



**ALASKA POLLUTANT DISCHARGE ELIMINATION SYSTEM  
PERMIT FACT SHEET – FINAL**

Permit Number: AK0052566

**Alaska SeaLife Center**

**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
Wastewater Discharge Authorization Program**

**555 Cordova Street  
Anchorage, AK 99501**

Public Comment Period Start Date: March 6, 2020

Public Comment Period Expiration Date: April 6, 2020

[Alaska Online Public Notice System](#)

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

**SEWARD ASSOCIATION FOR THE ADVANCEMENT OF MARINE SCIENCE**

For wastewater discharges from:

Alaska SeaLife Center  
301 Railway Avenue  
Seward, Alaska 99664

The Alaska Department of Environmental Conservation (the Department or DEC) proposes to reissue an APDES individual permit (permit) to the Seward Association for the Advancement of Marine Science (SAAMS). 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 Alaska SeaLife Center and outlines best management practices to which the facility must adhere.

This fact sheet explains the nature of potential discharges from the Alaska SeaLife Center 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 <b>Mail:</b> P.O. Box 111800 <b>In Person:</b> 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:	Seward Association for the Advancement of Marine Sciences
Facility:	Alaska SeaLife Center
APDES Permit Number:	AK0052566
Facility Location:	301 Railway Avenue Seward, AK 99664
Mailing Address:	PO Box 1329, Seward, AK, 99664
Facility Contact:	Ms. Caryn Fosnaugh

The map in Fact Sheet Part 2.1 shows the approximate locations of the Alaska SeaLife Center (ASLC), the adjoining Steller South Beach Facility (SSBF) 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 reissuance 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 Seward Association for the Advancement of Marine Science (SAAMS) first applied for a wastewater discharge permit on October 13, 1994. DEC issued Waste Disposal Permit, # 9423-DB005 in 1994 for the discharge of non-domestic wastewater to the ASLC. The permit was renewed on January 15, 2001.

On January 20, 2004, DEC issued Wastewater Disposal Permit #0123DB005 to replace permit #9423-DB005. The replacement permit expired on January 19, 2009. SAAMS submitted an administratively complete application for permit reissuance on July 17, 2008. SAAMS met the 30-day deadline and DEC accordingly provided administrative extension of the permit and issued Individual Permit AK0052566 under the Alaska Pollutant Discharge Elimination System (APDES) program to the facility authorizing non-domestic wastewater discharge on June 14, 2014. APDES permit AK0052566 expired on July 31, 2019. On May 7, 2019, DEC received an application for renewal of AK0052566 and determined that the application was administratively complete on July 16, 2019. DEC administratively extended AK0052566 on July 17, 2019.

