	ND	7.1	ND	0.014	43	ND
01/13/2022	-	-	14.1	3.32	-	-	-	-	-	-	-	-	-	-	-	139	-
02/03/2022	-	-	16.6	13.7	-	-	-	-	-	-	-	-	-	-	-	61.0	-
03/03/2022	0.008	ND	18.1	11.0	ND	0.003 J	ND	ND	0.0003 J	ND	0.01	ND	6.9	ND	0.012	44	ND
04/07/2022	-	-	10.9	8.94	-	-	-	-	-	-	-	-	-	-	-	207	-
05/05/2022	-	-	10.7	7.32	-	-	-	-	-	-	-	-	-	-	-	36.5	-
06/02/2022	0.008	ND	13.7	16.7	ND	0.002 J	0.001 J	ND	0.0004 J	ND	0.01	ND	6.8	ND	0.023	60	0.006 J
07/07/2022	-	-	7.56	5.28	-	-	-	-	-	-	-	-	-	-	-	58.7	-
08/04/2022	-	-	7.38	5.49	-	-	-	-	-	-	-	-	-	-	-	103	-
09/13/2022	0.009	ND	15.7	ND	ND	0.003 J	0.0009 J	ND	0.0003 J	ND	0.01	ND	7.1	ND	0.021	29	0.003 J
10/06/2022	-	-	18.9	14.5	-	-	-	-	-	-	-	-	-	-	-	182	-
11/01/2022	-	-	17.4	11.6	-	-	-	-	-	-	-	-	-	-	-	58.5	-
12/06/2022	0.007	ND	16.6	10.4	0.00002 J	0.003 J	0.001 J	ND	0.0003 J	ND	0.01	ND	6.70	ND	0.031	48	0.002 J
01/05/2023	-	-	12.6	ND	-	-	-	-	-	-	-	-	-	-	-	40.0	-
02/07/2023	-	-	15.1	8.55	-	-	-	-	-	-	-	-	-	-	-	47.0	-
03/02/2023	0.009	0.00004 J	8.22	ND	0.00003 J	0.003 J	0.001 J	ND	0.0003 J	ND	0.01	2 J	7.0	ND	0.016	68	ND
04/06/2023	-	-	11.3	7.17	-	-	-	-	-	-	-	-	-	-	-	62.0	-
05/04/2023	-	-	26.4	8.61	-	-	-	-	-	-	-	-	-	-	-	68.0	-
06/01/2023	0.01	ND	7.00	4.84	ND	0.003 J	0.0006 J	ND	0.0003 J	ND	0.01	3 J	6.9	ND	0.022	62	0.003 J
07/06/2023	-	-	12.1	ND	-	-	-	-	-	-	-	-	-	-	-	37.3	-
08/03/2023	-	-	7.72	3.48	-	-	-	-	-	-	-	-	-	-	-	71.0	-
09/07/2023	0.008	ND	11.1	8.05	ND	0.003 J	ND	ND	0.0003 J	ND	0.01	2 J	6.8	ND	0.020	45	0.002 J
10/05/2023	-	-	12.6	7.37	-	-	-	-	-	-	-	-	-	-	-	66.0	-
11/02/2023	-	-	8.02	4.86	-	-	-	-	-	-	-	-	-	-	-	59.3	-
12/05/2023	0.008	ND	9.3	7.47	0.00007 J	0.003 J	ND	ND	0.0003 J	ND	0.01	1 J	7.0	ND	0.022	58	0.004 J
01/04/2024	-	-	8.10	6.81	-	-	-	-	-	-	-	-	-	-	-	33.0	-

Key	Description
<	Less than
>	Greater than
*	Total Aromatic Hydrocarbon (TAH) result is sum of benzene, toluene, ethylbenzene, & xylenes concentration results
mg/L	Milligrams per liter
ND	Not Detected
J	Estimated Value

Key	Description
-	Sample not analyzed for this parameter
NA	Not Applicable
[A]	TSS was analyzed out of hold time due to laboratory sample login error
[B]	BOD was over diluted due to laboratory error
[C]	BOD was analyzed on 7/7/16
[D]	Soluable BOD analyzed outside hold time due to laboratory error
B	Reported concentration potentially affected by method blank detection.

December 28, 2023

Steve Gaither
Industrial Pretreatment Program
Anchorage Water and Waste Water Utility
3000 Arctic Boulevard
Anchorage, AK 99503

Permit #2

Subject: Chugach Electric Association (CEA) George M. Sullivan Plant 2/2A.
Industrial Wastewater Discharge Permit. Compliance Report
for the Period July 1, 2023- December 31, 2023.

SELF-MONITORING REQUIREMENTS

1. CEA collected wastewater samples from Outfall 001 and the cooling tower blowdown, Outfall 003 discharge on 11/28/2023 in accordance with Part 2 of the Industrial Wastewater Discharge Permit. The samples were submitted to SGS laboratory using chain-of-custody procedures. Analytical test results are summarized in Table 1. Laboratory analysis reports are included in Attachment 1.

Table 1. Summary of Analytical Test Results from Outfall 001

Pollutant	Units	Result	Discharge Limit	Sample Location
Copper	mg/L	0.00784	1.0	Outfall 001
Zinc	mg/L	0.0242	1.0	Outfall 001
Arsenic	mg/L	0.00500U	3.7	Outfall 001
Beryllium	mg/L	0.000400U	14.5	Outfall 001
Cadmium	mg/L	0.000500U	0.69	Outfall 001
Chromium	mg/L	0.00500U	2.77	Outfall 001
Total Cyanide	mg/L	0.0050U	1.7	Outfall 001
Lead	mg/L	0.00200U	0.69	Outfall 001
Mercury	mg/L	0.000400U	0.2	Outfall 001
Nickel	mg/L	0.0292	3.88	Outfall 001
Oil or Grease HEM/TPH Silica	mg/L	4.00U	10	Outfall 001
Silver	mg/L	0.00100U	2.5	Outfall 001
Chromium	mg/L	0.00500U	2.77	Outfall 003
Zinc	mg/L	0.0100U	1.0	Outfall 003

Note:
-U – Indicates the analyte was analyzed for but not detected
-J - The quantitation is as estimate

2. The cooling tower maintenance chemicals do not contain 126 priority pollutants detectable in the final discharge. See Table 2 and Attachment 2 for engineering calculations. Additionally, samples of FloGard MS6206 were analyzed at 50 ppm and 100 ppm concentrations for mercury on 7/29/2015. Test results showed non-detectable levels of mercury (see semiannual report for July 2015 – December 2015).

Chugach Electric Association, Inc.
5601 Electron Drive, P.O. Box 196300, Anchorage, Alaska 99519-6300 • (907) 563-7494 Fax (907) 562-0027 • (800) 478-7494
www.chugachelectric.com • info@chugachelectric.com

July 14, 2023

Steve Gaither
Industrial Pretreatment Program
Anchorage Water and Waste Water Utility
3000 Arctic Boulevard
Anchorage, AK 99503

Permit #

Subject: Chugach Electric Association (CEA) George M. Sullivan Plant 2/2A.
Industrial Wastewater Discharge Permit. Compliance Report
for the Period January 1, 2023- June 30, 2023.

SELF-MONITORING REQUIREMENTS

1. CEA collected wastewater samples from Outfall 001 on 6/7/2023 in accordance with the Part 2 of the Industrial Wastewater Discharge Permit. The samples were submitted to SGS laboratory using chain-of-custody procedures. Analytical test results are summarized in Table 1. Laboratory analysis reports are included in Attachment 1.

Table 1. Summary of Analytical Test Results from Outfall 001

Pollutant	Units	Result	Discharge Limit	Sample Location
Copper	mg/L	0.00414	1.0	Outfall 001
Zinc	mg/L	0.0370	1.0	Outfall 001
Arsenic	mg/L	0.00500U	3.7	Outfall 001
Beryllium	mg/L	0.000400U	14.5	Outfall 001
Cadmium	mg/L	0.000500U	0.69	Outfall 001
Chromium	mg/L	0.00500U	2.77	Outfall 001
Total Cyanide	mg/L	0.0050U	1.7	Outfall 001
Lead	mg/L	0.00200U	0.69	Outfall 001
Mercury	mg/L	<0.50	0.2	Outfall 001
Nickel	mg/L	0.0242	3.88	Outfall 001
Oil or Grease HEM/TPH Silica	mg/L	2.00J	10	Outfall 001
Silver	mg/L	0.00191	2.5	Outfall 001

Note:
-U – Indicates the analyte was analyzed for but not detected
-J - The quantitation is as estimate

2. The cooling tower maintenance chemicals do not contain 126 priority pollutants detectable in the final discharge. See Table 2 and Attachment 2 for engineering calculations. Additionally, samples of FloGard MS6206 were analyzed at 50 ppm and 100 ppm concentrations for mercury on 7/29/2015. Test results showed non-detectable levels of mercury (see semiannual report for July 2015 – December 2015).

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
pretreatment@awwu.biz

Mayor
Ethan Berkowitz

Owned by the
Municipality of Anchorage

REPORT OF LABORATORY ANALYSIS

Permit #2

Report Date: 7.1.2023

Sample Date: 6.7.2023

Sample Collector: SWG

This sample was analyzed by standard EPA protocol for wastewater. All results were validated against standard QA procedures. No results exceeded your permit limit.

Analytical Results

Parameter	Method	Unit	Result	Limit	Sample Location
Arsenic	EPA 200.8	mg/L	0.00250	3.7	Outfall 001
Beryllium	EPA 200.8	mg/L	0.0002	14.5	Outfall 001
Cadmium	EPA 200.8	mg/L	0.00025	0.69	Outfall 001
Chromium	EPA 200.8	mg/L	0.0025	2.77	Outfall 001
Copper	EPA 200.8	mg/L	0.003	1.0	Outfall 001
Cyanide	EPA 200.8	mg/L	0.0025	1.7	Outfall 001
Lead	EPA 200.8	mg/L	0.001	0.69	Outfall 001
Mercury	EPA 245.1	mg/L	0.0001	0.2	Outfall 001
Nickel	EPA 200.8	mg/L	0.000986	3.88	Outfall 001
Silver	EPA 200.8	mg/L	0.0005	2.5	Outfall 001
Zinc	EPA 200.8	mg/L	0.0369	5.62	Outfall 001
Oil or Grease HEM	EPA 1664	mg/L	5.68	250	Outfall 001
Oil and Grease TPH	EPA 1664	mg/L	8.74	10	Outfall 001
Total Aromatic Hydrocarbons	EPA 602/624	mg/L	0.0027	5.0	Outfall 001
pH	SM18 4500H	pH units	7.5	6.0-9.6	Outfall 001
Chromium, total	EPA 200.8	mg/L	0.0025	0.2	Outfall 002
Zinc	EPA 200.8	mg/L	0.0148	1.0	Outfall 002
126 Priority Pollutant's		mg/L	NA	NA	Outfall 002

If you have any questions regarding these analysis or procedures, please contact:
AWWU Industrial Pretreatment Program
Point Woronzof Wastewater Treatment Facility
Phone: 751-2224 FAX: 751-2207
E-mail: Steven.Gaither@awwu.biz

"A New Standard of Excellence"

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
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Phone (907) 751-2219 FAX 751-2207

Permit #6

US Ecology

SAMPLE DATE: 5.22.2023 SAMPLED BY POTW ANNUAL SAMPLING EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit	Monthly Average Limit
Arsenic	200.8	mg/L	0.00344	3.7	
Beryllium	200.8	mg/L	0.00039	14.5	
Cadmium	200.8	mg/L	0.000699	0.69	
Chromium	200.8	mg/L	0.00424	0.947	0.487
Cobalt	200.8	mg/L	0.00962	56.4	18.8
Copper	200.8	mg/L	0.00986	0.405	0.301
Lead	200.8	mg/L	0.00259	0.222	0.172
Nickel	200.8	mg/L	0.0432	3.88	
Silver	200.8	mg/L	0.0005	2.5	
Tin	200.8	mg/L	0.0005	0.249	0.146
Zinc	200.8	mg/L	0.402	6.95	4.46
Mercury	EPA 245.1	mg/L		0.2	
Cyanide	SM20 4500 CN C, E	mg/L	0.011	1.7	
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.18079	5.0	N/A
pH		pH		5 to 12.5	
BOD	SM5210 B	mg/L	972		
SOLUBLE BOD	SM5210 B	mg/L	900		
TSS	SM2540 B	mg/L	19.0		
Oil & Grease, total (HEM) of animal or vegetable origin	1664	mg/L	8.49		
Oil & Grease, Nonpolar (SGT-HEM)	1664	mg/L	5.59		
Bis(2-ethylhexyl) phthalate	EPA 625	mg/L	ND	0.267	0.158
Carbazole	EPA 625	mg/L	ND	0.392	0.233
n-Decane	EPA 625	mg/L	ND	5.79	3.31
Fluoranthene	EPA 625	mg/L	ND	0.787	0.393
n-Octadecane	EPA 625	mg/L	ND	1.22	0.925

