ALASKA POLLUTANT DISCHARGE ELIMINATION SYSTEM
PERMIT FACT SHEET – Final
Permit Number: AK0053708
Niblack Project Wastewater Treatment Facility

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Wastewater Discharge Authorization Program
555 Cordova Street
Anchorage, AK 99501

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Issuance of an Alaska Pollutant Discharge Elimination System (APDES) permit to

NIBLACK PROJECT, LLC – BLACKWOLF COPPER AND GOLD LTD

For wastewater discharges from

Niblack Project Wastewater Treatment Facility
Niblack Anchorage
Prince of Wales Island

The Alaska Department of Environmental Conservation (the Department or DEC) has issued an APDES individual permit (permit) to Niblack Project LLC. The permit authorizes and sets conditions on the discharge of pollutants from this facility to waters of the United States. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the facility and outlines best management practices to which the facility must adhere. This fact sheet explains the nature of discharges from the Niblack Project Wastewater Treatment Facility and the development of the permit including:

- information on appeal procedures

- a listing of effluent limitations and other conditions
- technical material supporting the conditions in the permit
- monitoring requirements in the permit

Appeals Process
The Department has both an informal review process and a formal administrative appeal process for final APDES permit decisions. An informal review request must be delivered within 20 days after receiving the Department's decision to the Director of the Division of Water at the following address:

Director, Division of Water
Alaska Department of Environmental Conservation
P.O. Box 111800
Juneau AK, 99811

Interested persons can review 18 AAC 15.185 for the procedures and substantive requirements regarding a request for an informal Department review.

See http://www.dec.alaska.gov/commish/review-guidance/informal-reviews/ for information regarding informal reviews of Department decisions. An adjudicatory hearing request must be delivered to the Commissioner of the Department within 30 days of the permit decision, or a decision issued under the informal review process. An adjudicatory hearing will be conducted by an administrative law judge in the Office of Administrative Hearings within the Department of Administration. A written request for an adjudicatory hearing shall be delivered to the Commissioner at the following address:

Commissioner
Alaska Department of Environmental Conservation
P.O. Box 111800
Juneau AK, 99811.

Interested persons can review 18 AAC 15.200 for the procedures and substantive requirements regarding a request for an adjudicatory hearing. http://www.dec.alaska.gov/commish/review-guidance/adjudicatory-hearing-guidance/ for information regarding appeals of Department decisions.

Documents are Available
The permit, fact sheet, application, and related documents can be obtained by visiting or contacting DEC between 8:00 a.m. and 4:30 p.m. Monday through Friday at the addresses below. The permit, fact sheet, application, and other information are located on the Department's Wastewater Discharge Authorization Program website: http://www.dec.alaska.gov/water/wastewater/.

Alaska Department of Environmental Conservation Wastewater Discharge Authorization Program 555 Cordova Street Anchorage, AK 99501 (907) 269-6285	Alaska Department of Environmental Conservation Wastewater Discharge Authorization Program 410 Willoughby Avenue, Suite 310 Juneau, AK 99801 (907) 465-5180

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1.0 APPLICANT

This fact sheet provides information on the Alaska Pollutant Discharge Elimination System (APDES) permit for the following entity:

Name of Facility:	Niblack Project Wastewater Treatment Facility
APDES Permit Number:	AK0053708
Facility Location:	West Niblack Anchorage, Moira Sound, Prince of Wales Island
Mailing Address:	3123-595 Burrand Street, P.O. Box 49139 Vancouver, BC Canada V7X 1J1
Facility Contact:	Mr. Graham Neale

Figures in Appendix A of this Fact Sheet show the location of the Niblack Project and the discharge location.

2.0 FACILITY INFORMATION

2.1 Background

BlackWolf Copper and Gold Ltd, (formally Heatherdale Resources Ltd), are 100% owners of Niblack Project LLC, an Alaskan company which owns the Niblack Project (Niblack) and operates a wastewater treatment facility at the project site located in Niblack Anchorage, in Moira Sound, on Prince of Wales Island.

The Niblack adit is currently comprised of approximately 2500 feet, expandable to 6000 feet of underground drift development (adit) to provide access for continued exploration drilling on the Lookout and Mammoth massive sulfide mineral zones. Metals in the massive sulfide mineralization include copper, zinc, gold, and silver. Non-acid generating (NAG) rock is disposed of on the hill slope adjacent to the portal. The estimated quantity of NAG rock is 46,600 cubic yards. According to the Plan of Operations, potentially acid generating (PAG) rock will temporarily be stored on site in a 25,000 square-feet, lined, temporary pad. The estimated quantity of PAG rock is 14,300 cubic yards. Wastewater is generated from both the adit and the run-off from the PAG pile.

Effluent from the wastewater treatment ponds was originally discharged into a gravity feed land application treatment system. When temperatures fall below freezing the water in the lines freeze and prevent the water from discharging into the land application treatment system. Due to problems with freezing, including ice blockage, overflows, and human safety problems, the effluent will now be diverted to an outfall and discharged into the marine waters of the Niblack Anchorage.

2.2 Process Description

Groundwater from the adit is discharged into a two-pond treatment system with each pond measuring 76 feet x 76 feet x 8 feet deep. Runoff water from the PAG/ML rock pile is discharged into a separate treatment pond. Both of these treatment pond systems then flow into the discharge pipe and through the outfall into Niblack Anchorage.

The system is designed to treat a maximum flow rate of 300 gallons-per-minute (GPM) of water. Based on measured average flows, approximately 97 percent (291 GPM) of this flow is groundwater from the adit and direct precipitation into the settling ponds; the remaining 3 percent (9 GPM) of the flow is from run-off from the PAG pile. A maximum of 300 GPM of effluent will be treated and discharged from an outfall located at Latitude 55.065916 and Longitude -132.142143 in Niblack Anchorage, Moira Sound.

3.0 EFFLUENT LIMITS AND MONITORING REQUIREMENTS

3.1 Basis for Permit Effluent Limits

18 AAC 83.015 prohibits the discharge of pollutants to waters of the U.S. unless first obtaining a permit authorized by the APDES Program that meets the purposes of Alaska Statutes 46.03 and in accordance with CWA Section 402 and the requirements adopted by reference at 18 AAC 83.010.

The Clean Water Act (CWA) requires that the limits for a particular pollutant be the more stringent of either technology-based effluent limits (TBELs) or water quality-based effluent limits (WQBELs). TBELs are set according to the level of treatment that is achievable using available technology. WQBELs are set as the permit limit if they are more stringent than TBELs to ensure that the receiving water quality is protected. Wastewater generated onsite from the treatment ponds also includes groundwater infiltration and runoff water from the PAG pond A. flow limit is included in the APDES permit based on the hydraulic design limitations of the treatment ponds.

3.1.1 TBELs Based on ELGs

The Environmental Protection Agency (EPA) promulgated effluent limitation guidelines (ELGs) for the ore mining and dressing point source category at 40 CFR Part 440, which include TBELs for this point source category. Subpart J is applicable to Copper, Lead, Zinc, Gold, Silver, and Molybdenum Ores Subcategories.

New source ELGs are applicable for active mines where construction commenced after these ELGs were established on December 3, 1982. Niblack was an inactive exploration project during the current 2015 permit term, and ELGs were not directly applicable. However, the Department exercised its best professional judgment (BPJ) in establishing TBELs based on the previous active mine ELGs referenced in the preceding paragraph in the event the mine became active. The project resumed activity in late 2020 when a limited surface drilling program was started.

TBELs are carried over from the current 2015 permit. Table 1 below, identifies the parameters and TBEL’s required as a minimum for this Permit found in 40 CFR Part 440.

Table 1: TBEL Effluent Limits for Mine Drainage [40 CFR § 440.104(a)]

Parameter	Maximum for any 1 day		Average of daily values for 30 consecutive days		Range
Copper	150 Micrograms per Liter (µg/L)	1.5 Milligrams per Liter (mg/L)	150 µg/L	.015 mg/L	---
Zinc	1500 µg/L	1.5 mg/L	750 µg/L	0.75 mg/L	---
Lead	600 µg/L	0.6 mg/L	300 µg/L	0.3 mg/L	---
Mercury	2 µg/L	0.002 m/L	1 µg/L	.001 mg/L	---
Cadmium	100 µg/L	0.10 mg/L	50 µg/L	.05 mg/L	---
pH	Standard Units (SU)	---	---		6.0 – 9.0
Total Suspended Solids (TSS)	mg/L	30.0	20.0		---

3.1.2 Water Quality-Based Effluent Limit

CWA Section 301(b)(1) requires the establishment of limits in permits necessary to meet water quality standards (WQS) by July 1, 1977. All discharges to state waters must comply with WQS, including the Antidegradation Policy. Per 18 AAC 83.435(a)(1), APDES permits must include conditions to meet any applicable requirement in addition to, or more stringent than, TBELs (e.g., WQBELs) that "achieve WQSs established under CWA Section 303, including State narrative criteria for water quality." The RPA showed that Ammonia as NH_3 data collected during the last five years has reasonable potential to exceed water-quality criteria at the edge of the modeled mixing zone and therefore will require limits. Table 2 below identifies the parameters and water-quality criteria that have the potential to be exceeded at the edge of the mixing zone.

Table 2: Water Quality Criterion Having Potential to Exceed

Parameter	Units	Acute Criteria	Chronic Criteria
Ammonia as NH_3	mg/L	16.5	2.5

3.2 Basis for Effluent and Receiving Water Monitoring

In accordance with AS 46.03.110(d), the Department may specify in a permit the terms and conditions under which waste material may be disposed. Monitoring in a permit is required to determine compliance with effluent limits. Monitoring may also be required to gather effluent and receiving water data to determine if additional effluent limits are required and/or to monitor effluent impact on the receiving water body quality.

3.3 Effluent Limits and Monitoring Requirements

The permit contains effluent limits that are both TBELs and WQBELs, and a flow limit based on the treatment system design. Table 3 summarizes both TBELs and WQBELs derived using Reasonable Potential Analysis (RPA) Tool.

Table 3: Outfall 001 - Effluent Limits and Monitoring Requirements

Parameter	Daily Maximum	30-Day Average	Units	Sample Frequency	Sample Type
Total Discharge Flow	300 [a]	Report	Gallons Per Minute (GPM)	Continuous	Recorded
Copper	300	150	Micrograms per Liter (µg/L)	1/Quarter	Grab
TSS	30	20	mg/L	1/Quarter	Grab
pH	6.0-9.0	6.0-9.0	SU	1/Quarter	Grab
Cadmium	100	50	µg/L	1/Quarter	Grab
Lead	600	300	µg/L	1/Quarter	Grab
Mercury [b, c]	2	1	µg/L	1/Quarter	Grab
Zinc	1500	750	µg/L	1/Quarter	Grab
Ammonia as NH3	2642	887	mg/L	1/Quarter	Grab
Whole Effluent Toxicity	Report	N/A	Toxic Units, Chronic (TU_c)	2/ Year [d]	Grab

a) The wastewater discharge volume shall not exceed the maximum design flow rate approved.
b) Mercury shall be measured as total.
c) All other metals shall be measured as total recoverable.
d) Tests performed twice per year; one during the summer months (May1-September 30) and one during the winter months (October 1-April 30). In addition, samples collected for WET testing shall coincide with samples collected for analytical testing in an effort to correlate any toxic events with elevations in other parameters monitored.

3.4 Effluent Monitoring

The permit requires monitoring of the effluent to determine compliance with TBELs and water quality-based effluent limits (WQBELs). Effluent samples will be collected from the effluent stream after the flows from both the portal treatment settling pond and the PAG treatment pond facilities are combined, and before discharge into receiving waters.