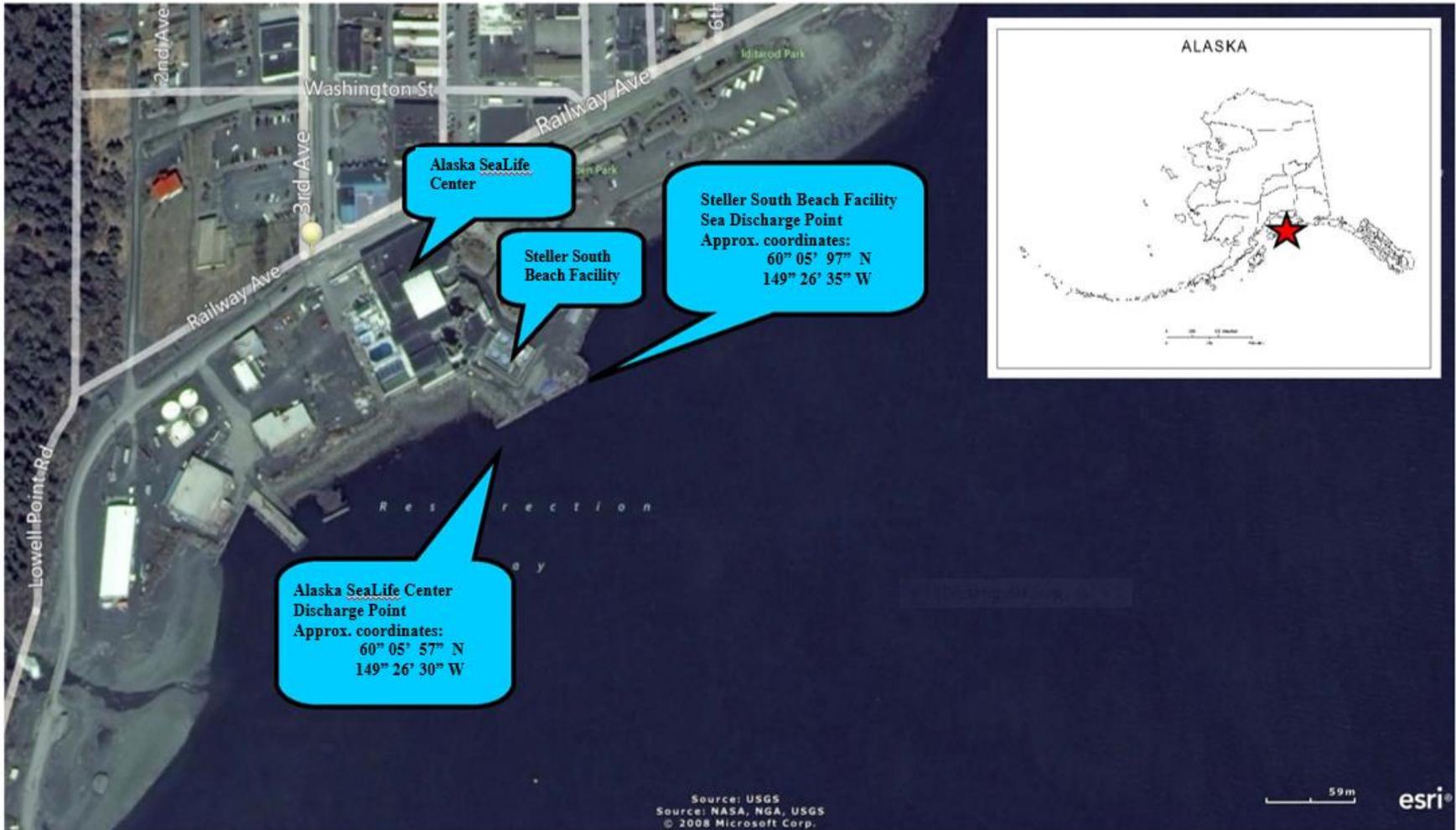
## 2.0 BACKGROUND

### 2.1 Facility Information

The Seward Association for the Advancement of Marine Science doing business as (dba) the ASLC and the SSBF operate as a public aquarium and Alaska's only permanent marine mammal rehabilitation facility. The center is the only permanent marine mammal rescue and rehabilitation facility in the state. The ASLC and SSBF generate and share scientific knowledge to promote understanding and stewardship of Alaska's marine ecosystems.