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

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Anchorage AK 99503-3898
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Ethan Berkowitz, Mayor

Owned by the Municipality of Anchorage

US ecology Alaska

Quarterly Monitoring Report 1 X January 1 through March 31 **due April 15th**
__ April 1 through June 30 **due July 15th**
__ July 1 through September 30 **due October 15th**
__ October 1 through December 31 **due January 15th**

Permit #6

Sample Date: 1-23-23

Pollutant	EPA Method	Units	Results	Detection Limit or Level	Daily Maximum Limit	Monthly Average Limit
Chromium	200.8	mg/L	0.005	0.0025	0.947	0.487
Cobalt	200.8	mg/L	0.00675	0.0012	56.4	18.8
Copper	200.8	mg/L	0.003	0.001	0.405	0.301
Lead	200.8	mg/L	0.002	0.0005	0.222	0.172
Tin	200.8	mg/L	0.001	0.00031	0.249	0.146
Zinc	200.8	mg/L	.244	0.0155	5.62	4.46
Bis(2-ethylhexyl) phthalate	EPA 625	mg/L	ND	0.01	0.267	0.158
Carbazole	EPA 625	mg/L	ND	0.01	0.392	0.233
n-Decane	EPA 625	mg/L	ND	0.01	5.79	3.31
Fluoranthene	EPA 625	mg/L	ND	0.01	0.787	0.393
n-Octadecane	EPA 625	mg/L	ND	0.01	1.22	0.925
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.01239	0.00167	5.0	N/A
pH	SM20 4500-HB	pH	5.7	0.100	5 to 12.5	
Arsenic	200.8	mg/L	0.0119	0.0015	3.7	
Beryllium	200.8	mg/L	0.0004	0.00013	14.5	
Cadmium	200.8	mg/L	0.0005	0.00015	0.69	
Cyanide	SM20 4500 CN C, E	mg/L	0.0050	0.0020	1.7	
Mercury	EPA 245.1	mg/L	0.000092	0.000092	0.2	
Nickel	200.8	mg/L	0.0459	0.00062	3.88	
Oil and Grease	EPA 1664 B	mg/L	4.0	1.00	250	
Silver	200.8	mg/L	0.001	0.00031	2.5	
BOD	SM21 5210B	mg/L	1770	1,200		
Soluble BOD	SM21 5210B	mg/L	1660	400		
TSS	SM21 2540D	mg/L	30.0	2.82		
Ammonia	SM21 4500-NH3 G	mg/L	34.2	0.310		

Review of the above monitoring data indicates US ecology Alaska (■is or □is not) in compliance with the pollutant limitations set forth in the NRC of Alaska wastewater discharge permit # 6. Note: Report violations within 24 hours of becoming aware.

Certification statement:
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature: _____ Date: 2-10-23

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

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Phone (907) 751-2219 FAX 751-2207

Ethan Berkowitz, Mayor

Owned by the Municipality of Anchorage

US ecology Alaska

Quarterly Monitoring Report 1 __January 1 through March 31 **due April 15th**
__X__ April 1 through June 30 **due July 15th**
__ July 1 through September 30 **due October 15th**
__ October 1 through December 31 **due January 15th**

Permit # 6

Sample Date: 5-1-23

Pollutant	EPA Method	Units	Results	Detection Limit or Level	Daily Maximum Limit	Monthly Average Limit
Chromium	200.8	mg/L	0.00715	0.0025	0.947	0.487
Cobalt	200.8	mg/L	0.0217	0.0012	56.4	18.8
Copper	200.8	mg/L	0.00504	0.001	0.405	0.301
Lead	200.8	mg/L	0.00109	0.0005	0.222	0.172
Tin	200.8	mg/L	0.0005	0.00031	0.249	0.146
Zinc	200.8	mg/L	0.345	0.0031	5.62	4.46
Bis(2-ethylhexyl) phthalate	EPA 625	mg/L	ND	0.01	0.267	0.158
Carbazole	EPA 625	mg/L	ND	0.01	0.392	0.233
n-Decane	EPA 625	mg/L	ND	0.01	5.79	3.31
Fluoranthene	EPA 625	mg/L	ND	0.01	0.787	0.393
n-Octadecane	EPA 625	mg/L	ND	0.01	1.22	0.925
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.11428	0.00167	5.0	N/A
pH	SM20 4500-HB	pH	5.7	0.100	5 to 12.5	
Arsenic	200.8	mg/L	0.00275	0.0015	3.7	
Beryllium	200.8	mg/L	0.000607	0.00013	14.5	
Cadmium	200.8	mg/L	0.00083	0.00015	0.69	
Cyanide	SM20 4500 CN C, E	mg/L	0.025	0.0020	1.7	
Mercury	EPA 245.1	mg/L	0.0005	0.00003	0.2	
Nickel	200.8	mg/L	0.056	0.00062	3.88	
Oil and Grease	EPA 1664 B	mg/L	11.2	1.06	250	
Silver	200.8	mg/L	0.0005	0.00031	2.5	
BOD	SM21 5210B	mg/L	3350	750		
Soluble BOD	SM21 5210B	mg/L	2660	750		
TSS	SM21 2540D	mg/L	24.0	3.10		
Ammonia	SM21 4500-NH3 G	mg/L	61.8	0.620		

Review of the above monitoring data indicates US ecology Alaska (■is or □is not) in compliance with the pollutant limitations set forth in the NRC of Alaska wastewater discharge permit # 6. Note: Report violations within 24 hours of becoming aware.

Certification statement:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature: _____ Date: 6-1-23

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

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Ethan Berkowitz, Mayor

Owned by the Municipality of Anchorage

US ecology Alaska

Quarterly Monitoring Report 1 __January 1 through March 31 **due April 15th**
__April 1 through June 30 **due July 15th**
X July 1 through September 30 **due October 15th**
__October 1 through December 31 **due January 15th**

Permit #6

Sample Date: 08-23-23

Pollutant	EPA Method	Units	Results	Detection Limit or Level	Daily Maximum Limit	Monthly Average Limit
Chromium	200.8	mg/L	0.00639	0.0025	0.947	0.487
Cobalt	200.8	mg/L	0.00336	0.0012	56.4	18.8
Copper	200.8	mg/L	0.00272	0.001	0.405	0.301
Lead	200.8	mg/L	0.00432	0.0005	0.222	0.172
Tin	200.8	mg/L	0.0005	0.00031	0.249	0.146
Zinc	200.8	mg/L	0.0345	0.0031	5.62	4.46
Bis(2-ethylhexyl) phthalate	EPA 625	mg/L	ND	0.01	0.267	0.158
Carbazole	EPA 625	mg/L	ND	0.01	0.392	0.233
n-Decane	EPA 625	mg/L	ND	0.01	5.79	3.31
Fluoranthene	EPA 625	mg/L	ND	0.01	0.787	0.393
n-Octadecane	EPA 625	mg/L	ND	0.01	1.22	0.925
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.3948	0.0167	5.0	N/A
pH	SM20 4500-HB	pH	6.1	0.100	5 to 12.5	
Arsenic	200.8	mg/L	0.00622	0.0015	3.7	
Beryllium	200.8	mg/L	0.000132	0.00013	14.5	
Cadmium	200.8	mg/L	0.000314	0.00015	0.69	
Cyanide	SM20 4500 CN C, E	mg/L	0.0033	0.0020	1.7	
Mercury	EPA 245.1	mg/L	0.0001	0.00003	0.2	
Nickel	200.8	mg/L	0.0259	0.00062	3.88	
Oil and Grease	EPA 1664 B	mg/L	4.90	1.04	250	
Silver	200.8	mg/L	0.0005	0.00031	2.5	
BOD	SM21 5210B	mg/L	1360	400		
Soluble BOD	SM21 5210B	mg/L	14800	600		
TSS	SM21 2540D	mg/L	10.0	3.10		
Ammonia	SM21 4500-NH3 G	mg/L	2.07	0.0310		

Review of the above monitoring data indicates US ecology Alaska (■is or □is not) in compliance with the pollutant limitations set forth in the NRC of Alaska wastewater discharge permit # 6. Note: Report violations within 24 hours of becoming aware.

Certification statement:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature: _____

Date: 9-13-23

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

Ethan Berkowitz, Mayor

Owned by the Municipality of Anchorage

US ecology Alaska

Quarterly Monitoring Report 4 _January 1 through March 31 **due April 15th**
__ April 1 through June 30 **due July 15th**
__ July 1 through September 30 **due October 15th**
_X_ October 1 through December 31 **due January 15th**

Permit #6

Sample Date: 10-25-23

Pollutant	EPA Method	Units	Results	Detection Limit or Level	Daily Maximum Limit	Monthly Average Limit
Chromium	200.8	mg/L	0.00255	0.0025	0.947	0.487
Cobalt	200.8	mg/L	0.0116	0.0012	56.4	18.8
Copper	200.8	mg/L	0.0108	0.003	0.405	0.301
Lead	200.8	mg/L	0.0497	0.0005	0.222	0.172
Tin	200.8	mg/L	0.0005	0.00031	0.249	0.146
Zinc	200.8	mg/L	0.106	0.0031	5.62	4.46
Bis(2-ethylhexyl) phthalate	EPA 625	mg/L	ND	0.01	0.267	0.158
Carbazole	EPA 625	mg/L	ND	0.01	0.392	0.233
n-Decane	EPA 625	mg/L	ND	0.01	5.79	3.31
Fluoranthene	EPA 625	mg/L	ND	0.01	0.787	0.393
n-Octadecane	EPA 625	mg/L	ND	0.01	1.22	0.925
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.02214	0.00167	5.0	N/A
pH	SM20 4500-HB	pH	8.4	0.100	5 to 12.5	
Arsenic	200.8	mg/L	0.003	0.0015	3.7	
Beryllium	200.8	mg/L	0.0002	0.00013	14.5	
Cadmium	200.8	mg/L	0.00255	0.00015	0.69	
Cyanide	SM20 4500 CN C, E	mg/L	0.0081	0.0020	1.7	
Mercury	EPA 245.1	mg/L	0.0001	0.00003	0.2	
Nickel	200.8	mg/L	0.0646	0.00062	3.88	
Oil and Grease	EPA 1664 B	mg/L	6.70	1.06	250	
Silver	200.8	mg/L	0.0005	0.00031	2.5	
BOD	SM21 5210B	mg/L	1990	400		
Soluble BOD	SM21 5210B	mg/L	1590	400		
TSS	SM21 2540D	mg/L	9.00	.620		
Ammonia	SM21 4500-NH3 G	mg/L	8.89	0.155		

Review of the above monitoring data indicates US ecology Alaska (■is or □is not) in compliance with the pollutant limitations set forth in the NRC of Alaska wastewater discharge permit # 6. Note: Report violations within 24 hours of becoming aware.

