



**ALASKA POLLUTANT DISCHARGE ELIMINATION SYSTEM
PERMIT FACT SHEET - FINAL**
Permit Number: AK0055875
University of Alaska Southeast Anderson Building Facility

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

Public Comment Period Start Date: May 26, 2021

Public Comment Period Expiration Date: June 28, 2021

[Alaska Online Public Notice System](#)

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

UNIVERSITY OF ALASKA SOUTHEAST

For wastewater discharges from:

Anderson Building Facility
11275 Glacier Highway
Juneau, Alaska 99801

The Alaska Department of Environmental Conservation (the Department or DEC) has issued an APDES individual permit (permit) to the University of Alaska Southeast (UAS). 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 Anderson Building Facility and outlines best management practices to which the facility must adhere.

This fact sheet explains the nature of potential discharges from the Anderson Building Facility and the development of the permit including:

- information on public comment, public hearing, and appeal procedures
- a listing of proposed 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
555 Cordova Street
Anchorage, AK 99501

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

See <http://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
Mail: P.O. Box 11180
Juneau, AK 99811
In Person: 555 Cordova Street
Anchorage, AK 99501

Interested persons can review 18 AAC 15.200 for the procedures and substantive requirements regarding a request for an adjudicatory hearing. See <http://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://dec.alaska.gov/water/wastewater>.

Alaska Department of Environmental Conservation Division of Water Wastewater Discharge Authorization Program 555 Cordova Street Anchorage, AK 99501 (907) 269-6285	Alaska Department of Environmental Conservation Division of Water Wastewater Discharge Authorization Program Mail: P.O. Box 111800 In Person: 410 Willoughby Avenue, Suite 303 Juneau, AK 99811-1800 (907) 465-5180
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1.0 INTRODUCTION

1.1 Applicant

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

Permittee:	University of Alaska Southeast
Facility:	Anderson Building Facility
APDES Permit Number:	AK0055875
Facility Location:	11275 Glacier Highway Juneau, AK 99801
Mailing Address:	11066 Auke Lake Way, Juneau, AK, 99801
Facility Contact:	Mr. Daniel Garcia

The map in Fact Sheet Part 2.1 shows the approximate locations of the Anderson Building Facility (Anderson Bldg Facility) and the location of the outfall.

1.2 Authority

Section 301(a) of the Clean Water Act (CWA) and Alaska Administrative Code (AAC) 18 AAC 83.015 provide that the discharge of pollutants to water of the U.S. is unlawful except in accordance with an APDES permit. The individual permit issuance is being developed per 18 AAC 83. A violation of a condition contained in the Permit constitutes a violation of the CWA and subjects the permittee of the facility with the permitted discharge to the penalties specified in Alaska Statutes (AS) 46.03.760 and AS 46.03.761.

1.3 Permit History

The University of Alaska Southeast (UAS) Flow-Through Seawater System first applied for a state wastewater discharge permit on October 13, 1994. On July 30, 2008 DEC issued Wastewater Disposal Permit #2008DB0014, the most recently issued state permit. This permit expired on July 29, 2013. UAS submitted an application for an APDES permit on January 1, 2016 and DEC determined that the application was administratively complete on February 26, 2021.