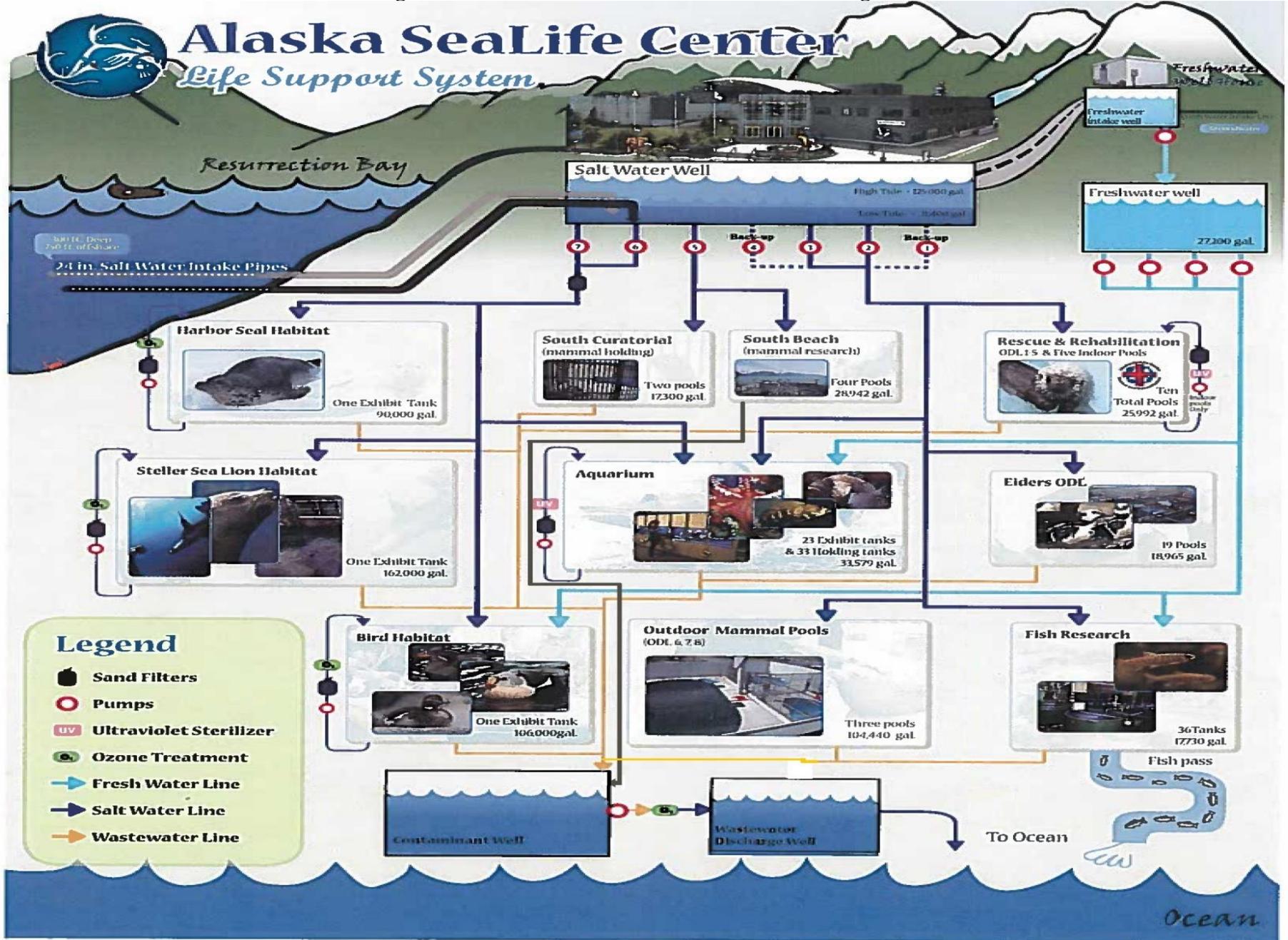
SAAMS operates the ASLC and the adjoining SSBF in Seward, Alaska. The ASLC and SSBF are industrial facilities operating as a Zoo and Botanical Garden under the North American Industry Classification System (NAICS). The ASLC facility contains seawater and fresh water systems that support two large marine mammal habitats, one seabird habitat, indoor and outdoor research pools, rescue and rehabilitation tanks and pools, and numerous aquaria.

**Figure 1: Alaska SeaLife Center Facility Vicinity Map**



AREAS DEPICTED ARE REPRESENTATIVE, AND MAY NOT BE EXACT.			DIVISION OF WATER 410 WILLOUGHBY AVE, SUITE 303 JUNEAU, AK 99803 PHONE (907) 465-5272 WWW.STATE.AK.US/DEC	G. SHREVE BY	ALASKA POLLUTANT DISCHARGE ELIMINATION SYSTEM	FIGURE NUMBER
					ALASKA SEALIFE CENTER SEWARD, ALASKA	1

Figure 2: Alaska SeaLife Center Process Flow Diagram



During the previous APDES permit issuance, the facility completed one major modification. In the winter of 2016 – 2017, a duplex submersible lift station was installed in the SSBF to receive all drainages from the facility's pools, tanks, and aquaria and delivered the combined drainage to the contaminate (contaminant) well at the ASLC. Since the completion of the modification on February 1, 2017, effluent from the SSBF combines with effluent from the ASLC, undergoes ozone disinfection and is discharged to Outfall 001A. With the exception of this modification, no other facility changes were implemented and there are no current plans for upgrades to the facility. Figure 2 provides a schematic of the facility's process flow system.