Certification statement:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature: _____ Date: 10-27-23

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

Dan Sullivan, Mayor

Permit # 7

Owned by the Municipality of Anchorage

Chugach Electric Southcentral

SAMPLE DATE: 6.7.2023 SAMPLED BY POTW ANNUAL SAMPLING EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.00250	3.7
Beryllium	200.8	mg/L	0.000200	14.5
Cadmium	200.8	mg/L	0.000250	0.69
Chromium	200.8	mg/L	0.00250	2.77
Copper	200.8	mg/L	0.00267	3.38
Cyanide	335.4	mg/L	0.0025	1.7
Lead	200.8	mg/L	0.00100	0.69
Mercury	245.1	mg/L	0.06	0.2
Nickel	200.8	mg/L	0.000643	3.88
Silver	200.8	mg/L	0.000500	2.5
Zinc	200.8	mg/L	0.0187	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.0027	5.0
Oil & Grease HEM	SM 1664A	mg/L	6.32	250
TPH Silica Gel HEM	SM 1664A	mg/L	4.02	
pH			7.2	

Attachment B
Summary of Analytical Results
Southcentral Power Project

Summary of Analytical Samples Collected
South Central Power Project - Industrial Pretreatment Program
Reporting Period January 1 - June 30, 2023

Bi-Annual Sampling Results for Metals, Cn, Oil & Grease, and Total Aqueous Hydrocarbons
Sample Collected - June 7, 2023

Permit #7

Pollutant	Permit Limitations mg/L	SPP - WW1		Turbine Wash	
Arsenic	3.7	0.005U	mg/L		
Beryllium	14.5	0.0004U	mg/L		
Cadmium	0.69	0.0005U	mg/L		
Chromium	2.77	0.005U	mg/L		
Copper	1.0	0.003U	mg/L	0.0207	mg/L
Cyanide	1.7	0.005U	mg/L		
Lead	0.69	0.002U	mg/L		
Mercury	0.2	<0.50	mg/L		
Nickel	3.88	0.0242	mg/L		
Silver	2.5	0.00191	mg/L		
Zinc	5.62	0.1	mg/L		
Oil & Grease HEM	250	2.00J	mg/L		
Oil & Grease TPH	10	2.00U	mg/L		
Benzene	5	0.0002U	mg/L		
Chlorobenzene	5	ND	mg/L		
Ethylbenzene	5	0.0005U	mg/L		
o-Xylene	5	0.0005U	mg/L		
P&M - Xylene	5	0.0010U	mg/L		
Toluene	5	0.0005U	mg/L		
		0.14111			

If > 10 mg/l Run TPH
Not Necessary if HEM is < 10mg/l

J- estimated value
U detection limit /not detected

Attachment B
Summary of Analytical Results
Southcentral Power Project

Permit #7

Summary of Analytical Samples Collected
South Central Power Project - Industrial Pretreatment Program
Reporting Period July 1 - December 31, 2023

Bi-Annual Sampling Results for Metals, Cu, Oil & Grease, and Total Aqueous Hydrocarbons
Sample Collected - Were not collected due to Unit 10 being out of service since 6/7/2023 - See attached email.
The Turbine Wash Sample was collected - 10/5/2023

Pollutant	Permit Limitations mg/L	SPP - WW1		Turbine Wash		
Arsenic	3.7	N/A	mg/L			
Beryllium	14.5	N/A	mg/L			
Cadmium	0.69	N/A	mg/L			
Chromium	2.77	N/A	mg/L			
Copper	1.0	N/A	mg/L	0.0516	mg/L	
Cyanide	1.7	N/A	mg/L			
Lead	0.69	N/A	mg/L			
Mercury	0.2	N/A	mg/L			
Nickel	3.88	N/A	mg/L			
Silver	2.5	N/A	mg/L			
Zinc	5.62	N/A	mg/L			
Oil & Grease HEM	250	N/A	mg/L			If > 10 mg/l Run TPH
Oil & Grease TPH	10	N/A	mg/L			Not Necessary if HEM is < 10mg/l
Benzene	5	N/A	mg/L			
Chlorobenzene	5	N/A	mg/L			
Ethylbenzene	5	N/A	mg/L			
o-Xylene	5	N/A	mg/L			
P&M - Xylene	5	N/A	mg/L			
Toluene	5	N/A	mg/L			
		0				

J- estimated value
U detection limit /not detected

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

Permit # 8

COPPER RIVER SEAFOODS

SAMPLE DATE: 8.3.2023 SAMPLED BY POTW ANNUAL SAMPLING EVENT

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Arsenic	200.8	mg/L	0.00182	3.7
Beryllium	200.8	mg/L	0.0002	14.5
Cadmium	200.8	mg/L	0.00025	0.69
Chromium	200.8	mg/L	0.0025	2.77
Copper	200.8	mg/L	0.00355	3.38
Cyanide	335.4	mg/L	0.0025	1.7
Lead	200.8	mg/L	0.001	0.69
Mercury	245.1	mg/L	0.11	0.2
Nickel	200.8	mg/L	0.00077	3.88
Silver	200.8	mg/L	0.0005	2.5
Zinc	200.8	mg/L	0.0724	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.0025	5.0
Oil & Grease HEM	SM 1664A	mg/L	19.1	250
TSS	SM 1664A	mg/L	360	
BOD		mg/L	428	

Copper River Seafoods, Inc.
1118 East 5th Avenue • Anchorage, AK 99501
Phone: (907) 522-7806 • (888) 622-1197 • Fax: (907) 222-0348
www. CopperRiverSeafoods.com

January 22, 2024

TO: Anchorage Waste and Water Utility

RE: Annual Compliance Report – Outfall 001
Anchorage - East Facility
1400 East 1st Avenue, Anchorage, AK 99501

Permit #8

To Whom It May Concern:

In compliance with Anchorage Industrial Pretreatment Program Procedures, please accept this document and the respective attachments for the annual report.

1. FISH WASTE DISCHARGE TO OUTFALL SUMMARY

MONTH	DISCHARGE (LBS)	MONTH	DISCHARGE (LBS)	MONTH	DISCHARGE (LBS)
JAN	453,027	MAY	0 (all pet food/landfill)	SEP	0 (all pet food)
FEB	283,071	JUN	0 (all pet food)	OCT	0 (all pet food)
MAR	10,092	JUL	0 (all pet food)	NOV	17,012 (grinder/pet food)
APR	0 (all pet food/landfill)	AUG	0 (all pet food)	DEC	41,422

2. ANALYTICAL RESULTS SUMMARY

SGS performed the analytical testing for the elements below.

PARAMETER	UNITS	LIMIT	Q1	Q2	Q3	Q3 (retest)	Q4
			4/26/23 (0945 hrs.) 6/5/23 (1107 hrs.) [TAH]	7/20/2023 (1125 hrs.)	9/29/23 (0750 hrs.)	10/11/23 (1115 hrs.) [Oil and Grease]	11/27/2023 (1045 hrs.)
Arsenic	mg/L	3.70	0.0039	NTR	NTR	NA	0.0075
Beryllium	mg/L	14.50	0.0002	NTR	NTR	NA	ND
Cadmium	mg/L	0.69	0.0009	NTR	NTR	NA	ND
Chromium	mg/L	2.77	0.0058	NTR	NTR	NA	0.0025
Copper	mg/L	3.38	0.0125	NTR	NTR	NA	0.01
Cyanide	mg/L	1.70	0.000004	NTR	NTR	NA	ND
Lead	mg/L	0.69	0.0009	NTR	NTR	NA	ND
Mercury	mg/L	0.20	<0.0005	NTR	NTR	NA	0.0001
Nickel	mg/L	3.88	0.0025	NTR	NTR	NA	0.0011
Silver	mg/L	2.50	ND	NTR	NTR	NA	ND
Zinc	mg/L	5.62	0.2290	NTR	NTR	NA	0.09
TAH	mg/L	5.0[2]	*	NTR	NTR	NA	*
Oil and Grease	mg/L	250	25.1	105.0	9,420	40.8	21.0
pH	mg/L	5.0-12.5	6.7	6.8	6.8	NA	7.0
BOD	mg/L	Monitoring	14,000	611	3,090	NA	123
TSS	mg/L	Monitoring	1,060	673	10,400	NA	113
LAB REPORT #	NA		1231667, 1232399	1233654	1235403	1235743	1236483
COMMENTS	NONE		TAH was missed on 4/26/23 and sampled on 6/5/23.	NONE	Oil and Grease was out of limit on 9/29/23 and resampled on 10/11/23.	NONE	NONE

NTR = No Testing Required, NA = Not Applicable
*** = See Q1 and Q4 reports for the TAH data due to TAH being a combination of multiple tests.**

3. SPILL EVENTS SUMMARY

DATE	TYPE	QUANTITY	FINAL DISPOSITION
None	N/A	N/A	N/A

I certify under penalty of law, that this document and all attachments were prepared under my direct supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chris LaCroix
Copper River Seafoods, Inc.

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

Owned by the Municipality of Anchorage

Environmental Compliance Consultants, Inc. (ECC)

Monitoring Report Permit # 12

Sampled: ECC-5.3.2023

Pollutant	EPA Method	Units	Results	Detection Limit or Level	Daily Maximum Limit	Monthly Average Limit
Chromium (Cr)	200.8	mg/L	0.0272	0.0025	0.746	0.323
Cobalt (Co)	200.8	mg/L	0.00792	0.0012	56.4	18.8
Copper (Cu)	200.8	mg/L	0.0417	0.0010	0.500	0.242
Lead (Pb)	200.8	mg/L	0.00231	0.0005	0.350	0.160
Tin (Sn)	200.8	mg/L	0.00155	0.0031	0.335	0.165
Zinc (Zn)	200.8	mg/L	2.880	0.0310	5.62	4.50
Bis(2-ethylhexyl) phthalate	EPA 625	mg/L	ND	0.005	0.215	0.101
Carbazole	EPA 625	mg/L	ND	0.005	0.598	0.276
n-Decane	EPA 625	mg/L	ND	0.001	0.948	0.437
Fluoranthene	EPA 625	mg/L	ND	0.0002	0.0537	0.0268
n-Octadecane	EPA 625	mg/L	ND	0.001	0.589	0.302
Oil and Grease	EPA 1664 A	mg/L	28.4	1.11	127	38.0
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.01351	0.0003	5.0	N/A
pH	SM20 4500-HB	pH	9.4		5 to 12.5	N/A
Arsenic (As)	200.8	mg/L	0.0766	0.0015	3.7	N/A
Beryllium (Be)	200.8	mg/L	ND	0.000130	14.5	N/A
Cadmium (Cd)	200.8	mg/L	0.00316	0.000150	0.69	N/A
Cyanide (Cn)	SM20 4500 CN C, E	mg/L	0.036	0.0020	1.7	N/A
Mercury (Hg)	EPA 245.1	mg/L	ND	0.03	0.2	N/A
Nickel (Ni)	200.8	mg/L	0.0979	0.00062	3.88	N/A
Silver (Ag)	200.8	mg/L	ND	0.00031	2.5	N/A

Pretreatment Program
Point Woronzof Wastewater Treatment Facility
Phone: 751-2253 FAX: 751-2207
E-mail: awwu.awwupretreatment@awwu.biz.00198

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

Owned by the Municipality of Anchorage

Environmental Compliance Consultants, Inc. (ECC)

Monitoring Report

Permit # 12

Sampled:7.10.2023

Pollutant	EPA Method	Units	Results	Detection Limit or Level	Daily Maximum Limit	Monthly Average Limit
Chromium (Cr)	200.8	mg/L	ND	0.015	0.746	0.323
Cobalt (Co)	200.8	mg/L	ND	0.012	56.4	18.8
Copper (Cu)	200.8	mg/L	ND	0.030	0.500	0.242
Lead (Pb)	200.8	mg/L	ND	0.005	0.350	0.160
Tin (Sn)	200.8	mg/L	ND	0.0031	0.335	0.165
Zinc (Zn)	200.8	mg/L	0.161	0.031	5.62	4.50
Bis(2-ethylhexyl) phthalate	EPA 625	mg/L	ND	0.200	0.215	0.101
Carbazole	EPA 625	mg/L	ND	0.200	0.598	0.276
n-Decane	EPA 625	mg/L	ND	0.040	0.948	0.437
Fluoranthene	EPA 625	mg/L	ND	0.008	0.0537	0.0268
n-Octadecane	EPA 625	mg/L	ND	0.040	0.589	0.302
Oil and Grease	EPA 1664 A	mg/L	28	1.0	127	38.0
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	0.0121	0.00012	5.0	N/A
pH	SM20 4500-HB	pH	9.4		5 to 12.5	N/A
Arsenic (As)	200.8	mg/L	0.234	0.015	3.7	N/A
Beryllium (Be)	200.8	mg/L	ND	0.013	14.5	N/A
Cadmium (Cd)	200.8	mg/L	0.00503	0.0015	0.69	N/A
Cyanide (Cn)	SM20 4500 CN C, E	mg/L	0.013	0.0020	1.7	N/A
Mercury (Hg)	EPA 245.1	mg/L	ND	0.005	0.2	N/A
Nickel (Ni)	200.8	mg/L	0.0964	0.00062	3.88	N/A
Silver (Ag)	200.8	mg/L	ND	0.00031	2.5	N/A