Whole effluent toxicity (WET) tests are required to measure the aggregate toxic effect of the effluent Samples shall be collected at the same time analytical test samples are collected in an effort to correlate possible spikes in toxicity with elevations in other parameters monitored.

The data produced by this monitoring will be used to evaluate the effluent for pollutants of concern and to conduct future RPA needed, which will determine if the discharge of these pollutants might cause an exceedance of the water quality criteria in the receiving water body. Table 4 below presents the most recent reported as well as historical maximum reported values of pollutants of concern in the treated effluent monitoring data provided by the permittee.

Table 4: Treated Effluent Monitoring Data (2016 – 2021)

Parameter	Maximum Reported Value, in µg/L
Arsenic	0.40
Cadmium	33.7
Chromium (Total)	2.76
Copper	702
Lead	3.0
Mercury	0.02
Nickel*	5.9
Selenium	0.5
Silver*	1.12
Zinc	7800
* - Data from 2007 - 2013	

The permittee shall also consult and review APDES Application Form 2C. Form 2C contains specific effluent monitoring requirements due to be submitted in the application for permit reissuance (180 days prior to the permit expiration date). A copy of Form 2C can be found at http://www.dec.alaska.gov/water/wastewater/.

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. The permittee has the option of taking more frequent samples than required under the permit. These additional samples can be used for averaging if they are conducted using Department – approved test methods (generally found in 18 AAC 70 and 40 CFR § 136 [adopted by reference in 18 AAC 83.010]), and if the Method Detection Limits (MDLs) are less than the effluent limits.

3.4.1 Whole Effluent Toxicity Monitoring

18 AAC 83.435 requires that a permit contain limitations on WET when a discharge has reasonable potential to cause or contribute to exceedances of WQS. The permit does not establish WET limits because no effluent monitoring data for WET is currently available for a determination of reasonable potential to cause or contribute to an exceedance of the chronic WET numeric water quality criterion of 1.0 chronic toxic unit (TU_c), found in 18 AAC 70.030. The permit requires WET testing twice per year, once in the summer months and once during the winter months and as detailed in Table 3.

3.4.1.1 WET tests are laboratory tests that measure total toxic effect of an effluent on living organisms. The tests use vertebrate and invertebrate species to measure the aggregate toxicity of an effluent. The permittee must conduct chronic WET testing to screen for the most sensitive species for the first year of the permit term. Once the most sensitive species has been determined, the permittee may request the elimination of the less sensitive species in writing and must be approved by DEC in writing for use in subsequent WET tests. DEC can also approve written requests to substitute the less sensitive species during periods when the more sensitive species is unavailable. The permittee shall not make any changes to the selection of test species or dilution series without prior written DEC approval and shall document the use of substitute species in the DMR for the test. The species to be tested are listed below.

3.4.1.2 Test Species -Vertebrate (survival and growth): *Atherinops affinis* (topsmelt). In the event that topsmelt is not available, *Menidia beryllina* (inland silverside) may be used as a substitute.

3.4.1.3 For larval development tests, the permittee must use bivalve species *Crassostrea gigas* (Pacific Oyster) or *Mytilus spp*. (mussel). Due to seasonal variability, testing may be performed during reliable spawning periods (e.g., December through February for mussels and June through August for oysters). In the event that bivalves are unavailable, *Americamysis bahia* (formally *Mysidopsis bahia*, mysid shrimp) may be used as a substitute.to determine survival and growth endpoints.

3.4.1.4 Methods and Endpoints: For the shrimp and alternate fish species, the presence of chronic toxicity must be estimated as specified in *EPA Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms, Third Edition* (EPA-821-R-02-014). For the bivalve species and topsmelt, chronic toxicity must be estimated as specified in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to West Coast Marine and Estuarine Organisms* (EPA/600/R-95/136). The WET testing will determine the EC_{25} endpoint estimate of the effluent concentration that would cause a 25 % reduction in normal embryo development for the bivalves or in survival for fish and/or mysid shrimp. The WET testing will also determine the inhibition concentration (IC_{25}) point estimate of the effluent concentration that would cause a 25 % reduction in the growth of the fish and/or mysid shrimp.

3.4.1.5 Reporting Results: Results must be reported on the DMR using TU_c, where $TU_c = 100/EC_{25}$ or $100/IC_{25}$. The reported EC_{25} or IC_{25} must be the lowest point estimate calculated for the applicable survival, growth, or normal embryo development endpoints. The permittee must report the no observed effect concentrations (NOECs) in the full WET test report. DEC may compare this information with the IC_{25} during reissuance of the Permit.

3.4.1.6 Acute Toxicity Estimates: Although acute WET testing is not required, the permittee must provide an estimate of acute toxicity based on observations of mortality when appropriate. Acute toxicity estimates, if available, must be documented in the full report.

3.4.1.7 Dilution Series: A series of at least five dilutions and a control must be tested. For the first year of testing designed to screen for the most sensitive species, the dilution series shall be 0.5, 6.25, 12.5, 25, 50 and 75% along with a control of dilution water (0% effluent). In subsequent tests, the dilution series should be modified to bracket toxicity endpoints observed during previous tests. DEC may provide written direction to modify the previous dilution series, or the permittee may request written approval from DEC to modify the dilution series based on previous test results.

3.4.1.8 Hold Times: WET sample holding times are established at 36 hours and samples must not exceed a hold time of 72 hours. The permittee must document the conditions that resulted in the need for the holding time to exceed 36 hours and the potential effect on the test results.

3.4.1.9 Additional Quality Assurance Procedures: In addition to those quality assurance measures specified in the methodology, the following quality assurance procedures must be followed:

a) If organisms are not cultured by the testing laboratory, concurrent testing with reference toxicants must be conducted, unless the test organism supplier provides control chart data from at least the previous five months of reference toxicant testing. Where organisms are cultured by the testing laboratory, monthly reference toxicant testing is sufficient.

b) If either of the reference toxicant tests or the effluent tests does not meet all test acceptability criteria as specified in the test methods manual, then the permittee shall re-sample and re-test within the following month.

c) Control and dilution water must be receiving water, or salinity adjusted lab water. If the dilution water used is different from the culture water, a second control, using culture water must also be used.

3.4.2 Wet Reporting: DMRs and Full Report Deliverables

3.4.2.1 The permittee shall submit chronic WET test results on the next month's electronic DMR (eDMR) following the month of sample collection. The permittee must also submit the full WET Toxicity Report as an attachment to the eDMR per Section 8.1.1.

3.4.2.2 Full Report Preparation: The report of results shall include all relevant information outlined in Section 10 of Report Preparation in the U.S. EPA Short-Term Methods for Estimating the *Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms,* Third Edition (EPA-821-R-02-014).

3.4.2.3 Additional Reporting Information: In addition to toxicity test results, the permittee shall report:

a) The date and time of sample collection and initiation of each test, and

b) The discharge flow rate at the time of sample collection.

3.4.3 Additional Effluent Monitoring and Analytical Data Analysis

DEC may require additional monitoring of effluent or receiving water for facility or site-specific purposes, including, but not limited to obtaining data to support applications, demonstrating of water quality protection, obtaining data to evaluate ambient water quality, evaluating causes for elevated parameters in the effluent, and conducting chronic WET toxicity identification and

reduction. If additional monitoring is required, DEC will provide the permittee or applicant the request in writing. The permittee also has the option of taking more frequent samples than required under the Permit. These additional samples must be used for averaging if they are conducted using the Department approved test methods (generally found in 18 AAC 70 and 40 CFR 136 [adopted by reference in 18 AAC 83.010]). The results of any additional monitoring must be included in the calculation and reporting of the data on DMRs as required by the Permit and Standard Conditions Part 3.2 and 3.3 (Permit Appendix A).

Monitoring for effluent limitations must use methods with method detection limits that are less than the effluent limitations or are sufficiently sensitive. Monitoring effluent or receiving water for the purpose of comparing to water quality criteria must use methods with detection limits that are less than the applicable criteria or are sufficiently sensitive. Per 40 CFR 122.21(a)(3), a method approved under 40 CFR 136 is sufficiently sensitive when:

(A) The method minimum level (ML) is at or below the level of the applicable water quality criterion for the measured parameter, or

(B) The method ML is above the applicable water quality criterion, but the amount of the pollutant or pollutant parameter in the discharge is high enough that the method detects and quantifies the level of the pollutant or pollutant parameter in the discharge (e.g., not applicable to effluent or receiving water monitored for characterization), or

(C) The method has the lowest ML of the analytical methods approved under 40 CFR 136 for the measured pollutant or pollutant parameter (e.g., the receiving water concentration or the criteria for a given pollutant or pollutant parameter is at or near the method with the lowest ML.

3.5 Receiving Water Monitoring

3.5.1 The permittee must sample the water column just below the surface at a depth of 5 ft. at monitoring sites designated as SW-1, just west and outside of the mixing zone in an area midpoint between the nearest boundary of the authorized mixing zone and the mouth of the unnamed creek nearest the facility at a frequency of once per year. See Figure 2.

3.5.1.1 The date, time, and weather conditions must be noted and reported for each sample collected.

3.5.1.2 All receiving water samples must be grab samples.

3.5.1.3 All receiving water samples must be analyzed for the parameters listed in Table 5 below with methods that achieve minimum detection limits (MDL) equivalent to or less than those listed in the table.

3.5.1.4 All metals shall be reported as dissolved and total recoverable with the exception of mercury, which is to be reported as total.

Table 5: Receiving Water Monitoring Parameters and MDLs

Parameter	Units	Sample Frequency	Sample Type	MDL
Copper [a]	Micrograms per Liter (µg/L)	1/Year	Grab	0.1
Cadmium [a]	µg/L	1/ Year	Grab	0.03

Parameter	Units	Sample Frequency	Sample Type	MDL
Lead [a]	µg/L	1/ Year	Grab	0.05
Mercury	µg/L	1/ Year	Grab	0.002
Zinc [a]	µg/L	1/ Year	Grab	0.2
Ammonia as NH_3	mg/L	1/ Year	Grab	-
pH	Standard Units (s.u.)	1/ Year	Grab	-
TSS	Milligrams/L (mg/L)	1/ Year	Grab	-

Note:

a. To compare dissolved measurements with total recoverable measurements, use translators specified in the *Alaska Water Quality Criteria Manual for Toxic and Deleterious Organic and Inorganic Substances*.

3.6 Sediment Monitoring

3.6.1 The permittee must conduct sediment monitoring once per year at established monitoring stations SW-1.

3.6.1.1 The date, time, and weather conditions must be noted and reported for each sample collected.

3.6.1.2 The Permittee must collect at least one sample per sample year at each site and conduct all chemical tests identified herein.

3.6.1.3 The sediment samples must be analyzed for the metals in Table 6 below using the listed analytical protocols (or equivalent) for each sediment sample.

Table 6: Sediment Monitoring Parameters and Methods

Parameter	Preparation Method	Analysis Method	MDL [a] (mg/Kg)
Copper	PSEP [b]	GFAA [c]	0.3
Cadmium	PSEP [b]	ICP [d]	15.0
Lead	PSEP [b]	ICP [d]	0.5
Mercury	7471 [e]	7471 [e]	0.02
Zinc	PSEP [b]	ICP [d]	15.0

Notes:

a. Dry weight basis.

b. Recommended Protocols for Measuring Selected Environmental Variables in Puget Sound. Puget Sound Estuary Program (PSEP), EPA 910/9-86-157, as updated by Washington Department of Ecology. Subsection: Metals in Puget Sound Water, Sediment, and Tissue Samples, PSEP.

c. Graphite Furnace Atomic Absorption (GFAA) Spectrometry - SW-846, Test Methods for Evaluating Solid Waste Physical/Chemical Methods. EPA 1986.

d. Inductively Coupled Plasma (ICP) Emission Spectrometry - SW-846, Test Methods for Evaluating Solid Waste Physical/Chemical Methods. EPA 1986.

e. Mercury Digestion and Cold Vapor Atomic Absorption (CVAA) Spectrometry - Method 7471, SW846, Test Methods for Evaluating Solid Waste Physical/Chemical Methods. EPA 1986.