2.0 BACKGROUND

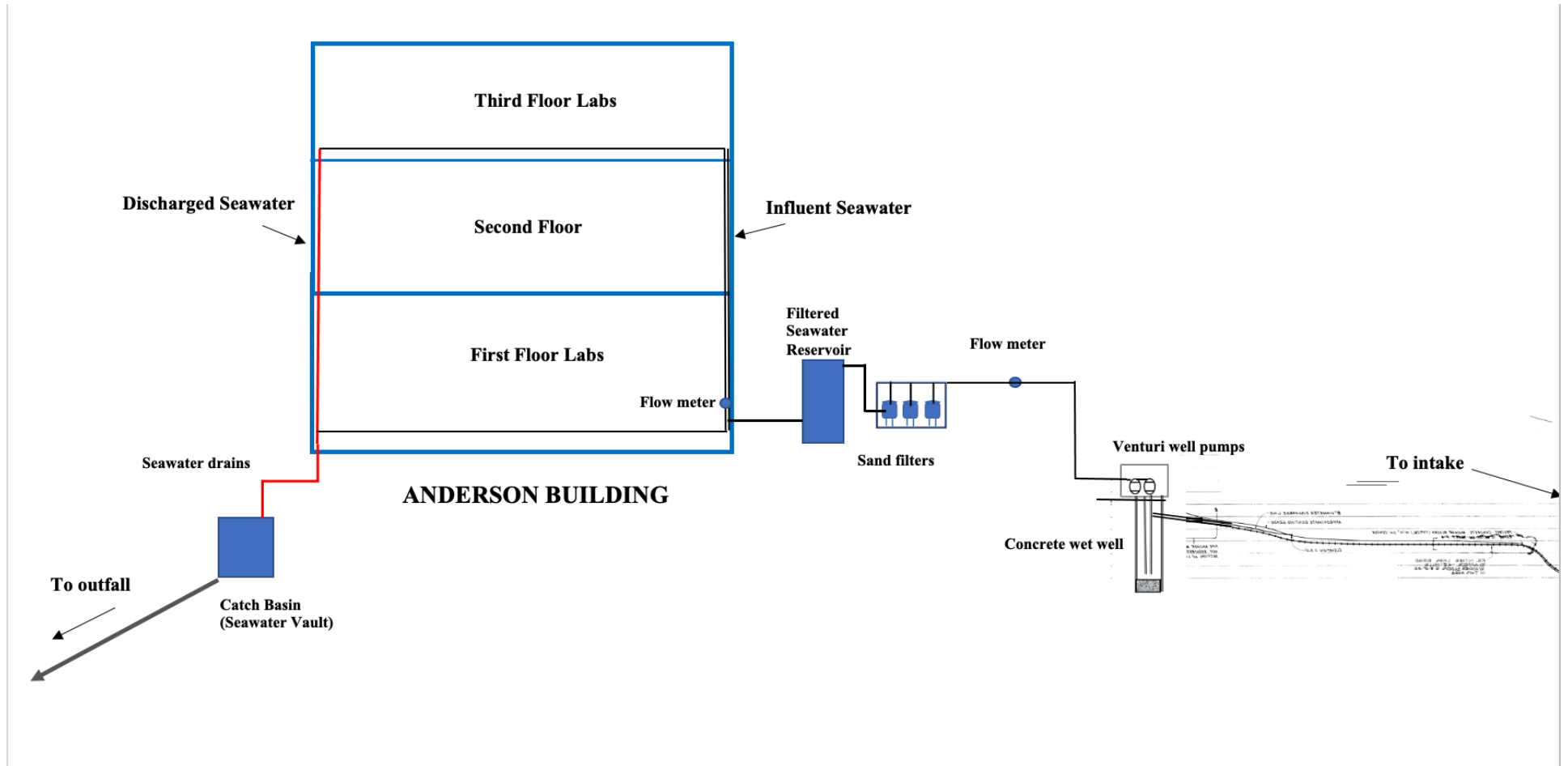
2.1 Facility Information

The Anderson Bldg Facility at UAS houses laboratory tanks for studying sea organisms used for academic research at the University near Juneau, Alaska. The Anderson Bldg Facility operates as a College and University and Noncommercial Research Organization 8221 under the Standard Industrial Classification System (SIC) and also may be classified under SIC code 8773, "Establishments primarily engaged in noncommercial research...primarily funded by endowments, contributions and grants." The Anderson Bldg Facility contains seawater systems that include one large tank that holds filtered seawater prior to entering the Anderson Bldg. Within the Anderson Bldg Facility, there are also academic tanks holding local aquatic life, usually crabs. Seawater flows through the tanks prior to discharge. Figure 1 shows a map of the Anderson Bldg and Figure 2 shows a diagram of the wastewater system within the facility.

Figure 1: Anderson Building Facility Vicinity Map



Figure 2: UAS Anderson Building Facility Center Process Flow Diagram



Untreated influent seawater enters the Anderson Bldg via two six-inch diameter intake pipes that extend approximately 240 feet offshore into Auke Bay to a depth of 80 feet. The intake pipe openings are fitted with stainless steel screens that filter most debris from system. The maximum intake rate is 150 gallons per minute (gpm), measured with a Seawater System DDC flow meter. The intake lines discharge influent seawater into an onshore precast concrete wet well. Duplex vertical turbine pumps located in the sea water pumphouse above the wet well draw seawater from the well and discharge it through three sand filters to an 8,000-gallon filtered seawater reservoir. A fresh water supply line connected to the building domestic water supply system also enters the main facility through the pumphouse. Filtered seawater from the reservoir is pumped into duplicate parallel seawater supply lines enter the main Anderson Bldg Facility. Influent seawater is directed to wet labs in the first and third floors of the Anderson Building. The Anderson Bldg Facility contain a total of ten 50-gallon capacity tanks that may be individually isolated from the seawater supply and discharge system. The tanks hold local aquatic life for academic research and education purposes. Spent seawater drains tanks in the first and third floors of in the Anderson Bldg by way of internal piping into the wastewater catch basin (Seawater Vault) located outside the building. From there, the wastewater discharges to Auke Bay via Outfall 001A.

2.2 Wastewater Treatment

The permit is limited to non-domestic wastewater discharges. Wastewater discharged from the UAS Anderson Bldg Facility is limited to spent seawater, filtered and treated from animal habitats and tanks. There are no collected screenings, grit, solids, or other pollutants removed in the course of wastewater treatment that are disposed at a separate facility. All domestic wastewater from the laboratories and the facility’s public services discharges separately to the permitted Mendenhall Wastewater Treatment Facility (Mendenhall WWTF). The Anderson Bldg Facility discharges about 3,000 gallons of domestic wastewater per day to the municipal sewer system. Facility stormwater runoff from exterior surfaces is also discharged to the municipal stormwater system.

Wastewater discharges from tanks in the Anderson Bldg to a catch basin located outside the building, the Seawater Vault, at a continuous rate of approximately 100 gpm. From the Seawater Vault, effluent flows through a discharge pipe extending approximately 215 feet into Auke Bay and terminating at a depth of 55 feet below Mean Lower Low Water (MLLW) at Outfall 001A, located just beyond the mouth of the harbor. Outfall 001A is a single port discharge unit without a diffuser.

Design criteria for the Anderson Bldg Facility is provided in Table 1.

Table 1: Design Criteria for the Anderson Bldg Facility

Design Flow Rate	100,800 gallons per day (gpd)
Average Daily Flow Rate	93,000 gpd

2.3 Pollutants of Concern

The Anderson Bldg Facility discharges only spent seawater, filtered and treated from tanks containing live sea creatures, but no mammals or birds. Pollutants of concern in the effluent of the UAS Anderson Bldg Facility are 5-day biological oxygen demand (BOD₅), total suspended solids (TSS), total settleable solids (settleable solids), fecal coliform bacteria (FC), temperature, enterococci bacteria (enterococci), dissolved oxygen (DO), and pH.

The parameters monitored in the previous permit, state permit 2008DB0014 were BOD₅, settleable solids, FC, DO, total residual chlorine (TRC), and pH. The same parameters remain as pollutants of concern, except for TRC, and will be monitored in the permit. New effluent limits and monitoring requirements for temperature and enterococci are applied in the permit. A new monitoring requirement for TSS is also applied in the permit.

2.4 Compliance History

No compliance inspection reports were submitted since the previous state permit, 2008DB0014, was put into effect on July 15, 2008. No monitoring reports were submitted to DEC from UAS since July 15, 2008 and no complaints were lodged against the facility during the previous permit cycle.

3.0 EFFLUENT LIMITS AND MONITORING REQUIREMENTS

3.1 Basis for Permit Effluent Limits

Per 18 AAC 83.015, the Department prohibits the discharge of pollutants to waters of the U.S. unless the permittee has first obtained a permit issued by the APDES Program that meet the purposes of AS 46.03 and is in accordance with the CWA Section 402. Per these statutory and regulatory provisions, the Permit includes effluent limits that require the discharger to (1) meet standards reflecting levels of technological capability, (2) comply with 18 AAC 70 –WQS, and (3) comply with other state requirements that may be more stringent.

The CWA requires that the limits for a particular pollutant be the more stringent of either technology-based effluent limits (TBELs) or WQBELs. TBELs are set according to the level of treatment that is achievable using available technology. A WQBEL is designed to ensure that the Alaska Water Quality Standards (WQS) of a water body are met. WQBELs may be more stringent than TBELs. There are no applicable Effluent Limitation Guidelines (ELGs) mandating TBELs promulgated to control the facility's discharge, and the Department has not proposed to implement any case-by-case TBELs derived using Best Professional Judgment. The permit contains WQBELs for DO, pH, FC, temperature and enterococci.

The following section summarizes the proposed effluent limits. A more expansive technical and legal basis for the proposed effluent limits is provided in the Fact Sheet Appendix A.

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 following summarizes the proposed effluent limits. More details are provided in the Fact Sheet Appendix A.

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 must be used for averaging (for pollutants results reported on a monthly or weekly average) if they are conducted using the Department – approved test methods (generally found in 18 AAC 70 and 40 CFR Part 136 [adopted by reference in 18 AAC 83.010]).