Pretreatment Program
Point Woronzof Wastewater Treatment Facility
Phone: 751-2253 FAX: 751-2207
E-mail: awwu.awwupretreatment@awwu.biz

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

Owned by the Municipality of Anchorage

Environmental Compliance Consultants, Inc. (ECC)

Monitoring Report

Permit #12

Sampled: 8/1/2023
Sample ID#: ECC-23-213-001

Pollutant	EPA Method	Units	Results	Detection Limit or Level	Daily Maximum Limit	Monthly Average Limit
Chromium (Cr)	200.8	mg/L	0.0272	0.0025	0.746	0.323
Cobalt (Co)	200.8	mg/L	0.0269	0.0012	56.4	18.8
Copper (Cu)	200.8	mg/L	0.00998	0.001	0.500	0.242
Lead (Pb)	200.8	mg/L	ND	0.0005	0.350	0.160
Tin (Sn)	200.8	mg/L	0.00301	0.000310	0.335	0.165
Zinc (Zn)	200.8	mg/L	1.850	0.0155	5.62	4.50
Bis(2-ethylhexyl) phthalate	EPA 625	mg/L	ND	0.0048	0.215	0.101
Carbazole	EPA 625	mg/L	ND	0.0048	0.598	0.276
n-Decane	EPA 625	mg/L	ND	0.00095	0.948	0.437
Fluoranthene	EPA 625	mg/L	ND	0.00019	0.0537	0.0268
n-Octadecane	EPA 625	mg/L	ND	0.00095	0.589	0.302
Oil and Grease	EPA 1664 A	mg/L	5.79	1.05	127	38.0
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	ND	0.00060	5.0	N/A
pH	SM20 4500-HB	pH	6.2	0.100	5 to 12.5	N/A
Arsenic (As)	200.8	mg/L	0.0211	0.0015	3.7	N/A
Beryllium (Be)	200.8	mg/L	ND	0.00013	14.5	N/A
Cadmium (Cd)	200.8	mg/L	ND	0.00015	0.69	N/A
Cyanide (Cn)	SM20 4500 CN C, E	mg/L	ND	0.0020	1.7	N/A
Mercury (Hg)	EPA 245.1	mg/L	ND	0.005	0.2	N/A
Nickel (Ni)	200.8	mg/L	0.0759	0.00062	3.88	N/A
Silver (Ag)	200.8	mg/L	ND	0.00031	2.5	N/A

Pretreatment Program
Point Woronzof Wastewater Treatment Facility
Phone: 751-2253 FAX: 751-2207
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ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

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3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

Owned by the Municipality of Anchorage

Environmental Compliance Consultants, Inc. (ECC)

Monitoring Report Permit # 12

Sampled: 9/18/2023
Sample ID#: ECC-23-260-001

Pollutant	EPA Method	Units	Results	Detection Limit or Level	Daily Maximum Limit	Monthly Average Limit
Chromium (Cr)	200.8	mg/L	0.0311	0.0015	0.746	0.323
Cobalt (Co)	200.8	mg/L	0.0311	0.0012	56.4	18.8
Copper (Cu)	200.8	mg/L	0.0473	0.001	0.500	0.242
Lead (Pb)	200.8	mg/L	0.00347	0.005	0.350	0.160
Tin (Sn)	200.8	mg/L	0.00107	0.00031	0.335	0.165
Zinc (Zn)	200.8	mg/L	1.360	0.0155	5.62	4.50
Bis(2-ethylhexyl) phthalate	EPA 625	mg/L	ND	0.097	0.215	0.101
Carbazole	EPA 625	mg/L	ND	0.097	0.598	0.276
n-Decane	EPA 625	mg/L	0.0767	0.019	0.948	0.437
Fluoranthene	EPA 625	mg/L	ND	0.0039	0.0537	0.0268
n-Octadecane	EPA 625	mg/L	0.0196	0.019	0.589	0.302
Oil and Grease	EPA 1664 A	mg/L	22.4	4.00	127	38.0
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	ND 0.00107 TB	0.0006	5.0	N/A
pH	SM20 4500-HB	pH	6.0	0.100	5 to 12.5	N/A
Arsenic (As)	200.8	mg/L	0.0183	0.0015	3.7	N/A
Beryllium (Be)	200.8	mg/L	ND	0.00013	14.5	N/A
Cadmium (Cd)	200.8	mg/L	0.00102	0.00250	0.69	N/A
Cyanide (Cn)	SM20 4500 CN C, E	mg/L	0.0080	0.0020	1.7	N/A
Mercury (Hg)	EPA 245.1	mg/L	ND	0.005	0.2	N/A
Nickel (Ni)	200.8	mg/L	0.147	0.00062	3.88	N/A
Silver (Ag)	200.8	mg/L	ND	0.00031	2.5	N/A

Pretreatment Program
Point Woronzof Wastewater Treatment FacilityND
Phone: 751-2253 FAX: 751-2207
E-mail: awwu.awwupretreatment@awwu.biz

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
3000 Arctic Boulevard
Anchorage AK 99503-3898
Phone (907) 751-2219 FAX 751-2207

CATIGORICAL LIMITS

Permit # 12

SAMPLED BY POTW COLLECTED 5.3.2023

Pollutant	EPA Method	Results	Units	Daily Maximum Limit	Monthly Average Limit
Arsenic, As	200.8	0.0715	mg/L	3.7	
Beryllium, Be	200.8	0.0002	mg/L	14.5	
Cadmium, Cd	200.8	0.259	mg/L	0.69	
Chromium, Cr	200.8	0.0335	mg/L	0.947	0.487
Cobalt, Co	200.8	0.782	mg/L	56.4	18.8
Copper, Cu	200.8	0.339	mg/L	0.405	0.301
Lead, Pb	200.8	0.118	mg/L	0.222	0.172
Nickel, Ni	200.8	0.104	mg/L	3.88	
Silver, Ag	200.8	0.0005	mg/L	2.5	
Tin, Sn	200.8	0.0199	mg/L	0.249	0.146
Zinc, Zn	200.8	2.88	mg/L	5.62	4.46
Mercury, Hg	245.1	0.0005	mg/L	0.2	
Cyanide	SM20 4500 CN C, E	0.031	mg/L	1.7	
Bis(2-ethylhexyl) phthalate	EPA 625	ND	mg/L	0.267	0.158
Carbazole	EPA 625	ND	mg/L	0.392	0.233
n-Decane	EPA 625	ND	mg/L	5.79	3.31
Fluoranthene	EPA 625	ND	mg/L	0.787	0.393
n-Octadecane	EPA 625	ND	mg/L	1.22	0.925
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	0.0198	mg/L	5.0	
Oil & Grease of animal or vegetable origin Oil & Grease HEM	SM 1664A	NS	mg/L	250	
TPH Silica Gel HEM	SM 1664A	5.43			
Biochemical Oxygen Demand (BOD)	SM5210 B	NS	mg/L		
BOD soluble (SBOD)	SM5210 B	NS	mg/L		
Total Suspended Solids (TSS)	SM2540 B	NS	mg/L		
pH		9.4		5.0-12.5	

Inlet World Wide

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
Phone (907) 751-2224

Permit #13

9.24.24

SAMPLE RESULTS

Pollutant	EPA Method	Results	Units	Daily Maximum Limit
Arsenic	200.8	0.00375	mg/L	3.7
Beryllium	200.8	0.0003	mg/L	14.5
Cadmium	200.8	0.000375	mg/L	0.69
Chromium	200.8	0.00375	mg/L	2.77
Copper	200.8	0.00225	mg/L	3.38
Cyanide	200.8	0.0037	mg/L	1.7
Lead	200.8	0.0015	mg/L	0.69
Mercury	1631	ND	mg/L	0.2
Nickel	200.8	0.00307	mg/L	3.88
Silver	200.8	0.00075	mg/L	2.5
Zinc	200.8	0.0429	mg/L	5.62
TAH	602/624	0.00405	mg/L	250
Oil and Grease HEM	SM 1664A	4.48	mg/L	250
TPH Silica Gel HEM	SM 1664A	3.28	mg/L	250
pH		7.24	mg/L	5.0-12.5
Biochemical Oxygen Demand (BOD)	SM5210B	2.0	mg/L	Monitoring
Total Suspended Solids (TSS)	SM2540B	2.4	mg/L	Monitoring
Diesel Range Organics (DRO)	AK102	0.512	mg/L	
Residual Range Organics (RRO)	AK103	0.745	mg/L	
Gasoline Range Organics (GRO)	AK101	0.075	mg/L	

Certification statement:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: Date: _____ Date: _____

REPORTING FORM
Inlet Worldwide, Inc.
Monitoring Report

Month: April 2024

Sample Number/Sample Collection Date: DP-042424 collected April 24, 2024

Permit #13

Pollutant	EPA Method	Units	Result	Daily Maximum Limit
Chromium	200.8	mg/L	(0.0020)	2.77
Copper	200.8	mg/L	(0.0010)	3.38
Lead	200.8	mg/L	0.00018	0.69
Zinc	200.8	mg/L	0.066	5.62
Total Aromatic Hydrocarbons (TAH) [1]	EPA 624	mg/L	(0.0040)	5.0
Arsenic	200.8	mg/L	0.0013	3.7
Beryllium	200.8	mg/L	(0.00050)	14.5
Cadmium	200.8	mg/L	(0.00050)	0.69
Cyanide	SM20 4500 CN C, E	mg/L	(0.010)	1.7
Mercury	245.1	mg/L	(0.00020)	0.2
Nickel	200.8	mg/L	0.0052	3.88
Oil & Grease of Animal or Vegetable Origin	SM 1664A, HEM		(4.7)	250
Silver	200.8	mg/L	(0.00050)	2.5
Biochemical Oxygen Demand (BOD)	SM5210 B	mg/L	4.6	500
Total Suspended Solids (TSS)	SM2540 B	mg/L	(10)	1,100
pH	4500 H-B	mg/L	6.6	> 5 or < 12.5
Diesel Range Organics (DRO)	AK 102	mg/L	0.12	1.5
Residual Range Organics (RRO)	AK 103	mg/L	(0.40)	1.1
Gasoline Range Organics (GRO)	AK 101	mg/L	0.084	2.2

Month: April 2024

Sample Number/Sample Collection Date: P3-042424 collected April 24, 2024

Permit # 13

Pollutant	EPA Method	Units	Result	Daily Maximum Limit
Chromium	200.8	mg/L	NS	2.77
Copper	200.8	mg/L	NS	3.38
Lead	200.8	mg/L	NS	0.69
Zinc	200.8	mg/L	NS	5.62
Total Aromatic Hydrocarbons (TAH) [1]	EPA 624	mg/L	(0.0040)	5.0
Arsenic	200.8	mg/L	NS	3.7
Beryllium	200.8	mg/L	NS	14.5
Cadmium	200.8	mg/L	NS	0.69
Cyanide	SM20 4500 CN C, E	mg/L	NS	1.7
Mercury	245.1	mg/L	NS	0.2
Nickel	200.8	mg/L	NS	3.88
Oil & Grease of Animal or Vegetable Origin	SM 1664A, HEM		NS	250
Silver	200.8	mg/L	NS	2.5
Biochemical Oxygen Demand (BOD)	SM5210 B	mg/L	NS	500
Total Suspended Solids (TSS)	SM2540 B	mg/L	NS	1,100
pH	4500 H-B	mg/L	NS	> 5 or < 12.5
Diesel Range Organics (DRO)	AK 102	mg/L	0.20	1.5
Residual Range Organics (RRO)	AK 103	mg/L	(0.40)	1.1
Gasoline Range Organics (GRO)	AK 101	mg/L	0.086	2.2

Notes:
[1] = Sum of benzene, toluene, ethylbenzene, and total xylenes (BTEX) equals TAH.
Milligrams per Liter = mg/L; J = Estimated value; NS = not sampled; EPA = Environmental Protection Agency; Reporting Limit is in (parentheses).
See attached laboratory analytical report.