3.7 In-situ Bioassay and Sessile Organism Tissue Analysis

3.7.1 The permittee must conduct analysis or organism tissues at least once per year at established monitoring station SW-1.

3.7.1.1 The date, time, and weather conditions must be noted and reported for each sample collected.

3.7.1.2 The tissue samples must be collected from the organisms and locations listed In Table 7 below.

Table 7: In-situ Bioassay Monitoring Organisms and Parameters

Sample Location	In-situ Test Organism [a]	Parameters (total in mg/K)
SW-1	*Nephthys procera* (polychaetae) and *Nereis spp*. (polychaetas) [b]	Cadmium Copper Lead Mercury Zinc
SW-1	*Mytilus edulis* (blue mussel)	

Notes:

a. The organisms must be collected from each of the locations identified.

b. *Nereis sp*. may be replaced with other local species if *Nereis sp.* is not available.

3.7.1.3 The tissue samples must be prepared following EPA Method 200.2, where 0.3 grams of dry tissue and 5 milliliters (mL) of nitric acid are heated to 85 °C for four hours, cooled, and diluted to a volume of 22 mL. Levels of the elements must be determined by inductively coupled plasma mass spectrometer.

3.7.1.4 Quality assurance/quality control (QA/QC) plans for all the ambient water monitoring must be covered in the Quality Assurance Project Plan (QAPP) required under Permit Part 2.1.

3.7.1.5 Reporting. All monitoring results must be included in the Annual Report and submitted to DEC by March 1st of the next year. See Permit Part 9. The report must include a presentation of the analytical results and an evaluation of the results. The Annual Report must include a statistical evaluation of data showing averages, variations, and changes over time including a comparison of the past year's data to annual averages from the pre-production period and the production period. The report must include relevant QA/QC information. The report must be submitted electronically, and a hard copy provided upon request.

3.8 Annual Ambient Water Quality, Sediment Quality, and Sessile Organism Tissue Analysis

Annual discharge and receiving water quality monitoring results must be summarized in an Annual Water Quality Monitoring Summary (Annual Report) and submitted by March 1 of the next year. The report must include a presentation of the analytical results and an evaluation of the results. The evaluation must include an electronic spreadsheet containing historical data, a graphical presentation of the data at each monitoring station versus time, and a comparison of upstream and downstream monitoring results. The Annual Report must be certified and signed in accordance with Permit Appendix A, Part 1.12 and contain information required by Permit Parts 1.7.1.5, and 2.2.6**.**

4.0 RECEIVING WATER

As previously discussed at the end of Section 2.2, the permittee discharges treated effluent into the marine waters of Niblack Anchorage. Niblack Anchorage is located within Moira Sound off the Prince of Wales Island. Note, a mixing zone has been authorized as part of the permitting action (see Section 4.3 below).

4.1 Water Quality Standards

Section 301(b)(1)(C) of the CWA requires the development of limits in permits necessary to meet water quality standards by July 1, 1977. Per 18 AAC 83.435, APDES permits must include conditions to ensure compliance with 18 AAC 70 –Alaska Water Quality Standards (WQS). Regulations in 18 AAC 70 require that conditions in permits ensure compliance with the WQS. The state's WQS are composed of use classifications, numeric and/or narrative water quality criteria, and an Antidegradation Policy. The use classification system designates the beneficial uses that each water body is expected to achieve. The numeric and/or narrative water quality criteria are the criteria deemed necessary by the state to support the beneficial use classification of each water body. The antidegradation policy ensures that the beneficial uses and existing water quality are maintained.

Water bodies in Alaska are designated for all uses unless the water has been reclassified under 18 AAC 70.230 as listed under 18 AAC 70.230(e). Some water bodies in Alaska can also have site–specific water quality criterion per 18 AAC 70.235, such as those listed under 18 AAC 70.236(b). The receiving water for the discharge, Niblack Anchorage, has not been reclassified, nor have site-specific water quality criteria been established. Therefore, Niblack Anchorage, must be protected for all marine water designated use classes listed in 18 AAC 70.020(a)(2).

4.2 Water Quality Status of Receiving Water

Any part of a water body for which the water quality does not or is not expected to meet applicable WQS is defined as a "water quality limited segment" and placed on the state's impaired water body list. Niblack Anchorage is not included on *Alaska's Final 2020 Integrated Water Quality Monitoring and Assessment Report*, May 17, 2021 (2020 *Integrated Report*), nor is it listed as a CWA 303(d) waterbody requiring a TMDL. Accordingly, a TMDL has not been established for Niblack Anchorage.

4.3 Mixing Zone Analysis

Under 18 AAC 70.240, excluding 18 AAC 240(g)(2), and (4) as amended through March 23, 2006, the Department may authorize a mixing zone in a permit. Determination of mixing zones requires an evaluation of critical characteristics of the receiving water, effluent discharges, and other pertinent factors, combined with use of an approved mixing zone modeling program such as the Cornell Mixing Zone Model (CORMIX). The Department authorizes a mixing zone for the following parameters: copper, cadmium, lead, mercury, nickel, zinc, and ammonia, with an acute dilution factor of 378 and a chronic dilution factor of 587 surrounding Outfall 001. See Figure 2. Dilution factors were derived from the maximum expected effluent concentration from the last five years of effluent water quality data applicable water quality criteria, and other relevant site-specific discharge and ambient data using DEC's RPA tool, then entered into the Cormix 12.0 modeling program to obtain mixing zone sizes.

As per 18 AAC 70.240 (c)(4)(A) and (d)(8), the mixing zones will not result in an acute or chronic toxic effect in the water column, sediments, or biota outside the boundaries of the mixing zones. At and beyond the boundary of the acute mixing zone, all chronic aquatic life WQS apply. Based on the maximum expected effluent concentrations and acute WQS, copper required the most dilution with an acute dilution factor equal to 378, and a chronic dilution factor of 587 so copper concentrations determined the acute and chronic mixing zone sizes. Other parameters being addressed in the Permit meet their respective water quality criteria well within the acute and chronic mixing zones sized for copper. Cormix modeling incorporated both high and low flow ambient water velocities to determine the mixing zone size necessary to meet ambient flow conditions.

The acute mixing zone is a parallelogram box shape extending from the ocean floor to the water surface. It has a maximum length of 53 m centered along the 26.01 m long diffuser, with a maximum width of 57 meters.

The chronic mixing zone is a parallelogram box shape extending from the ocean floor to the water surface. It has a maximum length of 81.66 m multiplied by 2 to account for ebb and flood tide resulting in a total length of 163.32 meters, rounded up to 165 m. The chronic mixing zone is centered along the 26.01 m long diffuser, and has a total width of 107.36 m rounded up to 110

m. These results were modeled using the multiport diffuser option in CORMIX. These results were modeled using the multiport diffuser option in CORMIX. The 2015 permit contained language based on 18 AAC 70.240 and 18 AAC 255(b), as amended June 26, 2003, regarding the maximum size of an acute mixing zone (which were generally referenced in 18 AAC 70.255(d)), a drifting organism was not to be within an acute mixing zone for longer than 15 minutes. Based on both the 10^{th}, 0.0217 meters/second (m/s), and 90^{th}, 0.195 m/s, percentile receiving water current velocity a drifting organism passed through the acute mixing zone in less than four minutes and was consistent with *EPA's Technical Support Document for Water Quality-based Toxics Control.* As a result, the Department confirmed that there would be no lethality to organisms passing through the mixing zone. 18 AAC 70 was amended on March 5, 2020, and the requirements of 18 AAC 70.255 (d) were repealed March 23, 2006. Nevertheless, based on both the 10^{th}, 0.0217 meters/second (m/s), and 90^{th}, 0.195 m/s, percentiles receiving water current velocity, a drifting organism passes through the acute mixing zone length of 53 m and the width of 57 m in under an hour using the 10^{th} percentile, and is consistent with Section 2.2.2 of *EPA's Technical Support Document for Water Quality-based Toxics Control* guidance document.

4.4 Mixing Zones.

4.4.1 Modeling and Methodology

The Mixing Zone Check list (Attachment 1) outlines regulatory criteria that must be considered when the Department analyzes a permittee's request for a mixing zone. These criteria include the size of the mixing zone, treatment technology, designated and existing uses of the water body, human consumption, spawning areas, human health, aquatic life, and endangered species. All criteria must be met to authorize a mixing zone. A summary of this analysis follows.

4.4.2 Mixing Zone Size Constraints - Per 18AAC 70.240(k), the Department may authorize a mixing zone as proposed, or with conditions, if the mixing zone is not greater than 10% of the receiving water area or the cumulative linear length of the mixing zones intersected on any given cross section is less than 10 %. Neither of these two size limitations are exceeded by the newly calculated dimensions of the mixing zone.

4.4.3 Ambient Data – To determine the width and length of the mixing zone under critical receiving water conditions, calculations using the 10^{th} and the 90^{th} percentile current velocity were completed. Due to limitations of the Cormix program, the slightly higher percentile 35^{th} percentile was substituted for the 10^{th} percentile, resulting in a lower tidal velocity of 0.075 m/s (35^{th} percentile) input to the model along with a higher tidal velocity of 0.195 m/s (90^{th} percentile) The water body was modeled as stratified with surface and bottom densities of 1019.8 and 1021.1 kilograms per cubic (kg/m^3), respectively. These densities were derived from temperature and salinity profiles recently collected from Kassan Bay, Alaska, and used as surrogate densities. Baseline water quality data was collected to determine the assimilative capacity of the receiving water. Water samples from Niblack Anchorage were collected on May 14, 2007, and October 2, 2007, from three different depths in the water column. These samples were tested for salinity, pH, and a suite of chemicals and dissolved metals. The October samples were non-detect for copper, the parameter that determines the size of the acute and chronic mixing zones. The average copper background concentration measured in May 2007, was 0.39 µg/L, and this is the value that was used for the background copper concentration in the RPA and the mixing zone modeling.

4.4.4 Effluent Data – The mixing zone plume was modeled using the maximum permitted flow limit equal to 300 gallons per minute and an effluent temperature of 9º C. The effluent parameter requiring the greatest dilution to meet WQS at Outfall 001 is copper, with a maximum expected effluent concentration of 2193.45 micrograms per liter (µg/L); therefore, copper determined the chronic mixing zone size. All other parameters needing a chronic mixing zone to meet their respective water quality criteria in the water body fit within the chronic mixing zone sized for copper. Consequently, this parameter determined the smallest practicable mixing zone.

4.4.5 Discharge Data – Depth of water at the diffuser is approximately13 meters as presented in NOAA's Bathymetric Data Viewer at https://www.ncei.noaa.gov/maps/bathymetry/.

4.4.6 Size – For practical reasons, both the acute and chronic mixing zones are included in an approved chronic mixing zone size length of 165 m centered along the 26.01 m long diffuser by a total width of 110 meters. CORMIX model simulations based on critical receiving water and effluent conditions along with the Department's knowledge of the water body's existing uses were used to determine the appropriate size of the mixing zone. This evaluation is consistent with the provisions of 18 AAC 70.245 and the small as practicable provision found 18 AAC 70.240(a)(2).