For all effluent monitoring, the permittee must use a sufficiently sensitive EPA approved test method that quantifies the pollutants to a level lower than applicable limits or water quality standards or use the most sensitive test method available, per Title 40 Code of Federal Regulations (CFR) §136 (Guidelines Establishing Test Procedures for the Analysis of Pollutants), adopted by reference at 18 AAC 83.010(f).

The permit carries forward Outfall 001A effluent limits for pH, DO, and FC from the previously issued state permit, 2008DB0014. No effluent monitoring has been conducted since 2008.

BOD₅ was reported as a Daily Maximum Average (DML) once per quarter in the previous state permit, 2014DB008. This monitoring requirement is carried forward in the permit.

Settleable Solids was reported as a DML once per quarter in the previous state permit, 2014DB008. The settleable solids DML effluent limit was 'no increase above natural conditions in the receiving water'. The permit requires the settleable solids DML to be reported and the monitoring frequency of one sample per quarter will be carried forward. No effluent limit for settleable solids is required in the permit, but data collected for settleable solids to determine if continued monitoring or new effluent limits will be required in the next permit cycle.

The WQS-WQBEL and monitoring frequency for pH is carried over from the previous permit. The WQS-WQBEL pH limits are 6.5 Standard Units (S.U.) as the minimum DML and 8.5 S.U. as the maximum DML. Previously, UAS was required to monitor pH 'upon DEC's request' and is changed in the permit to a monitoring frequency of once per month. More information about pH can be found in the Fact Sheet Appendix A.

TRC was monitored in the previous state permit. The DML was 0.0075 milligrams per liter (mg/L) and the monitoring frequency was once per event. During the previous monitoring period, UAS used Bering Sea snow crabs in a research project. In order to prevent any snow crab-borne bacteria from impacting the resident Auke Bay crabs or other organisms, UAS took the precaution of disinfecting the effluent with chlorine bleach whenever snow crab tank water was released into the Anderson Bldg Facility waste stream. The former chlorine bleach disinfection system consisted of a carboy of bleach that dripped into the wastewater stream with a drip rate proportional to the flow from the operational seawater tanks. Effluent containing TRC was directed into the Seawater Vault outside the Anderson Bldg and then discharged to Outfall 001A into Auke Bay. The Bering Sea snow crabs were used for a research project that concluded ten years previously with no planned repeat studies involving alien sea life during the permit cycle, therefore the disinfection equipment has been dismantled. Since no chlorine disinfectant is added to the waste stream, the permit does not contain a monitoring requirement for TRC.

The WQS-WQBEL for DO is carried forward in the permit. The minimum DO DML in the previous permit was 6.0 mg/L and the maximum DML for DO in the previous permit was 17.0 mg/L. The monitoring frequency of DO monitoring of 'upon DEC's request' was a requirement in the previous permit and is changed in the permit to a monthly monitoring requirement. More information about DO can be found in the Fact Sheet Appendix A.

The WQS-WQBEL for FC from the previous permit is carried forward in the permit. The Department has determined the DML of 43 fecal coliform colonies per 100 milliliters (FC/100 mL) and a 30-day geomean of 14 FC/100 mL as the Average Monthly Limit (AML) are appropriate and consistent with WQS for FC. The previous permit required FC to be monitored once per quarter on a year-round basis and this monitoring frequency is carried forward in the permit. More information about FC can be found in the Fact Sheet Appendix A.

A new WQBEL for enterococci is included in the permit. Enterococci are indicator organisms of harmful pathogens in marine water and are a better indicator of acute gastrointestinal illness than FC. Enterococci monitoring was not required in the previous state permit because the state adopted EPA's recommended recreational water quality criteria (RWCQ) for enterococci bacteria for the designated use of contact recreation since the time when the previous state permit was issued. The Department has determined the DML of 130 colony-forming units per 100 milliliters (cfu/100 mL) and a 30-day geomean of 35 cfu/100 mL AML are appropriate and consistent with WQS for enterococci. The permit requires quarterly monitoring for enterococci during the summer season only. The summer season is defined as the time period of May 1 to September 30, to be consistent with the recommended contact recreation Water Quality Criteria (WQC) for marine waters during the summer season when contact recreation is more likely to occur. Enterococci monitoring is required to be performed in conjunction with FC monitoring. More information about enterococci can be found in the Fact Sheet Appendix A.

A new WQS-WQBEL for temperature is included in the permit. Seawater discharged to receiving water after it has been circulated through a heated building has the potential to influence the ambient temperature of the receiving water. The Department has determined the temperature DML to not exceed 15 degrees Centigrade (°C) to be appropriate and consistent with WQS for marine water temperature. The permit requires a temperature monitoring frequency of once per month. More information about temperature can be found in the Fact Sheet Appendix A.

A new monitoring requirement for TSS is included in the permit. TSS is a conventional pollutant found in wastewater. The permit requires the DML for TSS to be reported to provide data to determine if continued monitoring or new effluent limits will be required in the next permit cycle. The permit requires TSS monitoring frequency to be once per month.

Table 2 presents the effluent monitoring requirements for Outfall 001A.

Table 2: Outfall 001A - Effluent Limits and Monitoring Requirements

Parameter	Effluent Limits					Monitoring Requirements		
	Units ^a	Daily Minimum	Monthly Average	Weekly Average	Daily Maximum	Sample Location	Sample Frequency	Sample Type
Total Discharge Flow	gpd	N/A	Report	Report	100,800	Effluent	1/Week	Estimated or Measured
Biochemical Oxygen Demand (BOD ₅)	mg/L	N/A	Report	Report	Report	Effluent	1/Quarter ^b	24-hour Composite ^c or Grab
Total Suspended Solids (TSS)	mg/L	N/A	N/A	N/A	Report	Effluent	1/Quarter	24-hour Composite or Grab
Total Settleable Solids	Volume %	N/A	N/A	N/A	Report ^d	Effluent	1/Quarter	24-hour Composite or Grab
Temperature	°C	N/A	N/A	N/A	15	Effluent	1/Month	Grab
pH	S.U.	6.5	N/A	N/A	8.5	Effluent	1/Month	Grab
Dissolved Oxygen (DO)	mg/L	6.0	N/A	N/A	17.0	Effluent	1/Month	Grab
Fecal Coliform Bacteria (FC)	FC/100 mL	N/A	14 ^e	N/A	43 ^f	Effluent	1/Quarter	Grab
Enterococci Bacteria	cfu/100 mL	N/A	35 ^e	N/A	130 ^f	Effluent	1/Quarter ^g	Grab