Review of the above monitoring data indicates Inlet Worldwide, Inc. (☒ is or ☐ is not) in compliance with the pollutant limitations set forth in the Inlet Worldwide Inc., Industrial Wastewater Discharge Permit No. 13. Note Report violations within 24 hours of becoming aware.

REPORTING FORM
Inlet Worldwide, Inc.
Monitoring Report

Permit #13

Month: May, 2024

Sample Number/Sample Collection Date: DP-052224; collected on May 22, 2024

Pollutant	EPA Method	Units	Result	Daily Maximum Limit
Chromium	200.8	mg/L	ND (0.0020)	2.77
Copper	200.8	mg/L	0.00047	3.38
Lead	200.8	mg/L	ND (0.00050)	0.69
Zinc	200.8	mg/L	0.0083	5.62
Total Aromatic Hydrocarbons (TAH) [1]	EPA 624	mg/L	ND (0.001)	5.0
Arsenic	200.8	mg/L	0.0023	3.7
Beryllium	200.8	mg/L	ND (0.00050)	14.5
Cadmium	200.8	mg/L	ND (0.00050)	0.69
Cyanide	SM20 4500 CN C, E	mg/L	ND (0.010)	1.7
Mercury	245.1	mg/L	ND (0.00020)	0.2
Nickel	200.8	mg/L	0.0023	3.88
Oil & Grease of Animal or Vegetable Origin	SM 1664A, HEM	mg/L	ND (4.7)	250
Silver	200.8	mg/L	ND (0.00050)	2.5
Biochemical Oxygen Demand (BOD)	SM5210 B	mg/L	1.3	500
Total Suspended Solids (TSS)	SM2540 B	mg/L	ND (10)	1,100
pH	4500 H-B	mg/L	7.0	> 5 or < 12.5
Diesel Range Organics (DRO)	AK 102	mg/L	0.18	1.5
Residual Range Organics (RRO)	AK 103	mg/L	0.14	1.1
Gasoline Range Organics (GRO)	AK 101	mg/L	ND (0.150)	2.2

Notes:
Sample DP was collected from the sample port after the water treatment system and before discharge to the sanitary sewer.
[1] = Sum of benzene, toluene, ethylbenzene, and total xylenes (BTEX) equals TAH.
Milligrams per Liter = mg/L; J = Estimated value; ND = non-detectable; NS = not sampled; EPA = Environmental Protection Agency;
Reporting Limit is in (parentheses).
See attached laboratory analytical report.

Permit # 13

Month: May, 2024

Sample Number/Sample Collection Date: P3-052224; collected on May 22, 2024

Pollutant	EPA Method	Units	Result	Daily Maximum Limit
Chromium	200.8	mg/L	NS	2.77
Copper	200.8	mg/L	NS	3.38
Lead	200.8	mg/L	NS	0.69
Zinc	200.8	mg/L	NS	5.62
Total Aromatic Hydrocarbons (TAH) [1]	EPA 624	mg/L	0.0019	5.0
Arsenic	200.8	mg/L	NS	3.7
Beryllium	200.8	mg/L	NS	14.5
Cadmium	200.8	mg/L	NS	0.69
Cyanide	SM20 4500 CN C, E	mg/L	NS	1.7
Mercury	245.1	mg/L	NS	0.2
Nickel	200.8	mg/L	NS	3.88
Oil & Grease of Animal or Vegetable Origin	SM 1664A, HEM	mg/L	NS	250
Silver	200.8	mg/L	NS	2.5
Biochemical Oxygen Demand (BOD)	SM5210 B	mg/L	NS	500
Total Suspended Solids (TSS)	SM2540 B	mg/L	NS	1,100
pH	4500 H-B	mg/L	NS	> 5 or < 12.5
Diesel Range Organics (DRO)	AK 102	mg/L	0.25	1.5
Residual Range Organics (RRO)	AK 103	mg/L	0.12	1.1
Gasoline Range Organics (GRO)	AK 101	mg/L	0.077	2.2

Notes:
Sample P3 was collected from the sample port between the first and second drums containing granular activated carbon.
[1] = Sum of benzene, toluene, ethylbenzene, and total xylenes (BTEX) equals TAH.
Milligrams per Liter = mg/L; J = Estimated value; ND = non-detectable; NS = not sampled; EPA = Environmental Protection Agency;
Reporting Limit is in (parentheses).
See attached laboratory analytical report.

Review of the above monitoring data indicates Inlet Worldwide, Inc. (☒ is or ☐ is not) in compliance with the pollutant limitations set forth in the Inlet Worldwide Inc., Industrial Wastewater Discharge Permit No. 13. Note: Report violations within 24 hours of becoming aware.

REPORTING FORM
Inlet Worldwide, Inc.
Monitoring Report

Permit #13

Month: August 2024

Sample Number/Sample Collection Date: DP-080824; collected on August 8, 2024

Pollutant	EPA Method	Units	Result	Daily Maximum Limit
Chromium	200.8	mg/L	ND (0.0020)	2.77
Copper	200.8	mg/L	0.00043 J	3.38
Lead	200.8	mg/L	ND (0.00050)	0.69
Zinc	200.8	mg/L	0.010	5.62
Total Aromatic Hydrocarbons (TAH) [1]	EPA 624	mg/L	ND (0.0010)	5.0
Arsenic	200.8	mg/L	0.0015 J	3.7
Beryllium	200.8	mg/L	ND (0.00050)	14.5
Cadmium	200.8	mg/L	ND (0.00050)	0.69
Cyanide	SM20 4500 CN C, E	mg/L	ND (0.010)	1.7
Mercury	245.1	mg/L	ND (0.00020)	0.2
Nickel	200.8	mg/L	0.0017	3.88
Oil & Grease of Animal or Vegetable Origin	SM 1664A, HEM	mg/L	2.0 J	250
Silver	200.8	mg/L	ND (0.00050)	2.5
Biochemical Oxygen Demand (BOD)	SM5210 B	mg/L	ND (2.4)	500
Total Suspended Solids (TSS)	SM2540 B	mg/L	ND (10)	1,100
pH	4500 H-B	SU	6.8	> 5 or < 12.5
Diesel Range Organics (DRO)	AK 102	mg/L	0.25	1.5
Residual Range Organics (RRO)	**AK 103**	**mg/L**	**1.2**	**1.1**
Gasoline Range Organics (GRO)	AK 101	mg/L	ND (0.150)	2.2

Notes:
Sample DP was collected from the sample port after the water treatment system and before discharge to the sanitary sewer.
[1] = Sum of benzene, toluene, ethylbenzene, and total xylenes (BTEX) equals TAH.
Milligrams per Liter = mg/L; J = Estimated value; ND = non-detectable; EPA = Environmental Protection Agency; SU = standard units
Reporting Limit is presented in (parentheses).
Bolded cell borders and cell concentration indicate an exceedance of AWWU's discharge limit.
See attached laboratory analytical report.

Review of the above monitoring data for Sample DP-080824 indicates Inlet Worldwide, Inc. (☐ is or ☒ is not) in compliance with the pollutant limitations set forth in the Inlet Worldwide Inc., Industrial Wastewater Discharge Permit No. 13. Note: Report violations within 24 hours of becoming aware.

Permit #13

Month: August 2024

Sample Number/Sample Collection Date: P3-080824; collected on August 8, 2024

Pollutant	EPA Method	Units	Result	Daily Maximum Limit
Chromium	200.8	mg/L	NS	2.77
Copper	200.8	mg/L	NS	3.38
Lead	200.8	mg/L	NS	0.69
Zinc	200.8	mg/L	NS	5.62
Total Aromatic Hydrocarbons (TAH) [1]	EPA 624	mg/L	ND (0.0010)	5.0
Arsenic	200.8	mg/L	NS	3.7
Beryllium	200.8	mg/L	NS	14.5
Cadmium	200.8	mg/L	NS	0.69
Cyanide	SM20 4500 CN C, E	mg/L	NS	1.7
Mercury	245.1	mg/L	NS	0.2
Nickel	200.8	mg/L	NS	3.88
Oil & Grease of Animal or Vegetable Origin	SM 1664A, HEM	mg/L	NS	250
Silver	200.8	mg/L	NS	2.5
Biochemical Oxygen Demand (BOD)	SM5210 B	mg/L	NS	500
Total Suspended Solids (TSS)	SM2540 B	mg/L	NS	1,100
pH	4500 H-B	SU	NS	> 5 or < 12.5
Diesel Range Organics (DRO)	AK 102	mg/L	ND (0.24)	1.5
Residual Range Organics (RRO)	AK 103	mg/L	ND (0.39)	1.1
Gasoline Range Organics (GRO)	AK 101	mg/L	ND (0.150)	2.2

Notes:
Sample P3 was collected from the sample port between the first and second drums containing granular activated carbon.
[1] = Sum of benzene, toluene, ethylbenzene, and total xylenes (BTEX) equals TAH.
Milligrams per Liter = mg/L; J = Estimated value; ND = non-detectable; NS = not sampled; EPA = Environmental Protection Agency; SU = standard units
Reporting Limit is presented in (parentheses).
See attached laboratory analytical report.

Review of the above monitoring data for Sample P3-080824 indicates Inlet Worldwide, Inc. (☒ is or ☐ is not) in compliance with the pollutant limitations set forth in the Inlet Worldwide Inc., Industrial Wastewater Discharge Permit No. 13. Note: Report violations within 24 hours of becoming aware.

Permit # 13

Month: September 2024

Sample Number/Sample Collection Date: P3-092424; collected on September 24, 2024

Pollutant	EPA Method	Units	Result	Daily Maximum Limit
Chromium	200.8	mg/L	NS	2.77
Copper	200.8	mg/L	NS	3.38
Lead	200.8	mg/L	NS	0.69
Zinc	200.8	mg/L	NS	5.62
Total Aromatic Hydrocarbons (TAH) [1]	EPA 624	mg/L	pending [2]	5.0
Arsenic	200.8	mg/L	NS	3.7
Beryllium	200.8	mg/L	NS	14.5
Cadmium	200.8	mg/L	NS	0.69
Cyanide	SM20 4500 CN C, E	mg/L	NS	1.7
Mercury	245.1	mg/L	NS	0.2
Nickel	200.8	mg/L	NS	3.88
Oil & Grease of Animal or Vegetable Origin	SM 1664A, HEM	mg/L	NS	250
Silver	200.8	mg/L	NS	2.5
Biochemical Oxygen Demand (BOD)	SM5210 B	mg/L	NS	500
Total Suspended Solids (TSS)	SM2540 B	mg/L	NS	1,100
pH	4500 H-B	SU	NS	> 5 or < 12.5
Diesel Range Organics (DRO)	AK 102	mg/L	0.098 J	1.5
Residual Range Organics (RRO)	AK 103	mg/L	ND (0.41)	1.1
Gasoline Range Organics (GRO)	AK 101	mg/L	ND (0.150)	2.2

Notes:
Sample P3 was collected from the sample port between the first and second drums containing granular activated carbon.
[1] = Sum of benzene, toluene, ethylbenzene, and total xylenes (BTEX) equals TAH.
[2] = The samples recollected on September 30, 2024 have not yet been received and are marked as pending above.
Milligrams per Liter = mg/L; J = Estimated value; ND = non-detectable; NS = not sampled; EPA = Environmental Protection Agency; SU = standard units
Reporting Limit is presented in (parentheses).
See attached laboratory analytical report.

Review of the above monitoring data for Sample P3-080824 indicates Inlet Worldwide, Inc. (☒ is or ☐ is not) in compliance with the pollutant limitations set forth in the Inlet Worldwide Inc., Industrial Wastewater Discharge Permit No. 13. Note: Report violations within 24 hours of becoming aware.