4.4.7 Technology –1 8 AAC 70.240(c)(1) requires the Department to determine if "an effluent or substance will be treated to remove, reduce, and disperse pollutants, using methods found by the Department to be the most effective and technologically and economically feasible, consistent with the highest statutory and regulatory treatment requirements" before authorizing a mixing zone. Applicable "highest statutory and regulatory requirements" are defined in 18 AAC 70.240(c)(A), (B), and (C) as follows:

A) Any federal TBEL identified in 40 CFR 125.3 and 40 CFR 122.29, as revised as of July1,2005 and adopted by reference.

B) Minimum treatment standards in 18 AAC 72.050; and

C) Any treatment requirement imposed under another state law that is more stringent than the requirement of this chapter.

Settling ponds are used to treat wastewater influent and produce an effluent of higher quality. In accordance with 18 AAC 70.240(a)(3), the most effective technologically and economically feasible methods are used to disperse, treat, remove, and reduce pollutants. Settling ponds are used to treat wastewater influent and produce an effluent of a higher quality. Additionally, state-of-the-art diffusers will be installed to help disperse the high-quality effluent upon mixing with the receiving water.

4.4.8 Existing Use – Per 18 AAC 70.240(c)(2), when authorizing mixing zones, the Department must ensure that the existing uses of the waterbody outside the mixing zone are not partially nor completely eliminated and the overall biological integrity of the waterbody as whole is not impaired. The Department has authorized 165 m long and a 110 m width chronic mixing zone to ensure water-quality criteria beyond the boundary of the mixing zone is not exceeded. Because water quality criteria are met at the boundary of the chronic mixing zones and the criteria are established to protect the existing uses and biological integrity of the waterbody, the mixing zones are appropriately sized and protective of the existing uses of the waterbody as a whole.

4.4.9 Human Consumption – Per 18 AAC 70.240(c)(4)(B) the mixing zone must not create a public health hazard that would preclude existing uses of the waterbody for water supply or contact recreation. Per 18 AAC 70.240(c)(4)(C), the mixing zone must not preclude, or limit established processing activities or commercial, sport, personal use, or subsistence fish and shellfish harvesting. Lastly, per 18 AAC 70.240(d)(6) the pollutants discharged cannot produce objectionable color, taste, or odor in aquatic resources harvested for human consumption; nor can the discharge. The mixing zones are not authorized in a location where aquatic resources are harvested or that could result in precluding or limiting established processing activities or commercial, sport, personal use, or subsistence fish and shellfish harvesting. Nor is there any indication that the pollutants discharged would produce objectionable color, taste or odor in aquatic resources harvested for human consumption if such activity occurred near the outfall. Any human consumption of marine water would require a level of treatment that would remove all pollutants (e.g., desalination or reverse osmosis). Therefore, human consumption is not impacted by discharges under the Permit.

4.4.10 Human Health - Per 18 AAC 70.240(d)(1), the mixing zones must not result in pollutants discharged at levels that will bioaccumulate, bioconcentrate, or persist above natural levels in sediments, water, or biota, or at levels at levels that otherwise will create a public health hazard through encroachment on a water supply or contact recreation uses. The Department has reviewed available data provided by the applicant and has determined there are no bioaccumulating or bioconcentrating parameters associated with the discharges. Per 18 AAC 70.250(a)(1)(A), available evidence must reasonably demonstrate that the pollutants discharged in an authorized mixing zone will not bioaccumulate. None of the discharges are expected to contain bioaccumulative chemicals.

Per 18 AAC 70.240(d)(2) pollutants discharged must not present an unacceptable risk to human health from carcinogenic, mutagenic, teratogenic, or other effects as determined using a risk assessment method approved by the Department and consistent with 18 AAC 70.025, which indicates the lifetime incremental cancer risk level is 1 in 100,000 for exposed individuals. There are no cancer-causing pollutants being discharged at concentrations that present unacceptable risks.

4.4.11 Aquatic Life and Wildlife – 18 AAC 70.240(c)(4)(A),(D), and (E), pollutants for which the mixing zones will be authorized will not result in an acute or chronic toxic effect in the water column, sediments, or biota outside the boundaries of the mixing zone; a reduction in fish or shellfish population levels; or in permanent or irreparable displacement of indigenous organisms. In addition, the mixing zone must not result in undesirable or nuisance aquatic life per 18 AAC 70.240(d)(5). Because all criteria are met at the respective acute and chronic mixing zone boundaries, toxic effects in the water column, sediments, or biota will not occur outside these boundaries; existing water quality criteria protect from these occurrences. In addition, there are no anticipated displacement of indigenous species nor promotion of undesirable or nuisance aquatic life.

4.4.12 Spawning Areas – Per 18 AAC 70.240(e)(1) and (2), a mixing zone will not be authorized in lakes, streams, rivers, or other flowing freshwaters in spawning area of any of the five species of Pacific salmon found in the state or be allowed to adversely affect the present and future capability of an area to support spawning of these species. Per 18 AAC 70.240(f), a mixing zone will not be authorized in a spawning area for the following resident fish: Arctic Grayling; northern pike; lake trout; brook trout; sheefish; burbot; landlocked coho salmon, chinook salmon, or sockeye salmon; anadromous or resident rainbow trout, Arctic char, Dolly Varden, whitefish, or cutthroat trout. Because the permit does not authorize the discharge of effluent to open waters of a freshwater lake, river, or other flowing freshwater, there are not associated discharges to anadromous fish spawning areas or the resident freshwater fish listed in the regulation.

4.4.13 Endangered Species – Per 18 AAC 70.240(c)(4)(F), the mixing zone will not cause an adverse effect on threatened or endangered species. The United States Fish and Wildlife Service (USFWS) indicated that the Finn Whale, Short-tailed Albatross and Steller Sea Lion may occur within Moira Sound. For more information on local endangered species, see Section 10 below.

4.5 Ocean Discharge Criteria

Section 403(a) of the CWA, Ocean Discharge Criteria, prohibits the issuance of a permit under Section 402 of the CWA for a discharge into the territorial sea, the water of the contiguous zone, or the oceans except in compliance with Section 403. Permits for discharges seaward of the baseline of the territorial seas must comply with the requirements of Section 403, which include development of an Ocean Discharge Criteria Evaluation (ODCE).

An interactive map depicting Alaska's baseline plus additional boundary lines is available at http://www.charts.noaa.gov/OnLineViewer/AlaskaViewerTable.shtml. The map is provided for information purposes only. The U.S. Baseline committee makes the official determinations on baseline.

A review of the baseline line maps revealed that the baseline extends across the mouth of Moira Sound. The Niblack Outfall 001 is positioned landward of the baseline of the territorial sea; therefore, an ODCE under Section 403 of the CWA is not required to be completed for this permit issuance.

5.0 ANTIBACKSLIDING

18 AAC 83.480 requires that "effluent limitations, standards, or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit." 18 AAC 83.480(c) also states that a permit may not be reissued "to contain an effluent limitation that is less stringent than required by effluent guidelines in effect at the time the permit is renewed or reissued."

Effluent limitations may be relaxed as allowed under 18 AAC 83.480, CWA 402(o) and CWA 303(d)(4). 18 AAC 83.480(b) allows relaxed limitations in renewed, reissued, or modified permits when there have been material and substantial alterations or additions to the permitted facility that justifies the relaxation or if the Department determines that technical mistakes were made.

CWA 303(d)(4)(B) states that, for waterbodies where the water quality meets or exceeds the level necessary to support the waterbody's designated uses, WQBELs may be revised as long as the revision is consistent with the State's Antidegradation Policy. Even if the requirements of CWA 303(d)(4) or 18 AAC 83.480(b) are satisfied, 18 AAC 83.480(c) prohibits relaxed limits that would result in violations of WQS or ELGs.

State regulation 18 AAC 83.480(b) only applies to effluent limitations established on the basis of CWA 402(a)(1)(B), and modification of such limitations based on effluent guidelines that were issued under CWA 304(b). Accordingly, 18 AAC 83.480(b) applies to the relaxation of previously established TBELs based on ELGs or TBELs developed using case-by-case BPJ. To determine if backsliding is allowable under 18 AAC 83.480(b), the regulation provides five regulatory criteria (18 AAC 83.480(b)(1-5)) that must be evaluated and satisfied.

The 2015 Niblack Mine discharge was accommodated by the plan to build an outfall with a diffuser that would accommodate the need to reduce pollutants discharge to below ELGS and water quality criteria.

In the case of the new effluent discharge data submitted with the permittee's application, elevated concentrations of copper, and has necessitated the redesign of the diffuser and a resizing of the mixing zones to accommodate those higher levels of copper. In the new RPA analysis, the 30-day monthly average limitations for lead have been increased concomitantly due to the increased mixing zone size necessary to accommodate increased copper concentrations and, along with other pollutants in the discharge, do not reflect an actual increase in loading relative to the 2015 permit. See Reasonable Potential Analysis Appendix B, Table B-3. Based on new data information, the substantial alteration of the diffuser, and the increased mixing zone size, 18 AAC 83.480, CWA 402(O) and CWA 303(d)(4) as well as the relevant parts of (1-5) of 18 AAC 83.480(b) have been satisfied. And the Permit does not reflect backsliding on the permittees part.

6.0 ANTIDEGRADATION

6.1 Legal Basis

Antidegradation is implicit in CWA Section 101(a) goals, explicitly referenced in CWA Section 303(d)(4)(B) and implemented through 40 CFR 131.12. Section 303(d)(4) of the CWA states that for waterbodies where the water quality meets or exceeds the level necessary to support the waterbody's designated uses, WQBELs may be revised as long as the revision is consistent with the State Antidegradation Policy and Implementation Methods. Alaska's current Antidegradation Policy and Implementation Methods are presented in 18 AAC 70.015 *Antidegradation Policy* (*Policy*) and in 18 AAC 70.016 *Antidegradation Implementation Methods for Discharges Authorized Under the Federal Clean Water Act* (*Implementation Methods*). For these state regulations to apply under the CWA, they must be previously approved by EPA per CWA Section 303(c)(3). The *Policy* and *Implementation Methods* have been amended through April 6, 2018; are consistent with the CWA and 40 CFR 131.12; and were approved by EPA on July 26, 2018.

6.2 Receiving Water Status, Tier Determination, and Analysis Requirements

Per the Implementation Methods, the Department determines a Tier 1 or Tier 2 classification and protection level on a parameter-by-parameter basis for the waterbody. The Implementation Methods

also describe a Tier 3 protection level applying to designated waters, although at this time no Tier 3 waters have been designated in Alaska.

The marine waters of Moira Sound, covered under the Permit, are not listed as impaired (Categories 4or 5) in the *2020 Integrated Report*. Therefore, no parameters have been identified where only the Tier 1 protection level applies. Accordingly, this antidegradation analysis applies the Tier 2 protection level on a parameter-by-parameter basis consistent with 18 AAC 70.016(c)(1) and18 AAC 70.015(a)(2), that states if the quality of water exceeds levels necessary to support propagation of fish, shellfish, wildlife, and recreation in and on the water, that quality must be maintained and protected, unless the Department authorizes a reduction in water quality. Prior to authorizing a reduction of water quality, the Department must first analyze and confirm the findings under 18 AAC 70.015(a)(2)(A-D) are met. Because Tier 1 protection applies to all waters of the U.S. in the state, the analysis must be conducted with implementation procedures in 18 AAC 70.016(b)(5)(A-C) for Tier 1 protection. For Tier 2 protection, the analysis must also comply with 18 AAC 70.016(c)(7)(A-F). These analyses and associated finding are summarized below.