Parameter	Effluent Limits					Monitoring Requirements		
	Units ^a	Daily Minimum	Monthly Average	Weekly Average	Daily Maximum	Sample Location	Sample Frequency	Sample Type
Footnotes:								
a. Units: gpd = gallons per day, mg/L = milligrams per liter, Volume % = per cent of volume, S.U. = standard units, ° C = degrees Centigrade, FC/100 mL = Fecal Coliform per 100 milliliters, and cfu/100 mL = colony forming units per 100 milliliters.								
b. Once per quarter means once every three months based on the calendar year beginning with January: Jan–March, April–June, July–Sept, and Oct–Dec.								
c. See Appendix C for definition.								
d. No measurable increase in concentration of settleable solids above natural conditions, as measured by the volumetric Imhoff cone method.								
e. If more than one FC or enterococci bacteria sample is collected within the reporting period, the average results must be reported as the geometric mean. When calculating the geometric mean, replace all results of zero, 0, with a one, 1. The geometric mean of “n” quantities is the “nth” root of the quantities. For example, the geometric mean of 100, 200, and 300 is $(100 \times 200 \times 300)^{1/3} = 181.7$.								
f. If fewer than ten samples are collected within a 30-day period, the effluent limit cannot be exceeded. If ten or more samples are collected within a 30-day period, not more than 10% of the samples may exceed the effluent limit.								
g. One sample shall be collected for each of two quarters defined as May-June and July-September, on the same day as a fecal coliform bacteria sample is collected.								

3.4 Receiving Waterbody Limits and Monitoring

Auke Bay is protected for the following uses per 18 AAC 70.020(a)(2)(A) – (D): water supply for aquaculture, seafood processing, and industrial uses; water recreation, both contact and secondary recreation; growth and propagation of fish, shellfish, other aquatic life, and wildlife and harvesting for consumption of raw mollusks or other raw aquatic life. No receiving water monitoring was required in the previous state permit and no receiving water monitoring is required in the current permit.

4.0 RECEIVING WATER BODY

4.1 Description of Receiving Waterbody

Auke Bay is a northeast-southwest trending embayment on the eastern side of Stephens Passage in Southeast Alaska, located approximately five miles northwest of the city of Juneau. It is classified in Category 2 (as a water with water quality information that is insufficient to determine an appropriate decision recommendation) in *Alaska’s Final 2018 Integrated Water Quality Monitoring and Assessment Report* (Alaska’s 2018 Integrated Report), June 23, 2020. The bay has a maximum length of approximately 0.8 miles and a maximum width of approximately 0.7 miles. Auke Bay is surrounded by mountains in the Coast Range on the east and the Inside Passage to the west. The primary freshwater inflow to the bay is from Auke Lake, discharging into the eastern side of Auke Bay from Auke Creek. The community of Auke Bay is located at the head of the bay. The seafloor of the bay is composed of glacial sediments overlying metamorphic bedrock of primarily Triassic age.

4.2 Outfall Description

The Anderson Bldg Facility discharges treated effluent from Outfall 001A into Auke Bay at a depth of 55 feet below the surface of the water. The outfall pipe extends 215 feet from the Anderson Bldg Facility to the outfall terminus at a flow rate of approximately 63,360 gpd. Geographic coordinates of the outfall terminus are 58.38000° North latitude and 134.64420° West longitude. The Outfall 001A terminus is a single port discharge unit without a diffuser and does not have intermittent or periodic discharges.

4.3 Water Quality Standards

Section 301(b)(1)(C) of the CWA required 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 WQS. The state's WQS are composed of waterbody use classifications, numeric and/or narrative water quality criteria, and an Antidegradation policy. The use classification system identifies the designated uses that each waterbody is expected to achieve. The numeric and/or narrative water quality criteria are the criteria deemed necessary by the state to support the designated use classification of each waterbody. The Antidegradation policy ensures that the existing uses and the level of water quality necessary to protect the uses are maintained and protected.

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 waterbodies 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 this discharge, Auke Bay, has not been reclassified, nor have site-specific water quality criteria been established. Therefore, existing uses and designated uses are the same and Auke Bay must be protected for all marine water use classes listed in 18 AAC 70.020(a)(2)(A-D): water supply for aquaculture, seafood processing, and industrial uses; water recreation, both contact and secondary recreation; growth and propagation of fish, shellfish, other aquatic life, and wildlife and harvesting for consumption of raw mollusks or other raw aquatic life.

4.4 Water Quality Status of Receiving Water

Any part of a waterbody for which the water quality does not, or is not expected to, intrinsically meet applicable WQS is defined as a "water quality limited segment" and placed on the state's impaired waterbody list. For an impaired waterbody, Section 303(d) of the CWA requires states to develop a TMDL management plan for the waterbody. The TMDL documents the amount of a pollutant a waterbody can assimilate without violating a state's WQS and allocates that load to known point sources and nonpoint sources.

Auke Bay has not been reclassified in Alaska's 2018 Integrated Report. WQS-WQBEL Effluent limits for DO, pH, and FC have not changed from those set forth in the previous permit; new monitoring requirements and WQS-WQBEL effluent limits are in effect for temperature and enterococci. The DML for settleable solids will be reported on a quarterly basis and the permit contains new monitoring requirements for TSS. More information about WQS-WQBELs for DO, pH, temperature, enterococci and FC can be found in Fact Sheet Part 3.3 and Fact Sheet Appendix A.

4.5 Mixing Zone Analysis

In accordance with state regulations 18 AAC 70.240, as amended through June 23, 2003, the Department has authority to authorize a mixing zone in a permit. The applicant did not request a mixing zone. Accordingly, the Department has not authorized a mixing zone in the permit.

5.0 ANTIBACKSLIDING

Per 18 AAC 83.480, "interim effluent limitations, standards, or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit, unless the circumstances on which the previous permit was based have materially and substantially changed since the permit was issued, and the change in circumstances would cause for permit modification or revocation and reissuance under 18 AAC 83.135." 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."

The previous permit was a state permit, not an APDES or National Pollution Discharge Elimination System (NPDES) permit. Accordingly, no further backsliding analysis is required for this permit issuance.

6.0 ANTIDegradATION

Section 303(d)(4) of the CWA states that, for water bodies where the water quality meets or exceeds the level necessary to support the water body's designated uses, WQBELs may be revised as long as the revision is consistent with the State's Antidegradation policy. The State's Antidegradation policy is found in the 18 AAC 70 Water Quality Standards (WQS) regulations at 18 AAC 70.015. The Department's approach to implementing the Antidegradation policy is found in 18 AAC 70.016 *Antidegradation implementation methods for discharges authorized under the federal Clean Water Act*. Both the Antidegradation policy and the implementation methods are consistent with 40 CFR 131.12 and approved by EPA. This section analyzes and provides rationale for the Department's decisions in the permit issuance with respect to the Antidegradation policy and implementation methods.

Using the policy and corresponding implementation methods, the Department determines a Tier 1 or Tier 2 classification and protection level on a parameter-by-parameter basis. A Tier 3 protection level applies to a designated water. At this time, no Tier 3 waters have been designated in Alaska.