REPORTING FORM (Revised)
Inlet Worldwide, Inc.
Monitoring Report

Permit #13

Month: September 2024 (multiple sampling events)

Sample Number/Sample Collection Date: DP-092424, collected on Sept. 24, 2024; and DP-093024, collected on September 30, 2024

Pollutant	EPA Method	Units	Result	Daily Maximum Limit
Chromium	200.8	mg/L	ND (0.0020)	2.77
Copper	200.8	mg/L	ND (0.0010)	3.38
Lead	200.8	mg/L	ND (0.00050)	0.69
Zinc	200.8	mg/L	0.012	5.62
Total Aromatic Hydrocarbons (TAH) [1]	EPA 624	mg/L	ND (0.0010)	5.0
Arsenic	200.8	mg/L	ND (0.0020)	3.7
Beryllium	200.8	mg/L	ND (0.00050)	14.5
Cadmium	200.8	mg/L	ND (0.00050)	0.69
Cyanide	SM20 4500 CN C, E	mg/L	0.0050 J	1.7
Mercury	245.1	mg/L	ND (0.00020)	0.2
Nickel	200.8	mg/L	0.0017	3.88
Oil & Grease of Animal or Vegetable Origin	SM 1664A, HEM	mg/L	ND (4.8)	250
Silver	200.8	mg/L	ND (0.00050)	2.5
Biochemical Oxygen Demand (BOD)	SM5210 B	mg/L	1.9 J	500
Total Suspended Solids (TSS)	SM2540 B	mg/L	ND (10)	1,100
pH	4500 H-B	SU	7.0	> 5 or < 12.5
Diesel Range Organics (DRO)	AK 102	mg/L	ND (0.26)	1.5
Residual Range Organics (RRO)	AK 103	mg/L	ND (0.42)	1.1
Gasoline Range Organics (GRO)	AK 101	mg/L	ND (0.150)	2.2

Notes:
Sample DP was collected from the sample port after the water treatment system and before discharge to the sanitary sewer.
[1] = Sum of benzene, toluene, ethylbenzene, and total xylenes (BTEX) equals TAH.
Milligrams per Liter = mg/L; J = Estimated value; ND = non-detectable; EPA = Environmental Protection Agency; SU = standard units
Reporting Limit is presented in (parentheses).
See attached laboratory analytical report.

Review of the above monitoring data for Sample DP-080824 indicates Inlet Worldwide, Inc. (☒ is or ☐ is not) in compliance with the pollutant limitations set forth in the Inlet Worldwide Inc., Industrial Wastewater Discharge Permit No. 13. Note: Report violations within 24 hours of becoming aware.

Permit #13

Month: September 2024 (multiple sampling events)

Sample Number/Sample Collection Date: P3-092424, collected on Sept. 24, 2024; and P3-092424; collected on September 30, 2024

Pollutant	EPA Method	Units	Result	Daily Maximum Limit
Chromium	200.8	mg/L	NS	2.77
Copper	200.8	mg/L	NS	3.38
Lead	200.8	mg/L	NS	0.69
Zinc	200.8	mg/L	NS	5.62
Total Aromatic Hydrocarbons (TAH) [1]	EPA 624	mg/L	ND (0.0010)	5.0
Arsenic	200.8	mg/L	NS	3.7
Beryllium	200.8	mg/L	NS	14.5
Cadmium	200.8	mg/L	NS	0.69
Cyanide	SM20 4500 CN C, E	mg/L	NS	1.7
Mercury	245.1	mg/L	NS	0.2
Nickel	200.8	mg/L	NS	3.88
Oil & Grease of Animal or Vegetable Origin	SM 1664A, HEM	mg/L	NS	250
Silver	200.8	mg/L	NS	2.5
Biochemical Oxygen Demand (BOD)	SM5210 B	mg/L	NS	500
Total Suspended Solids (TSS)	SM2540 B	mg/L	NS	1,100
pH	4500 H-B	SU	NS	> 5 or < 12.5
Diesel Range Organics (DRO)	AK 102	mg/L	0.098 J	1.5
Residual Range Organics (RRO)	AK 103	mg/L	ND (0.41)	1.1
Gasoline Range Organics (GRO)	AK 101	mg/L	ND (0.150)	2.2

Notes:
Sample P3 was collected from the sample port between the first and second drums containing granular activated carbon.
[1] = Sum of benzene, toluene, ethylbenzene, and total xylenes (BTEX) equals TAH.
[2] = The samples recollected on September 30, 2024 have not yet been received and are marked as pending above.
Milligrams per Liter = mg/L; J = Estimated value; ND = non-detectable; NS = not sampled; EPA = Environmental Protection Agency; SU = standard units
Reporting Limit is presented in (parentheses).
See attached laboratory analytical report.

Review of the above monitoring data for Sample P3-080824 indicates Inlet Worldwide, Inc. (☒ is or ☐ is not) in compliance with the pollutant limitations set forth in the Inlet Worldwide Inc., Industrial Wastewater Discharge Permit No. 13. Note: Report violations within 24 hours of becoming aware.

REPORTING FORM (Revised)
Inlet Worldwide, Inc.
Monitoring Report

Permit #13

Month: October 2024 (multiple sampling events)

Sample Number/Sample Collection Date: DP-101724, collected on October 17, 2024; DP-102924, collected on October 29, 2024

Pollutant	EPA Method	Units	Result	Daily Maximum Limit
Chromium	200.8	mg/L	ND (0.0020)	2.77
Copper	200.8	mg/L	0.00059 J	3.38
Lead	200.8	mg/L	ND (0.00050)	0.69
Zinc	200.8	mg/L	0.0094 J	5.62
Total Aromatic Hydrocarbons (TAH) [1]	EPA 624	mg/L	ND (0.0010)[A]	5.0
Arsenic	200.8	mg/L	ND (0.0020)	3.7
Beryllium	200.8	mg/L	ND (0.00050)	14.5
Cadmium	200.8	mg/L	ND (0.00050)	0.69
Cyanide	SM20 4500 CN C, E	mg/L	ND (0.020)	1.7
Mercury	245.1	mg/L	ND (0.00020)	0.2
Nickel	200.8	mg/L	0.0017	3.88
Oil & Grease of Animal or Vegetable Origin	SM 1664A, HEM	mg/L	ND (4.9)	250
Silver	200.8	mg/L	ND (0.00050)	2.5
Biochemical Oxygen Demand (BOD)	SM5210 B	mg/L	1.5 J	500
Total Suspended Solids (TSS)	SM2540 B	mg/L	ND (7.1)	1,100
pH	4500 H-B	SU	7.0	> 5 or < 12.5
Diesel Range Organics (DRO)	AK 102	mg/L	ND (0.25)	1.5
Residual Range Organics (RRO)	AK 103	mg/L	0.17 J	1.1
Gasoline Range Organics (GRO)	AK 101	mg/L	ND (0.150)	2.2

Notes:
Sample DP was collected from the sample port after the water treatment system and before discharge to the sanitary sewer.
[1] = Sum of benzene, toluene, ethylbenzene, and total xylenes (BTEX) equals TAH.
[A] = Sample was collected on October 29, 2024.
Milligrams per Liter = mg/L; J = Estimated value; ND = non-detectable; EPA = Environmental Protection Agency; SU = standard units
Reporting Limit is presented in (parentheses).
See attached laboratory analytical report.

Review of the above monitoring data for Samples DP-091724 and DP-092924 indicates Inlet Worldwide, Inc. (☒ is or ☐ is not) in compliance with the pollutant limitations set forth in the Inlet Worldwide Inc., Industrial Wastewater Discharge Permit No. 13. Note: Report violations within 24 hours of becoming aware.

Permit #13

Month: October 2024 (multiple sampling events)

Sample Number/Sample Collection Date: P3-101724, collected on October 17, 2024; P3-102924, collected on October 29, 2024

Pollutant	EPA Method	Units	Result	Daily Maximum Limit
Chromium	200.8	mg/L	NS	2.77
Copper	200.8	mg/L	NS	3.38
Lead	200.8	mg/L	NS	0.69
Zinc	200.8	mg/L	NS	5.62
Total Aromatic Hydrocarbons (TAH) [1]	EPA 624	mg/L	ND (0.0010)[A]	5.0
Arsenic	200.8	mg/L	NS	3.7
Beryllium	200.8	mg/L	NS	14.5
Cadmium	200.8	mg/L	NS	0.69
Cyanide	SM20 4500 CN C, E	mg/L	NS	1.7
Mercury	245.1	mg/L	NS	0.2
Nickel	200.8	mg/L	NS	3.88
Oil & Grease of Animal or Vegetable Origin	SM 1664A, HEM	mg/L	NS	250
Silver	200.8	mg/L	NS	2.5
Biochemical Oxygen Demand (BOD)	SM5210 B	mg/L	NS	500
Total Suspended Solids (TSS)	SM2540 B	mg/L	NS	1,100
pH	4500 H-B	SU	NS	> 5 or < 12.5
Diesel Range Organics (DRO)	AK 102	mg/L	ND (0.24)	1.5
Residual Range Organics (RRO)	AK 103	mg/L	ND (0.39)	1.1
Gasoline Range Organics (GRO)	AK 101	mg/L	ND (0.150)	2.2

Notes:
Sample P3 was collected from the sample port between the first and second drums containing granular activated carbon.
[1] = Sum of benzene, toluene, ethylbenzene, and total xylenes (BTEX) equals TAH.
[A] = Sample was collected on October 29, 2024.
Milligrams per Liter = mg/L; J = Estimated value; ND = non-detectable; NS = not sampled; EPA = Environmental Protection Agency; SU = standard units
Reporting Limit is presented in (parentheses).
See attached laboratory analytical report.

Review of the above monitoring data for Sample P3-091724 and P3-092924 indicates Inlet Worldwide, Inc. (☒ is or ☐ is not) in compliance with the pollutant limitations set forth in the Inlet Worldwide Inc., Industrial Wastewater Discharge Permit No. 13. Note: Report violations within 24 hours of becoming aware.

REPORTING FORM
Inlet Worldwide, Inc.
Monitoring Report

Permit #13

Month: December 2024

Sample Number/Sample Collection Date: DP-120924 / December 9, 2024

Pollutant	EPA Method	Units	Result	Daily Maximum Limit
Chromium	200.8	mg/L	ND (0.0020)	2.77
Copper	200.8	mg/L	ND (0.0010)	3.38
Lead	200.8	mg/L	ND (0.00050)	0.69
Zinc	200.8	mg/L	0.0071 J	5.62
Total Aromatic Hydrocarbons (TAH) [1]	EPA 624.1	mg/L	ND (0.001)	5.0
Arsenic	200.8	mg/L	0.00087 J	3.7
Beryllium	200.8	mg/L	ND (0.00050)	14.5
Cadmium	200.8	mg/L	ND (0.00050)	0.69
Cyanide	SM20 4500 CN C, E	mg/L	ND (0.010)	1.7
Mercury	245.1	mg/L	ND (0.00020)	0.2
Nickel	200.8	mg/L	0.0016	3.88
Oil & Grease of Animal or Vegetable Origin	SM 1664A, HEM	mg/L	ND (5.1)	250
Silver	200.8	mg/L	ND (0.00050)	2.5
Biochemical Oxygen Demand (BOD)	SM5210 B	mg/L	ND (2.4)	500
Total Suspended Solids (TSS)	SM2540 B	mg/L	ND (3.0)	1,100
pH	4500 H-B	SU	7.0	> 5 or < 12.5
Diesel Range Organics (DRO)	AK 102	mg/L	ND (0.24)	1.5
Residual Range Organics (RRO)	AK 103	mg/L	ND (0.38)	1.1
Gasoline Range Organics (GRO)	AK 101	mg/L	ND (0.150)	2.2

Notes:
Sample DP was collected from the sample port after the water treatment system and before discharge to the sanitary sewer.
[1] = Sum of benzene, toluene, ethylbenzene, and total xylenes (BTEX) equals TAH.
Milligrams per Liter = mg/L; J = Estimated value; ND = non-detectable; EPA = Environmental Protection Agency; SU = standard units
Reporting Limit is presented in (parentheses).
See attached laboratory analytical report.

Review of the above monitoring data for Sample DP-120924 indicates Inlet Worldwide, Inc. (☒ is or ☐ is not) in compliance with the pollutant limitations set forth in the Inlet Worldwide Inc., Industrial Wastewater Discharge Permit No. 13. Note: Report violations within 24 hours of becoming aware.