6.2.1 Tier 1 Analysis of Existing Use Protection

The summary below presents the Department's analyses and findings for the Tier 1 analysis of existing use protections per 18 AAC 70.016(b)(5) finding that:

(A) *existing uses and the water quality necessary for protection of existing uses have been identified based on available evidence, including water quality and use related data, as well as information submitted by the applicant.*

The Department reviewed water quality data, environmental monitoring studies, and information on existing uses within the coverage area. The Department finds the information reviewed as sufficient and credible to identify existing uses and water quality necessary for Tier 1 protection.

(B) existing uses will be maintained and protected; and

Per 18 AAC 70.020 and 18 AAC 70.050, marine waters are protected for all uses. Therefore, the most stringent water quality criteria found in 18 AAC 70.020 and in *the Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances, 2008 (Toxicity Manual*) apply and were evaluated to ensure existing uses and the water quality necessary for protection of existing uses of the receiving waterbody are fully maintained and protected. Water quality criteria are developed to be protective of existing uses. The discharges authorized under the Permit are controlled or limited to either meet criteria at the point of discharge, or at the boundary of the chronic mixing zone, if applicable. Given water quality criteria is met at the boundary of the chronic mixing zone for all parameters, the existing uses of the waterbody as a whole are being maintained and protected.

(C) the discharge will not cause water quality to be lowered further where the department finds that the parameter already exceeds applicable criteria in 18 AAC 70.020(b),18 AAC 70.030, or 18 AAC 70.236(b).

As discussed in (B), the Permit has been developed to ensure discharges shall not cause or contribute to an exceedance of water quality criteria. As previously stated, the marine waters of Moira Sound covered under the Permit are not listed as impaired. Therefore, no parameters were identified as already exceeding the applicable criteria in 18 AAC 70.020(b) or 18 AAC 70.030.

The Department concludes the terms and conditions of the Permit will be adequate to fully protect and maintain the existing uses of the water and that the findings required under 18 AAC 70.016(b)(5) are met.

6.2.2 Tier 2 Analysis for Lowering Water Quality

Per 18 AAC 70.016(c)(2), an antidegradation analysis is required for those waterbodies needing Tier 2 protection and which have any new or existing discharges that are being expanded based on permitted increases in loading, concentration, or other changes in effluent characteristics that could result in comparative lower water quality or pose new adverse environmental impacts. Per 18 AAC 70.016(c)(2)(A), the analysis will only be conducted for the portion of the discharge that represents an increase from the existing authorized discharge

Per 18 AAC 70.990(75), "new or expanded" with respect to discharges means discharges that are regulated for the first time or discharges that are expanded such that they could result in an increase in pollutant load or concentration or other changes in discharge characteristics that could lower water quality or have other adverse environmental impacts. AK0053708 has an expanded discharge under the Permit and therefore must have a Tier 2 Analysis.

6.2.3 Tier 2 Analysis

The State's Antidegradation Policy (Amended as of March 5, 2020) in 18 AAC 70.015(a)(2) states that if the quality of water exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water (i.e., Tier 2 waters), that quality must be maintained and protected. The Department may allow a reduction of water quality only after finding that four specific requirements of the antidegradation policy at 18 AAC 70.015(a)(2)(A)-(D) are met. The Department's findings follow:

1. **18 AAC 70.015 (a)(2)(A).** Allowing lower water quality is necessary to accommodate important economic or social development in the area where the water is located.

   Niblack Exploration Project's contributions to the socioeconomics of Southeast Alaska are important and highly significant. Issuance of the permit will allow for a reliable long-term wastewater discharge option for the project site that is not susceptible to cold weather failure.

Previously, the facility discharged treated effluent to a land application system. This land application system was prone to continual freezing problems and potential overflows, causing operational and human safety issues. A marine discharge will allow the facility to discharge year-round without the potential freezing problems. This will allow Niblack to continue to maintain current levels of operations safely while focusing on future surface exploration activities and development studies. The project owner, Niblack Project LLC, has been committed to ensuring economic benefits from the Niblack Project are optimized for local residents, businesses, and communities. This commitment has seen about $37 million invested in the Southeast Alaska project since 2009. During mine operations, Niblack has the potential to provide 200 full-time jobs, with about two-thirds of workers at the mine site and one-third at the mill. During the mill construction phase, an estimated workforce of 200 would be needed. It is believed that the economic benefits from production at Niblack will be comparable to those generated at other mines in Southeast Alaska. In addition, by allowing the marine discharge, the project site will remain in a stable condition and the site will be maintained in a manner that will allow mining to commence as the project progresses.

As described in the following sections, the limits in the permit will meet WQS, provide for water quality adequate to protect existing uses, and treat and control discharges by the most effective and reasonable means and to the highest statutory and regulatory requirements. Allowing the discharge is important economically and socially for the Prince of Wales Island.

It would be a financial hardship to implement other source control and treatment measures. There are no other feasible wastewater disposal options that avoid a direct discharge to surface water. The Department concludes that the authorization of the discharge accommodates important economic and social development in the Prince of Wales Island area and that the finding is met.

2. **18 AAC 70.015 (a)(2)(B).** Except as allowed under this subsection, reducing water quality will not violate the applicable criteria of 18 AAC 70.020 or 18 AAC 70.235 or the whole effluent toxicity limit in 18 AAC 70.030.

   Except within the mixing zone, the permit prohibits violation of the water quality criteria in 18 AAC 70.020. Reduction of water quality in the mixing zone is specifically authorized according to 18 AAC 70.240 through 18 AAC 70.270 (Amended March 5, 2020) and as allowed in 18 AAC 70.015(a)(2). The mixing zone has been sized to ensure that all applicable water quality criteria are met at all points outside the boundary of the mixing zone; therefore, reduction of water quality in the mixing zone is allowed under the antidegradation policy at 18 AAC 70.015(a)(2), and outside the mixing zone all applicable water quality criteria are protected.

   Discharges authorized under this permit will not violate applicable water quality criteria, as allowed under 18 AAC 70.235. Under this regulation, the Department may establish a site-specific water quality criterion that modifies a water quality criterion set for a water body. Since there are no site-specific criteria established for any receiving waters applicable to this permit, further evaluation is not required.

   Whole effluent toxicity testing is required twice per year. The permittee is required to submit these results to DEC within 14 days of receipt of test results. WET results from this permit issuance will be used when the permittee applies for reissuance of the permit to ensure the applicable criteria of 18 AAC 70.030 are met.

The Department finds that the reduced water quality will not violate applicable water quality criteria and that the finding is met.

3. **18 AAC 70.015(a)(2)(C).** The resulting water quality will be adequate to fully protect existing uses of the water.

   Analysis of effluent monitoring data from the existing land application system from the past seven years shows that discharges will protect existing water body uses. In addition, the effluent limits required by the permit will ensure that all uses are fully protected. A mixing zone is authorized, in accordance with 18 AAC 70.245; the mixing zone has been appropriately sized to fully protect the existing uses of Niblack Anchorage.

   The Department concludes that the resulting water quality will be adequate to fully protect existing uses and that the finding is met.

4. **18 AAC 70.015(a)(2)(D).** The methods of pollution prevention, control, and treatment found by the Department to be most effective and reasonable will be applied to all wastes and other substances to be discharged.

   The Department finds the most effective and reasonable methods of prevention, control, and treatment are the practices and requirements set out in the APDES permit. Wastewater treatment consists of settling ponds that are used to treat groundwater infiltration and run-off water. This type of treatment and associated discharge is similar in nature to other, like facilities and their discharges. The design, construction and operation of the treatment system has been reviewed and approved by the Department.

   Previously, the facility discharged treated effluent to a land application system. This land application system was prone to continual freezing problems and potential overflows, causing operation and human safety issues. A marine discharge will allow the facility to discharge year-round without potential freezing problems.

   The facility does have some chemical mixing tanks that are available for water treatment, if need be, when the facility is operational. However, use of the chemical mixing tanks would require continuous, on-site supervision and the continuous expenditure of resources, such as fuel and materials. Since Niblack is a remote site that is in a period of temporary closure, with minimal staffing, use of the mixing tanks is currently not an economically feasible treatment option.

   The Department finds the most effective methods of prevention, control, and treatment are the practices and requirements set out in the permit and concludes that this finding is met.

7.0 Electronic Discharge Monitoring Reports

7.1.1 E-Reporting Rule - Phase I

The permittee must submit a DMR for each month by the 28th day of the following month. DMRs shall be submitted electronically through NetDMR per Phase I of the E Reporting Rule (40 CFR 127). For access to the NetDMR Portal, go to https://cdxnodengn.epa.gov/oeca-netdmr-web/action/login. DMRs submitted in compliance with the E-Reporting Rule are not required to be submitted as described in Appendix A - Standard Conditions unless requested or approved by the Department. Any DMR data required by the Permit that cannot be reported in a NetDMR field (e.g., full WET Reports, mixing zone receiving water data, etc…), shall be included as an attachment to

the NetDMR submittal. DEC has established an e-Reporting Information website at http://dec.alaska.gov/water/compliance/electronic-reporting-rule/ which contains general information about this new reporting format. Training modules and webinars for NetDMR can be found at https://netdmr.zendesk.com/home.

7.1.2 E-Reporting Rule - Phase II (Other Reports).

Phase II of the E-Reporting rule will integrate electronic reporting for all other reports required by the Permit (e.g., Annual Reports and Certifications) and implementation is expected to begin during the permit cycle. Permittees should monitor DEC's E-Reporting website at http://dec.alaska.gov/water/compliance/electronic-reporting-rule/ for updates on Phase II of the E-Reporting Rule and will be notified when they must begin submitting all other reports electronically. Until such time, other reports required by the Permit may be submitted in accordance with Appendix A, Standard Conditions.

8.0 OTHER PERMIT CONDITIONS

8.1 Standard Permit Provisions

Permit Appendix A of the Permit contains standard regulatory language that must be included in all APDES permits. These requirements are based on the regulations and cannot be challenged in the context of an individual APDES permit action. The standard regulatory language covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, signatory authority, and other general requirements.

8.2 Quality Assurance Project Plan

The permittee is required to develop procedures to ensure that the monitoring data submitted are accurate and to explain data anomalies if they occur. The permittee is required to develop and implement procedures in a QAPP that documents standard operating procedures the permittee must follow for collecting (e.g., sample collection for effluent and chronic WET analysis), handling, storing, and shipping samples; laboratory analysis (e.g., most sensitive methods); and data reporting. If a QAPP has already been developed and implemented, the permittee must review and revise the existing QAPP to ensure it includes the necessary content. The permittee must submit a letter to the Department prior to discharging or within 90 days of the effective date of the Permit certifying that the QAPP has been revised and implemented. The QAPP shall be retained onsite and made available to the Department upon request.

8.3 Best Management Practices Plan

A Best Management Practices Plan (BMP Plan) presents operating and housekeeping measures intended to minimize or prevent the generation and potential release of pollutants from a facility to the waters of the U.S. during normal operations and additional activities. Per 18 AAC 83.475(4)," A permit must include best management practices to control or abate the discharge of pollutants and hazardous in a permit when the practices are reasonably necessary to achieve effluent limitations and standards…"

Within 90 days of the effective date of the Permit, the permittee must review, revise as necessary, implement the BMP Plan to address current activities at the terminal and submit written certification of the review, revision, and implementation to DEC.