18 AAC 70.015(a)(1) states that the existing water uses and the level of water quality necessary to protect existing uses must be maintained and protected (Tier 1 protection level).

There are no marine waters (and specifically Auke Bay) on DEC's most recent Integrated Report (Alaska's 2018 Integrated Report); therefore, no parameters have been identified where only the Tier 1 protection level applies. Accordingly, this antidegradation analysis conservatively assumes that the Tier 2 protection level applies to all parameters, consistent with 18 AAC 70.016(c)(1).

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, that quality must be maintained and protected, unless the Department authorizes a reduction in water quality (Tier 2 protection level).

The Department may allow a reduction of water quality only after the specific analysis and requirements under 18 AAC 70.016(b)(5)(A-C), 18 AAC 70.016(c)(7)(A-F), and 18 AAC 70.016(d) are met. The Department's findings are as follows:

18 AAC 70.016(b)(5)

(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, information submitted by the applicant, and water quality and use related data and information received during public comment; and

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

(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).

Per 18 AAC 70.020 and 18 AAC 70.050 all 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* (Toxics manual) apply and were evaluated. This will ensure existing uses and the water quality necessary for protection of existing uses of the receiving waterbody are fully maintained and protected.

The permit places limits and conditions on the discharge of pollutants. The limits and conditions are established after comparing TBELs and WQBELs and applying the more restrictive of these limits. The WQ criteria, upon which the permit effluent limits are based, serve the specific purpose of protecting the existing and designated uses of the receiving water. WQBELs are set equal to the most stringent water quality criteria available for any of the protected water use classes.

Conventional pollutants of concern in wastewater in an industrial facility are BOD₅, TSS, and pH. Additional wastewater pollutants are FC, enterococci, settleable solids, temperature, and DO. The permit includes numeric effluent limits or continued monitoring addressing each of these pollutants of concern. The permit requires facilities to implement BMPs to minimize the production of waste and the discharge of pollutants to waters of the U.S., to ensure that non-process wastewater facilities provide for the protection or attainment of existing and designated uses.

Section 1.2.2 of the permit requires that the discharge shall not cause or contribute to a violation of the Alaska WQS at 18 AAC 70. As previously stated, there are no marine waters that are 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. Marine waters covered under the general permit are not listed under 18 AAC 70.236(b) as subject to site-specific criteria and therefore does not apply.

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 under 18 AAC 70.016(b)(5) are met.

18 AAC 70.016(c)(7)(A–F) if, after review of available evidence, the department finds that the proposed discharge will lower water quality in the receiving water, the department will not authorize a discharge unless the department finds that

18 AAC 70.016(c)(7)(A) the reduction of water quality meets the applicable criteria of 18 AAC 70.020(b), 18 AAC 70.030, or 18 AAC 70.236(b), unless allowed under 18 AAC 70.200, 18 AAC 70.210, or 18 AAC 70.240.

As previously stated, Section 1.2.2 of the permit requires that the discharge shall not cause or contribute to a violation of the WQS at 18 AAC 70. WQBELs are set equal to the most stringent water quality criteria available under 18 AAC 70.020(b) for any of the protected water use classes. Because of the nature of the permitted discharges, other pollutants are not expected to be present in the discharges at levels that would cause, have the reasonable potential to cause, or contribute to an exceedance of any Alaska WQS, including the whole effluent toxicity limit at 18 AAC 70.030.

The permit does not authorize short term variance, zones of deposit or mixing zones under 18 AAC 70.200, 18 AAC 70.210, or 18 AAC 70.240; therefore does not apply.

The Department has determined the reduction of water quality meets the applicable criteria of 18 AAC 70.020(b), 18 AAC 70.030, or 18 AAC 70.236(b), and that the finding is met.

18 AAC 70.016(c)(7)(B) each requirement under (b)(5) of this section for a discharge to a Tier 1 water is met; See 18 AAC 70.016(b)(5) analysis and findings above.

18 AAC 70.016(c)(7)(C) point source and state-regulated nonpoint source discharges to the receiving water will meet requirements under 18 AAC 70.015(a)(2)(D); to make this finding the department will (i) identify point sources and state-regulated nonpoint sources that discharge to, or otherwise impact, the receiving water; and (ii) consider whether there are outstanding noncompliance issues with point source permits or required state-regulated nonpoint source best management practices, consider whether receiving water quality has improved or degraded over time, and, if necessary and appropriate, take actions that will achieve the requirements of 18 AAC 70.015(a)(2)(D); and (iii) coordinate with other state or federal agencies as necessary to comply with (i) and (ii) of this subparagraph;

The requirements under 18 AAC 70.015(a)(2)(D) state:

(D) all wastes and other substances discharged will be treated and controlled to achieve
(i) for new and existing point sources, the highest statutory and regulatory requirements; and
(ii) for nonpoint sources, all cost-effective and reasonable best management practices; and

The highest statutory and regulatory requirements are defined at 18 AAC 70.015(d):

(d) For purposes of (a) of this section, the highest statutory and regulatory requirements are
(1) any federal technology-based effluent limitation identified in 40 C.F.R. 122.29 and 125.3, revised as of July 1, 2017 and adopted by reference; and
(2) any minimum treatment standards identified in 18 AAC 72.050; and
(3) any treatment requirements imposed under another state law that is more stringent than a requirement of this chapter; and
(4) any water quality-based effluent limitations established in accordance with 33 U.S.C. 1311(b)(1)(C) (Clean Water Act, sec. 301(b)(1)(C)).

The first part of the definition includes all federal technology based ELGs. Upon Department review, no federal technology based ELGs directly apply to these types of discharges. The ELGs set standards of performance for existing and new sources and are incorporated in the permit.

The second part of the definition references the minimum treatment standards found at 18 AAC 72.050, which refers to domestic wastewater discharges only. The permit does not authorize the discharge of domestic wastewater (Permit Section 1.1.1). Therefore, a finding under this section is not applicable.

The third part of the definition refers to treatment requirements imposed under another state law that are more stringent than 18 AAC 70. Other regulations beyond 18 AAC 70 that apply to this permitting action include 18 AAC 15 and 18 AAC 72. Neither the regulations in 18 AAC 15 and 18 AAC 72, nor another state law that the Department is aware of impose more stringent requirements than those found in 18 AAC 70.

The fourth part of the definition refers to water quality-based effluent limitations (WQBELS). A WQBEL is designed to ensure that the Water Quality Standards (WQS) of a waterbody are met and may be more stringent than TBELs. Section 301(b)(1)(C) of the CWA requires the development of limits in permits necessary to meet WQS by July 1, 1977. WQBELS included in APDES permits are derived from EPA-approved 18 AAC 70 WQS. APDES regulation 18 AAC 83.435(a)(1) requires that permits include WQBELS that can “achieve water quality standard established under CWA §303, including state narrative criteria for water quality.” The permit requires compliance with the 18 AAC 70 WQS, includes effluent limits for DO, pH, temperature, enterococci and FC.