Permit #13

Month: December 2024

Sample Number/Sample Collection Date: P3-120924 / December 9, 2024

Pollutant	EPA Method	Units	Result	Daily Maximum Limit
Chromium	200.8	mg/L	NS	2.77
Copper	200.8	mg/L	NS	3.38
Lead	200.8	mg/L	NS	0.69
Zinc	200.8	mg/L	NS	5.62
Total Aromatic Hydrocarbons (TAH) [1]	EPA 624.1	mg/L	ND (0.0010)	5.0
Arsenic	200.8	mg/L	NS	3.7
Beryllium	200.8	mg/L	NS	14.5
Cadmium	200.8	mg/L	NS	0.69
Cyanide	SM20 4500 CN C, E	mg/L	NS	1.7
Mercury	245.1	mg/L	NS	0.2
Nickel	200.8	mg/L	NS	3.88
Oil & Grease of Animal or Vegetable Origin	SM 1664A, HEM	mg/L	NS	250
Silver	200.8	mg/L	NS	2.5
Biochemical Oxygen Demand (BOD)	SM5210 B	mg/L	NS	500
Total Suspended Solids (TSS)	SM2540 B	mg/L	NS	1,100
pH	4500 H-B	SU	NS	> 5 or < 12.5
Diesel Range Organics (DRO)	AK 102	mg/L	ND (0.24)	1.5
Residual Range Organics (RRO)	AK 103	mg/L	ND (0.38)	1.1
Gasoline Range Organics (GRO)	AK 101	mg/L	ND (0.150)	2.2

Notes:
Sample P3 was collected from the sample port between the first and second drums containing granular activated carbon.
[1] = Sum of benzene, toluene, ethylbenzene, and total xylenes (BTEX) equals TAH.
Milligrams per Liter = mg/L; J = Estimated value; ND = non-detectable; NS = not sampled; EPA = Environmental Protection Agency; SU = standard units
Reporting Limit is presented in (parentheses).
See attached laboratory analytical report.

Review of the above monitoring data for Sample P3-120924 indicates Inlet Worldwide, Inc. (☒ is or ☐ is not) in compliance with the pollutant limitations set forth in the Inlet Worldwide Inc., Industrial Wastewater Discharge Permit No. 13. Note: Report violations within 24 hours of becoming aware.

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
Phone (907) 751-2224

Tesoro Logistics

POTW SAMPLE RESULTS

Permit #14

DATE COLLECTED 9.17.2024

DATE REPORTED 9.17.2024

Pollutant	EPA Method	Results	Units	Daily Maximum Limit
Arsenic	200.8	0.00375	mg/L	3.7
Beryllium	200.8	0.0003	mg/L	14.5
Cadmium	200.8	0.000375	mg/L	0.69
Chromium	200.8	0.00375	mg/L	0.947
Copper	200.8	0.00225	mg/L	0.405
Lead	200.8	0.0015	mg/L	0.222
Nickel	200.8	0.0015	mg/L	3.88
Silver	200.8	0.00075	mg/L	2.5
Zinc	200.8	0.0152	mg/L	5.62
Mercury	EPA 1631 E	0.0000949	mg/L	0.2
Cyanide	SM21 4500-CN C,E	0.0037	mg/L	1.7
Total Aromatic Hydrocarbons (TAH)	EPA 602/624.1	0.00405	mg/L	5.0
Oil & Grease HEM	EPA 1664B	4.42	mg/L	250
TPH Silica Gel HEM	EPA 1664B	3.94		
pH		6.59	mg/L	5.0-12.5
Biochemical Oxygen Demand (BOD)	SM21 5210B	2.0	mg/L	Monitoring
Total Suspended Solids (TSS)	SM21 2540D	2.38	mg/L	Monitoring
Diesel Range Organics (DRO)	AK102	0.449	mg/L	1.5
Gasoline Range Organics (GRO)	AK101	0.075	mg/L	2.2
Residual Range Organics (RRO)	AK103	0.374	mg/L	1.1

Certification statement:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature: _____

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
Phone (907) 751-2224

SAMPLE RESULTS

Permit #14

DATE COLLECTED: 04/17/2024

DATE REPORTED 05/01/2024 (Results received by Tesoro on 4/26/2024)

Pollutant	EPA Method	Results	Units	Daily Maximum Limit
Arsenic	SW6020B	U	mg/L	3.7
Beryllium	SW6020B	U	mg/L	14.5
Cadmium	SW6020B	U	mg/L	0.69
Chromium	SW6020B	U	mg/L	0.947
Copper	SW6020B	U	mg/L	0.405
Lead	SW6020B	U	mg/L	0.222
Nickel	SW6020B	.0058	mg/L	3.88
Silver	SW6020B	U	mg/L	2.5
Zinc	SW6020B	U	mg/L	5.62
Mercury	EPA 1631	0.000000698J	mg/L	0.2
Cyanide	SM21 4500-CN C, E	U	mg/L	1.7
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	U	mg/L	5.0
Oil & Grease of animal or vegetable origin	EPA 1664B	2.6J	mg/L	250
pH	SM21 4500-H B	6.8	mg/L	5.0-12.5
Biochemical Oxygen Demand (BOD)	SM21 5210B	U	mg/L	Monitoring
Total Suspended Solids (TSS)	SM21 2540D	1.3	mg/L	Monitoring
Diesel Range Organics (DRO)	AK 102	U	mg/L	1.5
Gasoline Range Organics (GRO)	AK 101	U	mg/L	2.2
Residual Range Organics (RRO)	AK 103	U	mg/L	1.1
Flow in Gallons per minute	Not Applicable*	60	FPM	100
Oily Sheen on Water	Not Applicable - Visual	No Sheen		

*System design does not allow the Flow Per Minute to be greater than 60.
J = The quantitation is an estimation.
U = Indicates the analyte was analyzed for but not detected.

Certification statement:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature: X Angela Brown

ANCHORAGE WATER & WASTEWATER UTILITY

Industrial Pretreatment Program

John M. Asplund Water Pollution Control Facility
Phone (907) 751-2224

SAMPLE RESULTS

Permit #14

DATE COLLECTED: 07/23/2024

DATE REPORTED 08/23/2024 (Results received by Tesoro on 8/21/2024)

Pollutant	EPA Method	Results	Units	Daily Maximum Limit
Arsenic	EP200.8	U	mg/L	3.7
Beryllium	EP200.8	U	mg/L	14.5
Cadmium	EP200.8	U	mg/L	0.69
Chromium	EP200.8	U	mg/L	0.947
Copper	EP200.8	0.00101J	mg/L	0.405
Lead	EP200.8	U	mg/L	0.222
Nickel	EP200.8	0.000644J	mg/L	3.88
Silver	EP200.8	U	mg/L	2.5
Zinc	EP200.8	0.00603	mg/L	5.62
Mercury	EPA 1631	U	mg/L	0.2
Cyanide	SM21 4500-CN C, E	U	mg/L	1.7
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	U	mg/L	5.0
Oil & Grease of animal or vegetable origin	EPA 1664B	2.5J	mg/L	250
pH	SM21 4500-H B	7.7	mg/L	5.0-12.5
Biochemical Oxygen Demand (BOD)	SM21 5210B	4.80	mg/L	Monitoring
Total Suspended Solids (TSS)	SM21 2540D	6.50	mg/L	Monitoring
Diesel Range Organics (DRO)	AK 102	U	mg/L	1.5
Gasoline Range Organics (GRO)	AK 101	U	mg/L	2.2
Residual Range Organics (RRO)	AK 103	U	mg/L	1.1
Flow in Gallons per minute	Not Applicable*	60	FPM	100
Oily Sheen on Water	Not Applicable - Visual	No Sheen		

*System design does not allow the Flow Per Minute to be greater than 60.
J = The quantitation is an estimation.
U = Indicates the analyte was analyzed for but not detected.

Certification statement:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature: X Angela Brown

Appendix F

REPORTING FORM

Tesoro Logistics Operations LLC

Monitoring Report

Quarter: 4th 2024 (October - December)

Sample Date: 10/14/2024

Permit #14

Laboratory Conducting Analysis: SGS North America Inc.

Pollutant	EPA Method	Units	Results	Daily Maximum Limit
Chromium	200.8	mg/L	U	2.77
Copper	200.8	mg/L	U	3.38
Lead	200.8	mg/L	U	0.69
Zinc	200.8	mg/L	U	5.62
Total Aromatic Hydrocarbons (TAH)	EPA 602/624	mg/L	U	5
pH	SM20 4500- HB (*SM21 4500-HB)	pH	6.7	5 to 12.5
Arsenic	200.8	mg/L	U	3.7
Beryllium	200.8	mg/L	U	14.5
Cadmium	200.8	mg/L	U	0.69
Cyanide	SM20 4500 CNC,E (*SM21 4500-CN C, E)	mg/L	U	1.7
Mercury	EPA 1631	mg/L	U	0.2
Nickel	200.8	mg/L	0.000861J	3.88
Oil and Grease	EPA 1664 A (*EPA 1664B)	mg/L	5.2	250
Silver	200.8	mg/L	U	2.5
BOD		mg/L	7.38	
TSS		mg/L	15.3	
Diesel Range Organics (GRO)	AK 102	mg/L	.207J	1.5
Residual Range Organics (RRO)	AK 103	mg/L	U	1.1
Gasoline Range Onranics (GRO)	AK 101	mg/L	U	2.2

J = The quantitation is an estimation.

U = Indicates the analyte was analyzed for but not detected.

* Method SM21 4500-CNC, E is the current method for SM20 4500 CNC, E. Method EPA 1664B is the current method for EPA 1664A. Method SM21 4500-HB is the current method for SM20 4500 - HB.

Review of the above monitoring data indicates Tesoro Logistics Operations LLC (☑ is or ☐ is not) in compliance with the pollutant limitations set forth in the Tesoro Logistics Operations LLC wastewater discharge permit #14. Note: Report violations within 24 hours of becoming aware.

Certification Satement:

Permit #15

TABLE 10
CHUGACH ELECTRIC ASSOCIATION
ONE CAMPUS DEWATERING

	C-SEWER GROUNDWATER												
SAMPLE ID	C-SEWER-TREATED	C-SEWER-TRE-A5.10.24	C-SEWER-TRE-A5.13.24	C-SEWER-TRE-A5.15.24	C-SEWER-TRE-B5.15.24	C-SEWER-TRE-A5.16.24	C-SEWER-TRE-A5.17.24	C-SEWER-TRE-B5.17.24	C-SEWER-TRE-A5.20.24	C-SEWER-TRE-A5.21.24	C-SEWER-TRE-A5.22.24	C-SEWER-TRE-A5.22.24	Local Discharge Limitations*
DATE	05/08/24	05/10/24	05/13/24	05/15/24	05/15/24	05/16/24	05/17/24	05/17/24	05/20/24	05/21/24	05/22/24	05/22/24	
SGS WORK ORDER	1241954	1242028	1242054	1242106	1242112	1242141	1242187	1242186	1242219	1242253	1242269	1242290	
Oil & Grease HEM (mg/L)	**1.68 J**	**2.50 J**	**1.90 J**	**3.00 J**	**2.50 J**	**4.06 J**	**3.70 J**	**3.10 J**	**3.30 J**	**3.50 J**	**2.55 J**	**1.80 J**	250
Cyanide (mg/L)	*0.0037 U*	*0.0037 U*	*0.0037 U*	*0.0037 U*	*0.0037 U*	*0.0037 U*	*0.0037 U*	*0.0037 U*	*0.0037 U*	*0.0037 U*	*0.0037 U*	*0.0037 U*	1.7
pH	NA	7.3	7.2	7.1	6.9	6.9	7	6.9	7	7	7	7.1	5.0-12.5
Biochemical Oxygen Demand (mg/L)	NA	*2.00 U*	**3.19**	*2.00 U*	**2.49**	**3.39**	**2.68**	**4.1**	*2.00 U*	**3.59**	*2.00 U*	2.12	--
Total Suspended Solids (mg/L)	NA	486	172	576	73	61.3	53.5	46	44	33	27.2	13.6	--

NOTES:

1) Petroleum volatile organic compounds (Petro VOC) analyses by Method EPA SW8260B
2) "ug/L" means "micrograms per Liter"
3) Bold font indicates the analyte was detected above the laboratory Detection Limit (DL)
4) Italicized font with a U-qualifier indicates the analyte was not detected above the detection limit; the value presented is the LOD
5) J flag indicates the result is an estimated value above the Detection Limit (DL) but less than the LOQ
6) Yellow highlighting indicates the analyte was detected above the ADEC Table C groundwater cleanup levels
7) Blue highlighting indicates the method detection limit was greater than the ADEC Table C groundwater cleanup levels