In each subsequent year of the Permit, the permittee must establish a committee to review and revise the BMP Plan as necessary to address any modifications or changes to operational practices at the terminal and to continue to meet the objectives and specific requirements of the Permit. The permittee must submit written certification to DEC that the BMP Plan review committee has reviewed the BMP Plan, and modified, if necessary, by January 31st of each year the Permit remains in effect.

8.4 Termination Notification

DEC may terminate coverage under an APDES permit for the reasons described in 18 AAC 83.140 using the procedures provided in 18 AAC 83.130. If a permittee desires to terminate coverage, the Permit requires the permittee to provide notice of termination (NOT) to DEC within 30 days following cessation of discharges. The notice must include certification that the facility is not subject to an enforcement action or citizen suit. The notice must also include any final reports required by the Permit.

9.0 OTHER LEGAL REQUIREMENTS

9.1 Endangered Species Act

The Endangered Species Act (ESA) requires federal agencies to consult with the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species.

As a state agency, DEC is not required to consult with these federal agencies regarding permitting actions; however, DEC voluntarily contacted the agencies to notify them of the issuance of this permit and to obtain listings of threatened and endangered species near the discharge. The following responses and information are from USFWS and the NOAA NMFS ESA/Marine Mammal Protection Act (MMPA) species map at the IPaC Information for Planning and Consultation website:

- USFWS was contacted via email on July 15, 2021, and responded on the same day, referring DEC to its IPaC website at https://ecos.fws.gov/ipac/.. The website indicated that the Short-Tailed albatross (*Phoebastria (=diomedea) albatrus*) is found in the project area.
- MMPA species map https://www.fisheries.noaa.gov/resource/data/alaska-endangered-species-and-critical-habitat-mapper-web-application showed the Fin Whale (*Balaenoptera physalus*) is found in the project area. The MMPA map also showed a small presence of the Steller Sea Lion (*Eumetopias jubatus*) on the land fringes entering Niblack Anchorage from Moira Sound.

The antidegradation analysis, found in Section 70, determined that the existing water uses and the level of water quality necessary to protect existing uses will be maintained and protected. In addition, the mixing zone analysis found in section 4.3, the Department confirmed that there will be no lethality to organisms passing through the mixing zone.

9.2 Essential Fish Habitat and Fish Passage

Essential fish habitat (EFH) includes the waters and substrate (sediments, etc.) necessary for fish from commercially fished species to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires federal agencies to consult with NOAA when a discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH. As a state agency, DEC is not required to consult with federal agencies regarding permitting action; however, DEC consulted with NOAA's EFH online mapper and found the project zone was EFH for Chinook, Chum, Pink, Sockeye, and Coho Salmon but no Habitat Areas of Particular Concern for Niblack Anchorage. The Alaska Department of Fish and Game's Fish Passage website at http://www.adfg.alaska.gov/index.cfm?adfg=fishpassage.database revealed that fish passage areas were confined to near shore areas of Niblack Anchorage.

9.3 Permit Expiration

The permit will expire five years from the effective date of the permit.

10.0 REFERENCES

1. Alaska Department of Environmental Conservation, 2003. Alaska Water Quality Criteria Manual for Toxics and Other Deleterious Organic and Inorganic Substances, as amended through December 12, 2008.
2. Alaska Department of Environmental Conservation, 2020. Alaska's Final 2020 Integrated Water Quality Monitoring and Assessment Report, May 17, 2020.
3. Alaska Department of Environmental Conservation, 2013. Interim Antidegradation Implementation Methods. Retrieved from http://www.dec.state.ak.us/water/wqsar/Antidegradation/docs/P&P-Interim_Antidegradation_Implemenation_Methods.pdf
4. Alaska Department of Environmental Conservation, 2020 Water Quality Standards, Amended March 5, 2020.
5. Alaska Department of Fish and Game, 2021. Fish Passage Website, http://www.adfg.alaska.gov/index.cfm?adfg=fishpassage.database
6. NMFS, Office of Habitat Conservation, 2013. Essential Fish Habitat Mapper v3.0. Retrieved from http://www.habitat.noaa.gov/protection/efh/habitatmapper.html.
7. NOAA, Bathymetric Data Viewer at https://www.ncei.noaa.gov/maps/bathymetry/
8. U.S. Environmental Protection Agency. 1991. Technical Support Document for Water Quality-based Toxics Control. Office of Water Enforcement and Permits, Office of Water Regulations and Standards. Washington DC, March 191. EPA/505/2-90-001.
9. U.S. Fish and Wildlife Service IPaC website, 2021. https://ecos.fws.gov/ipac/.