The Department reviewed available information on known point source discharges to receiving waters covered under the permit and found no outstanding noncompliance issues. The Anderson Bldg Facility will be able to meet marine WQS for FC, enterococci, temperature, DO, and pH in the facility’s effluent at the end of the pipe, so there would not be any additional pollutants added to the receiving water. There are no state regulated nonpoint sources that discharge to, or otherwise impact, the receiving waters covered under the permit.

After review of the methods of treatment and control and the applicable statutory and regulatory requirements, including 18 AAC 70, 18 AAC 72, and 18 AAC 83, the Department finds that the discharge authorized under this general permit meets the highest applicable statutory and regulatory requirements; therefore, 18 AAC 70.016(c)(7)(C) finding is met.

18 AAC 70.016(c)(7)(D)(i-ii) the alternatives analysis provided under (4)(C-F) of this subsection demonstrates that

- (i) a lowering of water quality under 18 AAC 70.015(a)(2)(A) is necessary; when one or more practicable alternatives that would prevent or lessen the degradation associated with the proposed discharge are identified, the department will select one of the alternatives for implementation; and*
- (ii) the methods of pollution prevention, control, and treatment applied to all waste and other substances to be discharged are found by the department to be the most effective and practicable.*

New discharges are required to meet all permit requirements prior to discharge.

- (i) The permit reissuance application does not propose any changes that would likely result in wastewater of lower quality to be discharged than under previously issued permits, including the previous state permit for the Anderson Bldg Facility, 2008DB0014. The Alaska WQS upon which the permit effluent limits are based, serve the specific purposes of protecting the existing and designated uses. Discharge under the limitations and requirements of the permit is identified as the practicable alternative; therefore 18 AAC 70.016(c)(7)(D)(i) finding is met.*
- (ii) Permit requirements include implementing BMPs, estimation of flow, and continued effluent monitoring to ensure compliance and for evaluation of future permit limits. Appropriate wastewater effluent treatment has been applied. The methods of pollution prevention, control, and treatment applied to all waste and other substances to be discharged are found by the department to be the most effective and practicable; therefore 18 AAC 70.016(c)(7)(D)(ii) finding is met.*

18 AAC 70.016(c)(7)(E) except if not required under (4)(F) of this subsection, the social or economic importance analysis provided under (4)(G) and (5) of this subsection demonstrates that a lowering of water quality accommodates important social or economic development under 18 AAC 70.015(a)(2)(A);

The Anderson Bldg Facility has been discharging spent seawater as wastewater to Auke Bay under the Alaska wastewater permitting program since the 1990s. The Anderson Bldg Facility is an important part of the research and educational programs at UAS. To support the research conducted by the facility, a large volume of seawater

is constantly required, which requires the facility to be located within close proximity to the ocean. Wastewater discharged from the Anderson Bldg Facility meets WQS at the end of the pipe for DO, pH, temperature, enterococci and FC, so there will not be any lowering of water quality in Auke Bay from the facility's effluent. The Anderson Bldg Facility generates and shares scientific knowledge that promotes understanding and stewardship of Alaska's marine ecosystems. The Anderson Bldg Facility's continued operation is important to the regional economy, as well as the overall economic and social development of the State of Alaska. The Department has determined that the operation of the Anderson Bldg Facility and the discharges authorized by the permit demonstrates that a lowering of water quality accommodates important social or economic development; therefore, 18 AAC 70.016(c)(7)(E) finding is met.

18 AAC 70.016(c)(7)(F) 18 AAC 70.015 and this section have been applied consistent with 33 U.S.C. 1326 (Clean Water Act, sec. 316) with regard to potential thermal discharge impairments.

Discharges authorized under the permit are not associated with a potential thermal discharge impairment; therefore, the finding is not applicable.

7.0 OTHER PERMIT CONDITIONS

7.1 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 update, implement and/or maintain the Quality Assurance Project Plan (QAPP). The QAPP shall consist of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples; laboratory analysis; precision and accuracy requirements; data reporting, including method detection/reporting limits; and quality assurance/quality control criteria. The permittee is required to amend the QAPP whenever any procedure addressed by the QAPP is modified. The plan shall be retained on site and made available to the Department upon request.

7.2 Best Management Practices Plan

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 of. The permit requires the permittee to develop and implement a BMP plan in order to prevent or minimize the potential for the release of pollutants to waters and lands of the State of Alaska through plant site runoff, spillage or leaks, or erosion. The permittee must review the BMP plan annually and certify the review was completed. These annual statements will be kept on file with the BMP and made available to the Department upon request.

7.3 Electronic Discharge Monitoring Report

The permittee must submit DMR data electronically through NetDMR per Phase I of the E-Reporting Rule (40 CFR 127) upon the effective date of the permit. Authorized persons may access permit information by logging into the NetDMR Portal (<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 permit 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., 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 <https://dec.alaska.gov/water/compliance/electronic-reporting-rule/> that contains general information about this new reporting format. Training materials and webinars for NetDMR can be found at <https://netdmr.zendesk.com/home>.

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 occur during the term of the permit. Permittees should monitor DEC's E-Reporting Information website (<https://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 permit APPENDIX A – Standard Conditions.

7.4 Standard Conditions

Appendix A of the permit contains standard regulatory language that must be included in all APDES permits. These requirements are based on 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, and other general requirements.

8.0 OTHER LEGAL REQUIREMENTS

8.1 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).

Charts depicting Alaska’s baseline plus additional boundary lines are available at https://alaskafisheries.noaa.gov/mapping/arcgis/rest/services/NOAA_Baseline/MapServer. The charts are provided for information purposes only. The U.S. Baseline Committee makes the official determinations of baseline.

A review of the charts revealed that a baseline has been established seaward of Chichagof Island. The Anderson Bldg Facility discharge is landward of this baseline; therefore, Section 403 of the CWA does not apply to the permit, and an Ocean Discharge Criteria Evaluation is not required.

8.2 Endangered Species Act

The National Marine Fisheries Service (NMFS) is responsible for administration of the Endangered Species Act (ESA) for listed cetaceans, seals, sea lions, sea turtles, anadromous fish, marine fish, marine plants, and corals. All other species (including polar bears, walrus, and sea otters) are administered by the United States Fish & Wildlife Service (USFWS).

The Endangered Species Act (ESA) requires federal agencies to consult with the National Oceanic and Atmospheric Administration (NOAA), NMFS and the 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 proposed permit issuance and to obtain listings of threatened and endangered species near the discharge.