Permit #15

TABLE 8
CHUGACH ELECTRIC ASSOCIATION
ONE CAMPUS DEWATERING
METALS IN GROUNDWATER

METALS IN GROUNDWATER													
SAMPLE ID	C-SEWER-TREATED	C-SEWER-TRE-A5.10.24	C-SEWER-TRE-A5.13.24	C-SEWER-TRE-A5.15.24	C-SEWER-TRE-B5.15.24	C-SEWER-TRE-A5.16.24	C-SEWER-TRE-A5.17.24	C-SEWER-TRE-B5.17.24	C-SEWER-TRE-A5.20.24	C-SEWER-TRE-A5.21.24	C-SEWER-TRE-A5.22.24	C-SEWER-TRE-A5.22.24	
DATE	05/08/24	05/10/24	05/13/24	05/15/24	05/15/24	05/16/24	05/17/24	05/17/24	05/20/24	05/21/24	05/22/24	05/22/24	AWWU Local Discharge Limitations*
SGS WORK ORDER	1241954	1242028	1242054	1242106	1242112	1242141	1242187	1242186	1242219	1242253	1242269	1242290	
UNITS	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
Arsenic	**4.50 J**	**11.4**	**4.79 J**	**10.7**	**6.59 J**	**5.12 J**	**4.87 J**	**5.70 J**	**4.11 J**	**16.1**	*7.50 U*	**4.63 J**	3700
Beryllium	**0.459 J**	**0.392 J**	*0.750 U*	*0.750 U*	*0.750 U*	*0.750 U*	*0.750 U*	*0.750 U*	*0.750 U*	*0.750 U*	*0.750 U*	*0.750 U*	14500
Cadmium	*1.50 U*	*1.50 U*	*1.50 U*	*1.50 U*	*1.50 U*	*1.50 U*	*1.50 U*	*1.50 U*	*1.50 U*	*1.50 U*	*1.50 U*	*1.50 U*	690
Chromium	**194**	**52.7**	**9.76 J**	**35.6**	*7.50 U*	*7.50 U*	*7.50 U*	*7.50 U*	*7.50 U*	*7.50 U*	*7.50 U*	*7.50 U*	2770
Copper	**70.8**	**78.8**	**24.8**	**47.9**	**4.11 J**	**2.81 J**	*4.50 U*	**2.43 J**	*4.50 U*	**14.8**	*4.50 U*	*4.50 U*	3380
Lead	**6.9**	**19.9**	**7.56**	**13.7**	**1.06**	**0.632 J**	**0.332 J**	**0.338 J**	*0.750 U*	**1.43**	*0.750 U*	*0.750 U*	1700
Mercury	*0.375 U*	**0.219 J**	*0.375 U*	**0.283 J**	*0.375 U*	*0.375 U*	*0.375 U*	*0.375 U*	**0.188 J**	*0.375 U*	*0.375 U*	*0.375 U*	200
Nickel	**161**	**115**	**22**	**67.5**	**9.55**	**9.39**	**8.73**	**7.84**	**8.45**	**10.3**	**7.51**	**8.19**	3880
Silver	*1.50 U*	*1.50 U*	*1.50 U*	*1.50 U*	*1.50 U*	**1.50 U**	*1.50 U*	*1.50 U*	*1.50 U*	*1.50 U*	*1.50 U*	*1.50 U*	2500
Zinc	**91.3**	**112**	**67.6**	**69**	**9.31 J**	**9.44 J**	*18.8 U*	**7.88 J**	**11.4 J**	**255**	**28.8**	**9.26 J**	5620

NOTES:
1) Metal analyses by Method EPA SW6020B
2) "ug/L" means "micrograms per Liter"
3) Bold font indicates the analyte was detected above the laboratory Detection Limit (DL)
4) Italicized font with a U-qualifier indicates the analyte was not detected above the detection limit; the value presented is the LOD
5) J flag indicates the result is an estimated value above the Detection Limit (DL) but less than the LOQ
6) Yellow highlighting indicates the analyte was detected above the AWWU Local Discharge Limitations

Permit #15

SGS

SGS Engage --- Sample Crosstab

Job1242846		**Client Sample ID:**	C-WAT-1TRE-6.14.24
DescriptionChugach One Dewatering		**Lab Sample ID:**	1242846001
		Matrix:	Water (Surface, Eff., Ground)
		Location:	N/A
		Sample Date:	6/14/2024 11:45 AM
Analysis	**Analyte**	**Unit**	
8270E SIM LV (PAH)	1-Methylnaphthalene	ug/L	0.0286 J
8270E SIM LV (PAH)	2-Methylnaphthalene	ug/L	0.0269 J
8270E SIM LV (PAH)	Acenaphthene	ug/L	0.0391 U
8270E SIM LV (PAH)	Acenaphthylene	ug/L	0.0391 U
8270E SIM LV (PAH)	Anthracene	ug/L	0.0391 U
8270E SIM LV (PAH)	Benzo(a)Anthracene	ug/L	0.0391 U
8270E SIM LV (PAH)	Benzo[a]pyrene	ug/L	0.0156 U
8270E SIM LV (PAH)	Benzo[b]Fluoranthene	ug/L	0.0391 U
8270E SIM LV (PAH)	Benzo[g,h,i]perylene	ug/L	0.0391 U
8270E SIM LV (PAH)	Benzo[k]fluoranthene	ug/L	0.0391 U
8270E SIM LV (PAH)	Chrysene	ug/L	0.0391 U
8270E SIM LV (PAH)	Dibenzo[a,h]anthracene	ug/L	0.0156 U
8270E SIM LV (PAH)	Fluoranthene	ug/L	0.0391 U
8270E SIM LV (PAH)	Fluorene	ug/L	0.0391 U
8270E SIM LV (PAH)	Indeno[1,2,3-c,d] pyrene	ug/L	0.0391 U
8270E SIM LV (PAH)	Naphthalene	ug/L	0.0780 U
8270E SIM LV (PAH)	Phenanthrene	ug/L	0.0780 U
8270E SIM LV (PAH)	Pyrene	ug/L	0.0391 U
EPA 602/624.1	Benzene	ug/L	0.300 U
EPA 602/624.1	Ethylbenzene	ug/L	0.750 U
EPA 602/624.1	o-Xylene	ug/L	0.750 U
EPA 602/624.1	P & M -Xylene	ug/L	1.50 U
EPA 602/624.1	Toluene	ug/L	0.750 U
SM21 2540D	Total Suspended Solids	mg/L	184
SM21 4500-H B	pH	pH units	7.4
SM21 5210B	Biochemical Oxygen Demand	mg/L	3.70

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SW6020B	Arsenic	ug/L	9.98 J
SW6020B	Beryllium	ug/L	0.376 J
SW6020B	Cadmium	ug/L	1.50 U
SW6020B	Chromium	ug/L	24.4
SW6020B	Copper	ug/L	45.2
SW6020B	Mercury	ug/L	0.420 J
SW6020B	Nickel	ug/L	28.7
SW6020B	Silver	ug/L	1.50 U
SW6020B	Zinc	ug/L	310
SW8260D	1,2,4-Trimethylbenzene	ug/L	0.750 U
SW8260D	1,2-Dibromoethane	ug/L	0.0562 U
SW8260D	1,2-Dichloroethane	ug/L	0.375 U
SW8260D	1,3,5-Trimethylbenzene	ug/L	0.750 U
SW8260D	Benzene	ug/L	0.300 U
SW8260D	Cyclohexane	ug/L	0.750 U
SW8260D	Ethylbenzene	ug/L	0.750 U
SW8260D	Isopropylbenzene (Cumene)	ug/L	0.750 U
SW8260D	Methyl-t-butyl ether	ug/L	7.50 U
SW8260D	n-Butylbenzene	ug/L	0.750 U
SW8260D	n-hexane	ug/L	0.750 U
SW8260D	n-Propylbenzene	ug/L	0.750 U
SW8260D	Naphthalene	ug/L	0.750 U
SW8260D	o-Xylene	ug/L	0.750 U
SW8260D	P & M -Xylene	ug/L	1.50 U
SW8260D	sec-Butylbenzene	ug/L	0.750 U
SW8260D	tert-Butylbenzene	ug/L	0.750 U
SW8260D	Toluene	ug/L	0.750 U
SW8260D	Xylenes (total)	ug/L	2.25 U

Sample Comments		
Client Sample ID	**Lab Sample ID**	
C-WAT-1TRE-6.14.24	1242846001	8270E SIM - PAH surrogate

Permit #15

SGS

SGS Engage - Sample Crosstab

Job: 1244982		Client Sample ID:	134PRE-9424	Trip Blank
Description: CEA Dewatering		Lab Sample ID:	1244982001	1244982002
		Matrix:	Water (Surface, Eff., Ground)	Water (Surface, Eff., Ground)
		Location:	N/A	FieldQC
		Sample Date:	9/4/2024 11:05 AM	9/4/2024 12:00 AM
Analysis	Analyte	Unit	1244982001	1244982002
AK102/103 LV	Diesel Range Organics	mg/L	0.450 U	
AK102/103 LV	Residual Range Organics	mg/L	0.262 J	
EPA 1664B	Oil & Grease HEM	mg/L	3.27 J	
EPA 602/624.1	Benzene	ug/L	0.300 U	0.300 U
EPA 602/624.1	Ethylbenzene	ug/L	0.750 U	0.750 U
EPA 602/624.1	o-Xylene	ug/L	0.750 U	0.750 U
EPA 602/624.1	P & M -Xylene	ug/L	1.50 U	1.50 U
EPA 602/624.1	Toluene	ug/L	0.750 U	0.750 U
SM21 2540D	Total Suspended Solids	mg/L	19.5	
SM21 4500-CN C,E	Cyanide	mg/L	0.0037 U	
SM21 4500-H B	pH	pH units	7.5	
SM21 5210B	Biochemical Oxygen Demand	mg/L	2.00 U	
SW6020B	Arsenic	ug/L	7.50 U	
SW6020B	Beryllium	ug/L	0.750 U	
SW6020B	Cadmium	ug/L	1.50 U	
SW6020B	Chromium	ug/L	7.50 U	
SW6020B	Copper	ug/L	3.06 J	
SW6020B	Lead	ug/L	0.347 J	
SW6020B	Mercury	ug/L	0.375 U	
SW6020B	Nickel	ug/L	3.99	
SW6020B	Silver	ug/L	1.50 U	
SW6020B	Zinc	ug/L	10.4 J	
SW8260D	1,2,4-Trimethylbenzene	ug/L	0.750 U	0.750 U
SW8260D	1,2-Dibromoethane	ug/L	0.0562 U	0.0562 U
SW8260D	1,2-Dichloroethane	ug/L	0.375 U	0.375 U
SW8260D	1,3,5-Trimethylbenzene	ug/L	0.750 U	0.750 U
SW8260D	Benzene	ug/L	0.300 U	0.300 U
SW8260D	Cyclohexane	ug/L	0.750 U	0.750 U
SW8260D	Ethylbenzene	ug/L	0.750 U	0.750 U
SW8260D	Isopropylbenzene (Cumene)	ug/L	0.750 U	0.750 U
SW8260D	Methyl-t-butyl ether	ug/L	7.50 U	7.50 U
SW8260D	n-Butylbenzene	ug/L	0.750 U	0.750 U
SW8260D	n-hexane	ug/L	0.750 U	0.750 U
SW8260D	n-Propylbenzene	ug/L	0.750 U	0.750 U
SW8260D	Naphthalene	ug/L	0.750 U	0.750 U
SW8260D	o-Xylene	ug/L	0.750 U	0.750 U
SW8260D	P & M -Xylene	ug/L	1.50 U	1.50 U
SW8260D	sec-Butylbenzene	ug/L	0.750 U	0.750 U
SW8260D	tert-Butylbenzene	ug/L	0.750 U	0.750 U
SW8260D	Toluene	ug/L	0.750 U	0.750 U
SW8260D	Xylenes (total)	ug/L	2.25 U	2.25 U