APPENDIX A. FACILITY INFORMATION

Figure 1: Niblack Exploration Project Facility Map

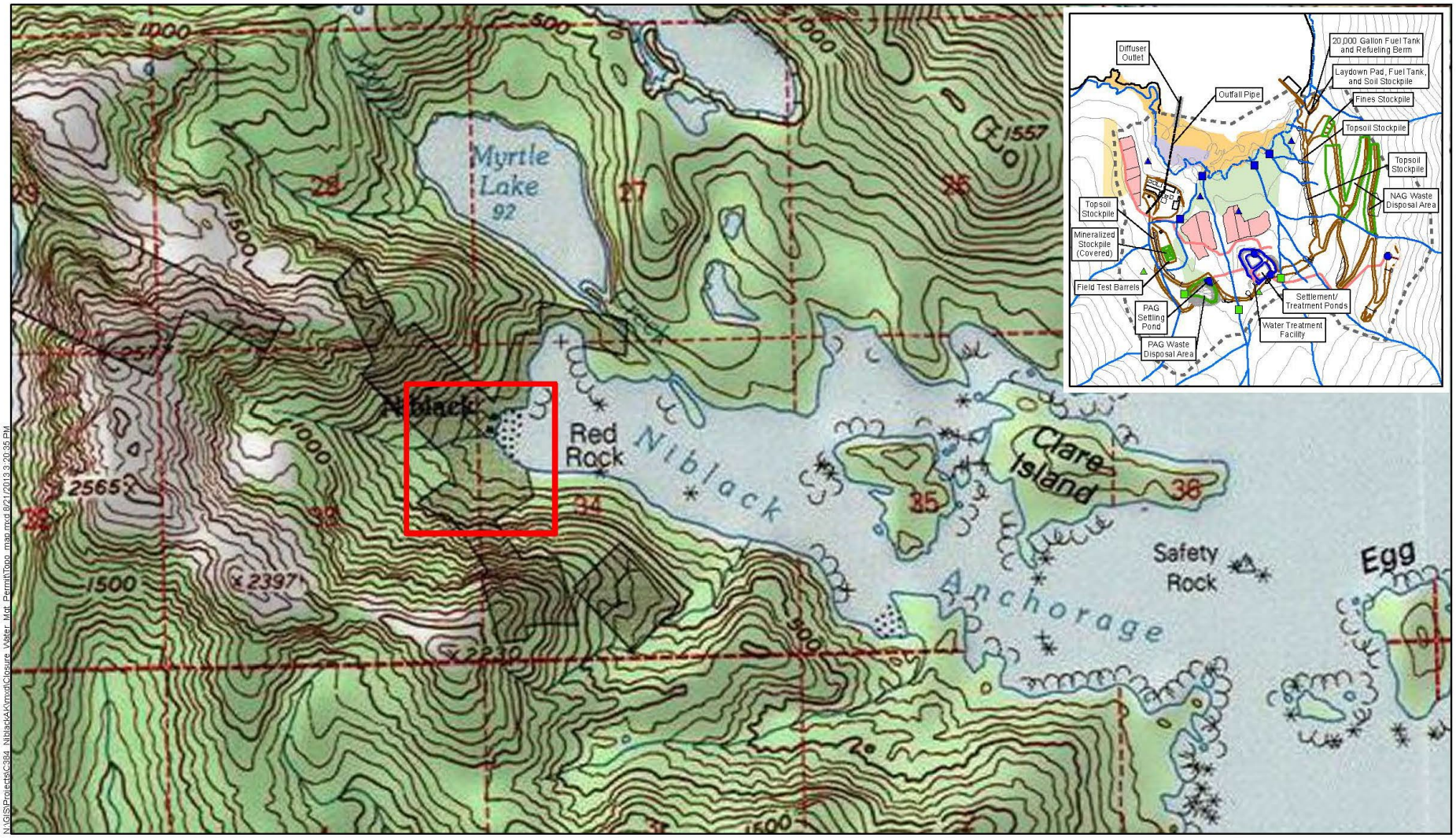


Figure 2: Mixing Zone/Sampling Site (SW-1) - Location and Dimensions

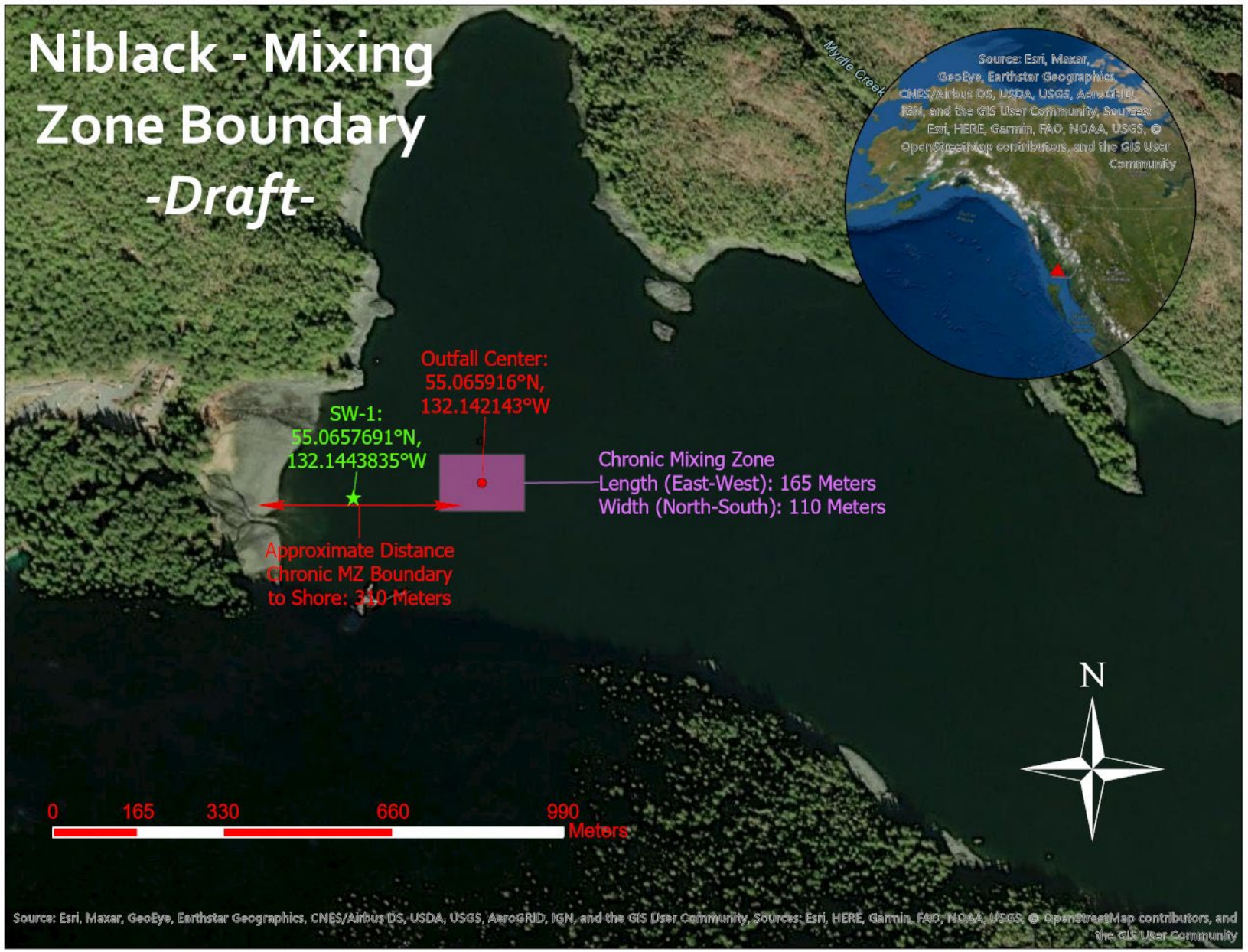
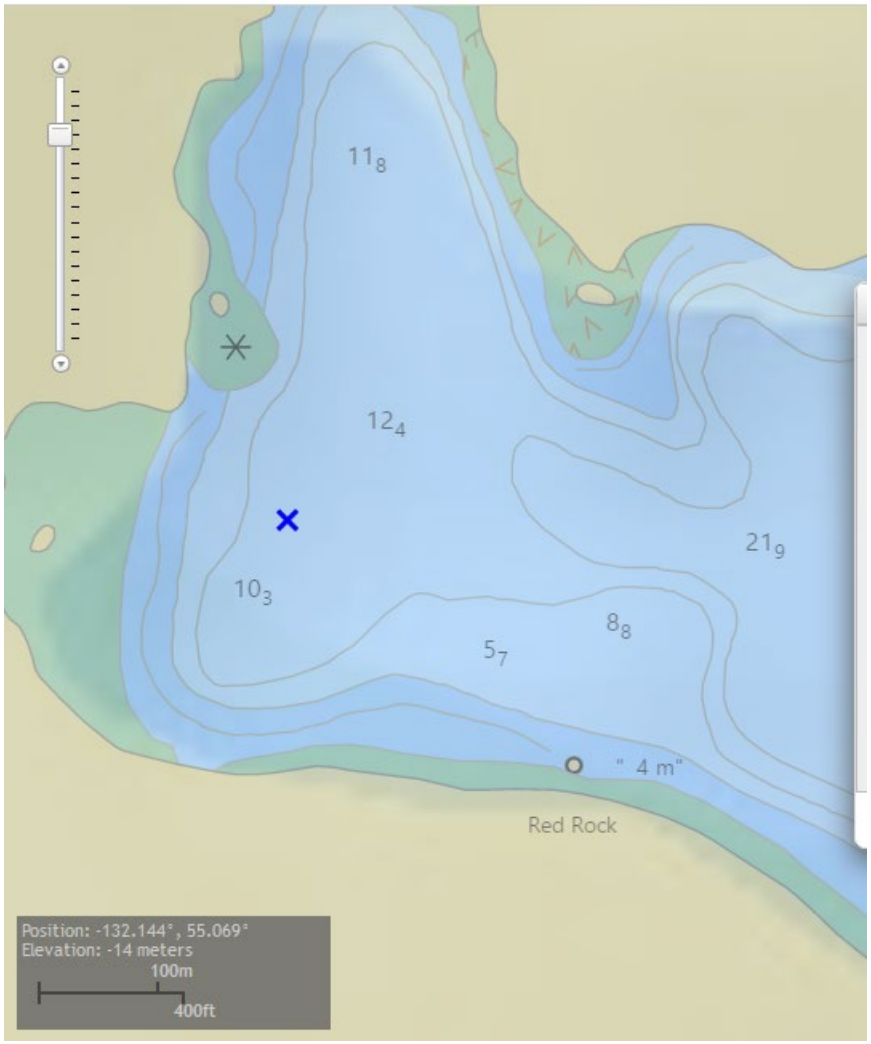


Figure 3: NOAA Bathymetric Map


11 8
12 4
21 9
10 3
8 8
5 7
" 4 m"
Red Rock
Position: -132.144°, 55.069°
Elevation: -14 meters
100m
400ft

APPENDIX B. BASIS FOR EFFLUENT LIMITATIONS

This section discusses the basis for and the development of effluent limits in the permit. This section includes: an overall discussion of the statutory and regulatory basis for development of effluent limitations (Section I); discussions of the development of Technology Based Effluent Limits (TBELs) (Section II) and water quality-based effluent limits (Section III); and a summary of the effluent limits developed for this permit (Section IV).

I. Statutory and Regulatory Basis for Limits

Sections 101, 301(b), 304, 308, 401, 402, and 405 of the Clean Water Act (CWA) provide the legal basis for the effluent limitations and other conditions in the permit. The Department evaluates the discharges with respect to these sections of the CWA and the relevant Alaska Pollutant Discharge Elimination System (APDES) regulations to determine which conditions to include in the permit.
In general, the Department first determines if any federally promulgated TBELs from an effluent limitation guideline have been developed that must be considered as the foundation for permit limits. The Department then evaluates the effluent quality expected to result from these controls to see if the discharge could result in any exceedances of the Water Quality Standards (WQS) in the receiving water. If reasonable potential exists that exceedances could occur, the Department must include WQBELs in the permit. The permit limits reflect whichever requirements (TBEL or WQBEL) are more stringent. For Outfall 001, a mixing zone was requested. In authorizing a mixing zone for Outfall 001, the Department considered "the characteristics of the effluent, including volume, flow rate, dispersion, and quality after treatment," as required by 18 AAC 70.245(b)(5). Water quality-based and technology-based analyses were performed to determine the most stringent limits. In conducting the water quality-based analysis, CORMIX modeling was used to determine dilution available to meet all WQS at and beyond the mixing zones boundary.

II. Outfall 001 - Technology-Based Evaluation

Section 301(b) of the CWA requires industrial dischargers to meet promulgated TBELs established by EPA. TBELs are enforceable through their incorporation into an APDES permit. For dischargers in industrial categories for which EPA has not yet promulgated TBELs, and for types of discharges not covered by applicable TBELs, best professional judgment can be used to establish case-by-case TBELs established by permit writers. The 1972 amendments to the CWA established a two-step approach for imposing technology-based controls. In the first phase, industrial dischargers were required to meet a level of pollutant control based on the best practicable control technology currently available (BPT). The second level of pollutant control was based on the best available technology economically achievable (BAT). In 1977, enactment of Section 301(b)(2)(E) of the CWA allowed the application of best conventional pollutant control technology (BCT) to supplement BPT standards for conventional pollutants with cost effectiveness constraints on incremental technology requirements that exceed BPT. The BPT/BAT/BCT system of standards does not apply to a new source, which is defined by EPA as a source, the construction of which is commenced after the publication of proposed regulations prescribing a standard of performance, which will be applicable to the source. Direct dischargers that are new sources must meet New Source Performance Standards (NSPS), which are based on the best available demonstrated control technology.

At 40 CFR Part 440, EPA has established TBELs for the Ore Mining and Dressing Point Source Category. Subpart J of these guidelines, titled *Copper, Lead, Zinc, Gold, Silver, and Molybdenum Ores Subcategory*, became effective on December 3, 1982. ELGs are applicable to mines that produce copper, gold, zinc, and silver bearing ores from open-pit or underground operations and to mills that use the froth-flotation process, alone or in conjunction with other processes, for the beneficiation of copper, gold, zinc, and silver. The ELGs applicable to a new source, which is a source that has commenced construction after the ELGs were established on December 3, 1982, are applicable to discharges from active mines. Since Niblack is an inactive exploration project, these ELGs are not directly applicable. The Department exercised its BPJ in establishing case-by-case TBELs based on the active mine ELGs. Table B-1 identifies the parameters and TBELs required for the permit.

Table B- 1: Outfall 001 - Technology Based Effluent Limits

Parameter	Daily Maximum	30-Day Average
Cadmium, µg/L	100	50
Copper, µg/L	300	150
Lead, µg/L	600	300
Mercury, µg/L	2	1
Zinc, µg/L	1,500	750
TSS, mg/L	30	20
pH, s.u.	within the range 6.0 - 9.0	

The CWA requires facilities to meet effluent limits based on available wastewater treatment technology and TBELs. The Department may find, by analyzing the effect of an effluent discharge on the receiving water body, that TBELs are not sufficiently stringent to meet WQS. In such cases, the Department is required to develop more stringent WQBELs, which are designed to ensure that the numeric WQS of the receiving water body are met.

III. Water Quality-Based Evaluation

In addition to the TBELs discussed above, the Department evaluated the Niblack discharges to determine compliance with Section 301(b)(1)(C) of the CWA. This section requires permit limits necessary to meet WQS by July 1, 1977.

Under 18 AAC 83.435, the Department must implement section 301(b)(1)(C) of the CWA. It requires that APDES permits include limits for all pollutants or parameters which "are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality." The limits must be stringent enough to ensure that WQS are met and must be consistent with any available wasteload allocation (WLA).

To determine if WQBELs are needed and develop those limits, when necessary, the Department follows guidance in the *Technical Support Document for Water Quality-based Toxics Control* (TSD, EPA 1991) and the Department's *Reasonable Potential Analysis and Effluent Limits Development Guide*. The water quality-based analysis consists of the following three step sequence:

1. Identify the applicable water quality criteria;
2. Determine if there is "reasonable potential" for the discharge to exceed a water quality criterion in the receiving water;

3. If there is "reasonable potential" (See Table B-3 below) or where a parameter has TBEL developed effluent limits.

The following sections provide a detailed discussion of each step.

A. Water Quality Criteria

The first step in determining if water quality-based limits are needed is to identify the applicable water quality criteria. Alaska's WQS are found at 18 AAC 70. The applicable criteria are determined based on the beneficial uses of the receiving water.

The beneficial uses for Niblack Anchorage, the receiving waters of Outfall 001 and the regulatory citation of the water quality criteria applicable to the uses are as follows:

1. aquaculture water supply - 18 AAC 70.020(b)(2)(A)(i)
2. seafood processing - 18 AAC 70.020(b)(2)(A)(ii)
3. industrial uses - 18 AAC 70.020(b)(2)(A)(iii)
4. contact recreation - 18 AAC 70.020(b)(2)(B)(i)
5. secondary recreation - 18 AAC 70.020(b)(2)(B)(ii)
6. growth and propagation of fish, shellfish, other aquatic life, and wildlife - 18 AAC 70.020(b)(2)(C)
7. harvesting for consumption of raw mollusks or other raw aquatic life - 18 AAC 70.020(b)(2)(D)

For a given pollutant, different uses may have different criteria. To protect all beneficial uses, the RPA and permit limits are based on the most stringent water quality criteria for protecting those uses. For Niblack Anchorage, the most stringent applicable WQS are summarized in Table B-2 below.