On March 9, 2021, NOAA was contacted regarding information on any threatened or endangered species that would be affected in the area of the discharge location. Ms. Jenna Malek of NOAA provided the following web resources for further reference: [GOA Groundfish FMP](#), [Appendix with additional EFH information](#), and [Pacific Salmon FMP](#). Additionally, Ms. Malek provided the following resources:

[NMFS AKR EFH webpage](#)

[Alaska EFH Mapper](#)

[National EFH Mapper](#)

On March 11, 2021, DEC received another email message from Ms. Jenna Malek of NOAA who provided the following list of threatened or endangered species for Auke Bay:

The ESA - listed species in the area are:

The threatened Mexico distinct population segment (DPS) humpback whale, and

The endangered Western DPS Steller sea lion, and

The endangered sperm whale.

Ms. Malek requested further information to ascertain whether if/how the activities may affect humpback whale prey, as there is proposed humpback whale critical habitat that may overlap with the area. On March 11, 2021 DEC sent a summary of the effluent characteristics, including rate of discharge and parameters monitored in the effluent. Ms. Malek returned a response on the same day, reporting that no further information was necessary and that NOAA did not anticipate that there would be an effect on the prey species for the endangered humpback whale.

On March 9, 2021, the US Fish & Wildlife Service (USFWS) was contacted regarding information on any threatened or endangered species or concerns about essential fish habitat that would be affected in the area of the discharge location. On March 9, 2021, Mr. Douglass Cooper of the USFWS responded to DEC's inquiry: "There are no USFWS jurisdiction ESA-listed species in Southeast Alaska. The National Marine Fisheries Service is the jurisdictional authority for ESA-listed marine mammals, such as sea lions and whales, so you should check with them for their species. Additionally, Essential Fish Habitat is a designation under the jurisdiction of NMFS, so you should also check with them on that issue. For project planning purposes, The USFWS has a great website that can generate a list of USFWS T&E species as well as other sensitive resources: <https://ecos.fws.gov/ipac/>."

This fact sheet and the permit will be submitted to the agencies for review during the public notice period and any comments received from these agencies will be considered prior to issuance of the permit.

8.3 Essential Fish Habitat

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 proposed 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 NOAA on EFH; however, DEC voluntarily contacts agencies to notify them of the proposed permit issuance and to obtain listings of EFH in the area.

NOAA and USFWS were contacted about EFH, as described in Fact Sheet Part 8.2. Additionally, DEC contacted Ms. Megan Marie of the State of Alaska Department of Fish & Game (ADF&G) on March 9, 2021 to see if ADF&G had any concerns about EFH or fish passage and spawning in the vicinity of the Anderson Bldg Facility's effluent discharge. Ms. Marie responded to DEC's email on March 10, 2021, stating that Ms. Kate Krouse of ADF&G would be the best person to contact about EFH in Southeast Alaska. On March 11, 2021, Ms. Krause responded to DEC's request for information about EFH or concerns with fish passage or spawning, stating that DF&G had no concerns regarding the effluent from the Anderson Bldg Facility.

The Alaska Department of Fish and Game also maintains regulatory and interactive maps that identify anadromous streams, fish passage, and fish inventory at:

<http://www.adfg.alaska.gov/sf/SARR/AWC/index.cfm?ADFG=maps.maps>.

DEC reviewed the interactive map for Auke Bay near the Anderson Bldg Facility location and did not identify EFH in Auke Bay near the areas of discharge.

This fact sheet and the permit will be submitted to the agencies for review during the public notice period and any comments received from these agencies will be considered prior to issuance of the permit.

8.4 Permit Expiration

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

9.0 REFERENCES

- DEC 2018, *Water Quality Standards*, as amended April 6, 2018, Alaska Department of Environmental Conservation 18 AAC 70
- DEC 2008, *Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances*, as amended through December 12, 2008, Alaska Department of Environmental Conservation 18 AAC 70
- DEC 2020, *Alaska's Final 2018 Integrated Water Quality Monitoring and Assessment Report*, June 23, 2020. Alaska Department of Fish and Game, *Anadromous Waters Catalog*, Interactive Map for the Juneau JUN250, available at <http://www.sf.adfg.state.ak.us/AnadromousRegPDFs/scn/SEW250.pdf>
Alaska Department of Fish and Game.
- Cooper, Douglass, (douglass_cooper@fws.gov). "RE: Threatened or Endangered Species -Essential Fish Habitat Inquiry: APDES Permit AK0055875 UAS Anderson Building Facility discharge to Waters of the US. March 8, 2021.
- Garcia, Daniel, (djgarcia@alaska.edu). "Re: APDES permit for the UAS Anderson Building at Auke Bay". January 27, 2021.
- Garcia, Daniel, (djgarcia@alaska.edu). "Re: Checking in with you regarding the APDES permit for the UAS Anderson Building at Auke Bay". February 17, 2021.
- Garcia, Daniel, (djgarcia@alaska.edu). "Anderson Seawater System permit update". March 8, 2021, March 10, March 17, March 26, March 31, April 6, 2021.
- Kanouse, Kate, (kate.kanouse@alaska.gov). "Re: Essential Fish Habitat Inquiry: APDES Permit AK0055875 UAS - Anderson Building Facility wastewater discharge to Auke Bay". March 11, 2021.
- Malek, Jenna, (jenna.malek@noaa.gov). "e: Threatened or Endangered Species -Essential Fish Habitat Inquiry: APDES Permit AK0055875 UAS Anderson Building Facility with proposed discharge to Auke Bay". March 9, 2021, March 11, 2021."
- Marie, Megan, (megan.marie@alaska.gov). "Re: Essential Fish Habitat Inquiry: APDES Permit AK0055875 UAS - Anderson Building Facility wastewater discharge to Auke Bay". March 10, 2021.
- NOAA Fisheries, *Final Environmental Impact Statement for Essential Fish Habitat Identification and Conservation in Alaska*, April, 2005.
- NOAA Fisheries, ArcGIS REST Services Directory
https://alaskafisheries.noaa.gov/arcgis/rest/services/NOAA_Baseline/MapServer
- NOAA Fisheries, Alaska Protected Fisheries Region Species Distribution Manager,
<https://alaskafisheries.noaa.gov/portal/apps/webappviewer/index.html?id=0c4a81f75310491d9010c17b6c081c81/>
- NOAA Fisheries, <https://www.fisheries.noaa.gov/species/steller-sea-lion>.

APPENDIX A: BASIS FOR EFFLUENT LIMITS

The Clean Water Act (CWA) requires that the effluent limit for a particular pollutant be the more stringent of either technology-based effluent limits (TBELs) or water quality-based effluent limits (WQBELs). TBELs are established by the Environmental Protection Agency (EPA) for many industries in the form of Effluent Limitation Guidelines (ELGs), are based on available pollution control technology and are adopted by reference in 18 AAC 83. The Department adopts the subject ELGs by reference in 18 AAC 83.010. There are no TBELs or Effluent Limit Guidelines (ELGs) that apply to this permit. The permit contains WQBELs designed to ensure that the WQS of the receiving water body are met.