Table B- 2: Most Stringent of the Water Quality Criteria Applicable to Niblack Exploration Project Discharges into Niblack Anchorage (Outfalls 001)

Parameter (µg/L unless otherwise noted)	Acute Aquatic Life Criterion	Chronic Aquatic Life Criterion	Human Health Criterion [c]
Ammonia as NH_3 (mg/L)	0.233	0.035	N/A
Arsenic (TR)[a, b]	69	36	N/A
Cadmium (TR) [a, b]	40	8.8	N/A
Copper (TR) [a, b]	5.8	3.7	N/A
Lead (TR) [a, b]	220	8.5	N/A
Mercury (TR)[a, b]	2.1	1.1	0.051
Nickel (TR)[a, b]	75	8.3	4600
Selenium (TR)[a, b]	290	71	11,000
Silver (TR)[a, b]	2.3	N/A	N/A
Zinc (TR) [a, b]	95	86	69,000
pH (s.u.)	within the range of 6.0 – 9.0		

Notes:
a. TR = total recoverable
b. Standards for metals have been converted from dissolved to total recoverable by dividing the dissolved criterion by the conversion factor identified in regulation.
c. Human health criterion for consumption of aquatic organisms

Table B- 3: Reasonable Potential Determination for Outfall 001

Parameter [a] (µg/L unless otherwise noted)	Effluent Data					Background Receiving Water Conc. (C_u) [h]	Max Projected Receiving Water Conc. (C_d), WLA	Reasonable Potential [i] (yes or no)
	Max Observed Effluent Conc. [b]	Coefficient of Variation (CV) [d]	Number of Samples [e]	Reasonable Potential Multiplier (RPM) [f]	Max Expected Effluent Conc. (MEC) [g]			
Ammonia as NH_3 (mg/L)	5.59	1.7101	32	1.5	8.43	0	6239.99	no
Arsenic	0.4	0.6	6	3.1	1.25	5.40	24057.71	no
Cadmium	33.7	0.6	6	3.1	105.3	1.32	14629.36	no
Chromium	2.76	0.6	6	3.1	6.62	0	N/A	no
Copper	702.0	0.6	6	3.1	2193.45	0.390	2046.35	yes
Lead	3.0	0.6	6	3.1	9.37	1.275	82718.91	no
Mercury	0.02	0.6	6	3.1	0.06	0.008	0.01	no
Nickel [c]	5.29	2.3637	35	3.6	19.08	0.0	N/A	N/A
Selenium	0.5	0.6	6	1.2	1.56	10.650	105665.51	no
Silver [c]	1.12	1.4623	33	1.5	1.65	0.345	N/A	no
Zinc	7800	1.2107	32	1.5	24371.65	12.90	31061.56	no

Notes:

a. Parameters where there are applicable water quality criteria and effluent monitoring data available.

b. The maximum observed effluent concentrations are based on effluent samples collected from 2016 through 2021 except where noted.

c. Maximum observed effluent concentrations for silver and nickel are based on effluent samples collected from 2007 through 2013.

d. The CV is calculated as the standard deviation of the data divided by the mean. If the effluent-specific variability cannot be determined, a default CV of 0.6 was used.

e. The number of samples is used to develop the RPM.

f. The RPM is based on the CV and the number of data points.

g. For each parameter, the MEC equals the maximum observed effluent concentration times the RPM producing a number based on treatment plant performance for determining if there is a reasonable potential to exceed WQS in the receiving water outside the mixing zone.

h. The receiving water concentrations are based on samples collected from Niblack Anchorage station SW on May 14 and October 2, 2007 (see *Niblack Underground Exploration Project Annual Report, April 2008*).

i. Reasonable potential is evaluated at the mixing boundary, and it exists if C_d exceeds the most stringent applicable water quality criterion in Table B- 2.

Summary of Permit Effluent Limitations

As discussed in Section I of this appendix, TBELs were applied to each discharge and evaluated to determine whether these limits may result in any exceedances of water quality standards (WQS) in the receiving water. If exceedances could occur, then water quality-based effluent limits (WQBELs) were developed. The following summarizes the effluent limits developed for the outfall.

Outfall 001: The RPA demonstrates that discharge at the WQBELs for metals will not cause or contribute to an exceedance of WQS at or beyond the boundary of the mixing zone in Niblack Anchorage. However, effluent discharge at the TBELs for copper and lead could result in an exceedance of WQS at the boundary of the authorized mixing zone. Consequently, WQBELs are implemented to ensure protection of WQS. In a few cases, the total suspended solids (TSS), chronic mercury, and cadmium limits, TBELS, which are more stringent than WQBELs, have been imposed by the permit. Additionally, the RPA showed that the discharge of arsenic, chromium, nickel, selenium, and silver would not cause or contribute to an exceedance of their applicable water quality criterion. Therefore, water quality-based effluents limits were not needed for these parameters, and in addition, there are no TBELs associated with these parameters.
The permit also includes flow limits to ensure that the volume discharged does not exceed the flow assumptions used to develop the allowable dilution (mixing zone). Since flow and concentration limits are included in the permit, mass limits are not needed. Controlling flow and concentration is the same as controlling mass. See Table B-4 for a summary of Outfall 001 effluent limits.

Table B-4: Outfall 001 Effluent Limits

Parameter	Units	Daily Maximum		30-Day Average	
		Effluent Limit	Basis for Limit	Effluent Limit	Basis for Limit
Flow	gpm	300	design capacity	Report	catchment area and precipitation
Cadmium [a]	µg/L	100	ELG	50	ELG
Copper [a]	µg/L	300	ELG	150	ELG
Lead [a]	µg/L	600	ELG	300	ELG
Mercury [b]	µg/L	2.0	ELG	1.0	ELG
Zinc [a]	µg/L	1,500	ELG	750	ELG
TSS	mg/L	30	ELG	20	ELG
Ammonia as NH3	mg/L	2642	Aquatic Life Maximum Daily Limit	887	Aquatic Life Average Monthly Limit
pH [c]	s.u.	6.0 to 9.0	ELG	6.0 to 9.0	ELG

Notes:
a. Metals shall be measured as total recoverable.
b. Mercury shall be measured as total.
c. The limit reflects that there is a pH mixing zone, covers a range, and does not offer specific daily and monthly limits.

MIXING ZONE ANALYSIS CHECKLIST

Mixing Zone Authorization Checklist
based on Alaska Water Quality Standards (2003)

The purpose of the Mixing Zone Checklist is to guide the permit writer through the mixing zone regulatory requirements to determine if all the mixing zone criteria at 18 AAC 70.240 through 18 AAC 70.270 are satisfied, as well as provide justification to authorize a mixing zone in an APDES permit. In order to authorize a mixing zone, all criteria must be met. The permit writer must document all conclusions in the permit Fact Sheet; however, if the permit writer determines that one criterion cannot be met, then a mixing zone is prohibited, and the permit writer need not include in the Fact Sheet the conclusions for when other criteria were met.

Criteria	Description	Resources	Regulation	MZ Approved Y/N
Size	Is the mixing zone as small as practicable? - Applicant collects and submits water quality ambient data for the discharge and receiving water body (e.g., flow and flushing rates) - Permit writer performs modeling exercise and documents analysis in Fact Sheet at: ►Section 4.3 Mixing Zone Analysis - describe what was done to reduce size.	•Technical Support Document for Water Quality Based Toxics Control •Fact Sheet, Appendix C •Fact Sheet, Appendix D • DEC's RPA Guidance • EPA Permit Writers' Manual	18 AAC 70.240 (a)(2) 18 AAC 70.245 (b)(1) - (b)(7) 18 AAC 70.255(e) (3) 18 AAC 70.255 (d)	Y

Criteria	Description	Resources	Regulation	MZ Approved Y/N
Technology	Were the most effective technological and economical methods used to disperse, treat, remove, and reduce pollutants? **If yes**, describe methods used in Fact Sheet at Section 4.3 Mixing Zone Analysis. . . . Attach additional documents if necessary.		18 AAC 70.240 (a)(3)	Y
Low Flow Design	**For river, streams, and other flowing fresh waters.** - Determine low flow calculations or documentation for the applicable parameters. Justify in Fact Sheet		18 AAC 70.255(f)	
Existing use	Does the mixing zone…			
	(1) partially or completely eliminate an existing use of the water body outside the mixing zone? No **If yes, mixing zone prohibited.**		18 AAC 70.245(a)(1)	Y
	(2) impair overall biological integrity of the water body? No **If yes, mixing zone prohibited.**		18 AAC 70.245(a)(2)	Y
	(3) provide for adequate flushing of the water body to ensure full protection of uses of the water body outside the proposed mixing zone? Yes **If no, then mixing zone prohibited.**		18 AAC 70.250(a)(3)	Y
	(4) cause an environmental effect or damage to the ecosystem that the department considers to be so adverse that a mixing zone is not appropriate? No **If yes, then mixing zone prohibited.**		18 AAC 70.250(a)(4)	Y

Criteria	Description	Resources	Regulation	MZ Approved Y/N
Human consumption	Does the mixing zone…			
	(1) produce objectionable color, taste, or odor in aquatic resources harvested for human consumption? No **If yes, mixing zone may be reduced in size or prohibited.**		18 AAC 70.250(b)(2)	Y
	(2) preclude or limit established processing activities of commercial, sport, personal use, or subsistence shellfish harvesting? No **If yes, mixing zone may be reduced in size or prohibited.**		18 AAC 70.250(b)(3)	Y
Spawning Areas	Does the mixing zone…			
	(1) discharge in a spawning area for anadromous fish or Arctic grayling, northern pike, rainbow trout, lake trout, brook trout, cutthroat trout, whitefish, sheefish, Arctic char (Dolly Varden), burbot, and landlocked coho, king, and sockeye salmon? No **If yes, mixing zone prohibited.**		18 AAC 70.255 (h)	Y
Human Health	Does the mixing zone…			
	(1) contain bioaccumulating, bioconcentrating, or persistent chemical above natural or significantly adverse levels? No **If yes, mixing zone prohibited.**		18 AAC 70.250 (a)(1)	Y

Criteria	Description	Resources	Regulation	MZ Approved Y/N
	(2) contain chemicals expected to cause carcinogenic, mutagenic, tetragenic, or otherwise harmful effects to human health? No **If yes, mixing zone prohibited.**			Y
	(3) Create a public health hazard through encroachment on water supply or through contact recreation? No **If yes, mixing zone prohibited.**		18 AAC 70.250(a)(1)(C)	Y
	(4) meet human health and aquatic life quality criteria at the boundary of the mixing zone? Yes **If no, mixing zone prohibited.**		18 AAC 70.255 (b),(c)	Y
	(5) occur in a location where the department determines that a public health hazard reasonably could be expected? No **If yes, mixing zone prohibited.**		18 AAC 70.255(e)(3)(B)	Y
Aquatic Life	Does the mixing zone…			
	(1) create a significant adverse effect to anadromous, resident, or shellfish spawning or rearing? No **If yes, mixing zone prohibited.**		18 AAC 70.250(a)(2)(A-C)	Y
	(2) form a barrier to migratory species? No **If yes, mixing zone prohibited.**			Y
	(3) fail to provide a zone of passage? No **If yes, mixing zone prohibited.**			Y
	(4) result in undesirable or nuisance aquatic life? No **If yes, mixing zone prohibited.**		18 AAC 70.250(b)(1)	Y

Criteria	Description	Resources	Regulation	MZ Approved Y/N
	(5) result in permanent or irreparable displacement of indigenous organisms? No **If yes, mixing zone prohibited.**		18 AAC 70.255(g)(1)	Y
	(6) result in a reduction in fish or shellfish population levels? No **If yes, mixing zone prohibited.**		18 AAC 70.255(g)(2)	Y
	(7) prevent lethality to passing organisms by reducing the size of the acute zone? No **If yes, mixing zone prohibited.**		18 AAC 70.255(b)(1)	Y
	(8) cause a toxic effect in the water column, sediments, or biota outside the boundaries of the mixing zone? No **If yes, mixing zone prohibited.**		18 AAC 70.255(b)(2)	Y
Endangered Species	Are there threatened or endangered species (T/E spp) at the location of the mixing zone?If yes, are there likely to be adverse effects to T/E spp based on comments received from USFWS or NOAA. If yes, will conservation measures be included in the permit to avoid adverse effects? **If yes, explain conservation measures in Fact Sheet. If no, mixing zone prohibited.**	Applicant or permit writer requests list of T/E spp from USFWS prior to drafting permit conditions.	Program Description, 6.4.1 #5 18 AAC 70.250(a)(2)(D)	Y