In accordance with Alaska Pollutant Discharge Elimination System regulations at 18 AAC 83.475, best management practices (BMPs) can be used to control or abate the discharge of pollutants in several circumstances, including, when numeric effluent limits are infeasible. BMPs are defined at 18 AAC 83.990(9) as schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States (U.S.). CWA Section 304 (e) authorizes the inclusion of BMPs as requirements in discharge permits.

A.1 Water Quality Based Effluent Limits for Outfall 001A

A.1.1 Statutory and Regulatory Basis

18 AAC 70.010 prohibits conduct that causes or contributes to a violation of the WQS. 18 AAC 15.090 requires that permits include terms and conditions to ensure criteria are met, including operating, monitoring, and reporting requirements.

The regulations require the permitting authority to make this evaluation using procedures that account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water body. The limits must be stringent enough to ensure that WQS are met and must be consistent with any available wasteload allocation (WLA).

A.1.2 Specific Water Quality-Based Effluent Limits

A.1.2.1 Floating, Suspended or Submerged Matter, including Oil and Grease

The WQS for floating, suspended or submerged matter, including oil and grease, are narrative. The most stringent standard, found at 18 AAC 70.020(b)(8)(A)(i), requires that fresh waters, “may not, alone or in combination with other substances or wastes, make the water unfit or unsafe for the use; cause a film, sheen, or discoloration on the receiving of the water or adjoining shorelines; cause leaching of toxic or deleterious substances; or cause a sludge, solid, or emulsion to be deposited beneath or upon the receiving of the water, within the water column, on the bottom, or upon adjoining shorelines.”

A.1.2.2 pH

Alaska WQS at 18 AAC 70.020(b)(18)(A)(i), (Water Supply – aquaculture) and 18 AAC 70.020(b)(18)(C) (Growth and Propagation of Fish, Shellfish, Other Aquatic Life, and Wildlife) states that the pH water quality criteria may not be less than 6.5 or greater than 8.5. Standard Units (S.U.). The previous state permit implemented WQS-WQBELs for pH that required a minimum Daily Maximum Limit (DML) of 6.5. S.U. and a maximum DML of 8.5 S.U., monitored at a frequency of ‘upon DEC’s request’. This WQS-WQBEL requirement is carried forward from the previous state permit in the present permit and the monitoring frequency has been changed to monthly monitoring.

A.1.2.3 Fecal Coliform Bacteria

The criteria at 18 AAC 70.020(b)(14)(D), Harvesting for Consumption of Raw Mollusks or Other Raw Aquatic Life criteria require that in a 30-day period, the fecal coliform (FC) bacteria geometric mean of samples may

not exceed 14 Fecal Coliform colonies per 100 milliliters (FC/100 mL) and not more than 10% of the samples may exceed a most probable number of 43 FC/100 mL.

The WQS-WQBEL corresponding to the water quality criteria (WQC) for FC of a 30-day geometric mean of 14 FC/100 mL as the Average Monthly Limit (AML) and a DML of 43 FC/100 mL will be required for this permit. Effluent monitoring for FC bacteria is required on a quarterly basis, year-round. This WQS-WQBEL and monitoring frequency requirement is carried forward from the previous state permit.

A.1.2.4 Enterococci Bacteria

Enterococci bacteria (enterococci) are indicator organisms of harmful pathogens recommended by EPA as the best indicator of health risk in marine water used for recreation. Enterococci are also a better indicator of acute gastrointestinal illness arising from swimming-associated activities than FC bacteria. In 1986, EPA published [Ambient Water quality Criteria for Bacteria](#) that contained recommended bacteria water quality criteria for primary contact recreational users. The Beaches Environmental Assessment and Coastal Health Act that followed in 2000 required states and territories with coastal recreation waters to adopt bacteria criteria into their WQS that were at least as protective as EPA's 1986 published bacteria criteria by April 10, 2004.

Alaska did not adopt the enterococci criteria into the Alaska WQS by the April 10, 2004 deadline. EPA promulgated the 1986 bacteria criteria for Alaska coastal recreational waters in 2004. In 2012, EPS issued updated recreational water quality criteria (RWQC) bacteria recommendations to protect human health in all coastal and non-coastal waters designated for primary contact recreational use. Primary contact recreation includes swimming, bathing, surfing, water skiing, tubing, play by children, and similar water contact activities where a high degree of bodily contact with water, immersion and ingestion are likely.

In January 2017, DEC adopted EPA's recommended RWCQ and revised 18 AAC 70.020(b)(14)(B)(i) to adopt enterococci as the recommended contact recreation WQ criteria for fresh waters. The criteria at 18 AAC 70.020(b)(14)(B)(i), Water Recreation – contact recreation criteria require that within a 30-day period, the geometric mean of samples may not exceed 35 enterococci colony-forming units per 100 mL (cfu/100 mL), and not more than 10% of the samples may exceed a statistical threshold value (STV) of 130 enterococci cfu/100 mL. The WQS-WQBELs for enterococci of 35 cfu/100mL mg/L as the AML of a 30-day geomean and 130 mg/L as the DML are new effluent limits and will be met at the end of the pipe. Effluent monitoring for enterococci is required on a quarterly basis from April through October, when primary contact recreation in which full immersion and ingestion of water is more likely to occur. The enterococci monitoring will be performed in conjunction with FC monitoring.

A.1.2.5 Dissolved Oxygen

The criteria for water supply/aquaculture are the most stringent standards for dissolved oxygen (DO). The standards at 18 AAC 70.020(b)(15)(A)(i) require that "Surface DO concentration in coastal water may not be less than 6.0 mg/l for a depth of one meter except when natural conditions cause this value to be depressed. In no case may DO levels exceed 17 mg/L. The concentration of total dissolved gas may not exceed 110% of saturation at any point of sample collection. The WQS-WQBEL for DO of 6.0 mg/L as the minimum DML and 17.0 mg/L as the maximum DML is carried forward from the previous state permit and will be met at the end of the pipe. The previous permit required DO in the effluent to be monitored once per quarter and this monitoring frequency requirement is changed in the permit to monthly monitoring.

A.1.2.6 Temperature

The WQS at 18 AAC 70.020(b)(22)(A)(i) Water Supply: aquaculture and (ii) seafood processing and 18 AAC 70.020(b)(22)(C) Growth and Propagation of Fish, Shellfish, Other Aquatic Life, and Wildlife and (D) Harvesting for Consumption of Raw Mollusks or Other Raw Aquatic Life state that temperature may not exceed 15 degrees Celsius (°C). The WQS-WQBEL for temperature of 15 °C as the DML is a new effluent limit in the permit and will be met at the end of the pipe. The permit requires the applicant to monitor effluent temperature one time per month.