Untreated influent seawater enters the ASLC via two 24-inch intake pipes capped with screens and capture baskets that extend 750 feet offshore into Resurrection Bay to a depth of 300 feet. The maximum intake rate is 6,200 gallons per minute (gpm). Seawater is pumped to a 225,000-gallon saltwater reservoir (salt water well) located below the floor of the pump room to a depth of 42 feet. A pigging unit is used in one of the seawater intake pipes to clear foreign matter and sediment from the intake. A continuous flow of influent seawater is pumped from the salt water well into the habitat pools, aquaria, laboratory, and South Curatorial/South Beach facility through one of three influent water lines; the habitat line, the research line or the line to the South Curatorial/South Beach facility. Seawater is completely exchanged throughout the ASLC approximately nine times per day.

Seawater in the habitat line is directed to the harbor seal habitat, the Steller sea lion habitat, the bird habitat, the west holding area, and the aquaria. Each of the main habitat tanks employs a set of high-pressure sand filters and an ozone treatment system to clarify and disinfect influent seawater before it enters the exhibits.

The research line water supplies untreated seawater to the Rescue and Rehabilitation Outside Deck Laboratories (ODLs) 1-5, five indoor pools and to the wet labs. The research water line also supplies seawater to the quarantine system, the Eiders' ODL, the outdoor mammal pools (ODLs 6, 7 and 8), 36 tanks in the Fish Research section, 23 indoor habitat tanks and 31 indoor holding tanks.

The third influent line supplies seawater to the South Curatorial/South Beach facilities.

Spent seawater drains from tanks and pools through one of two wastewater streams to a common contaminant well, a 4,620-gallon concrete tank. From the contaminant well, the wastewater undergoes ozone treatment and is piped into the wastewater discharge well. From there, the wastewater discharges to Resurrection Bay via Outfall 001A.

Fresh water from a natural spring, used in exhibits and for research purposes at the ASLC, collects in a 27,200-gallon concrete reservoir located east of the facility. The fresh water from the reservoir is pumped to the ASLC at a maximum rate of 500 gpm to provide the high-quality untreated fresh water needed for the bird habitat, to the fresh water aquaria and research.

Table 1 lists information about the pools and tanks located at the ASLC and SSBF.

**Table 1: Description of Pools and Tanks at ASLC and SSBF**

Description	Number of Pools/Tanks	Volume in Gallons	Influent line supplying seawater	Treatment prior to discharge
Harbor seal habitat tank	1	90,800	Habitat	Ozone
Steller sea lion habitat tank	1	102,000	Habitat	Ozone
Bird habitat tank	1	106,000	Habitat	Ozone
South Curatorial mammal holding pools	2	17,300	South Curatorial/ South Beach	Ozone
SSBF marine animal research pools	4	28,942	South Curatorial/ South Beach	Ozone
Rescue and Rehabilitation ODL/indoor pools	10	25,902	Research	UV
Eiders' ODL pools	19	18,965	Research	Ozone
Mammals' ODL pools	3	104,440	Research	Ozone
Fish research tanks	36	17,730	Research	Ozone
Indoor aquarium tanks and holding pools	54	31,579	Habitat and Research	UV

## 2.2 Wastewater Treatment

The permit is limited to non-domestic wastewater discharges. Wastewater discharged from the ASLC and SSBF 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 Seward Wastewater Treatment Facility (Seward WWTF). The amount of domestic wastewater discharged from the ASLC is approximately 46,000 gallons per day for an average high use day during the summer. Facility wash-down water and stormwater runoff from exterior surfaces is also discharged to the Seward WWTF. Stormwater runoff from the ASLC parking lot drains to an oil/water separator and is discharged to the City of Seward storm drain. The building cooling and heating exchangers are supplied with raw saltwater directly from the 225,000 gallon salt water reservoir and, after passing through the heat exchangers, goes directly to the discharge well, without coming into contact with vegetable-grade glycol in the cooling and heating system.

Non-domestic wastewater from the ASLC's tanks and pools, including filter backwash and wastewater from the SSBF, discharges through one of two waste streams to a 125,000-gallon contaminant well. Filter backwash water that may contain concentrated natural solids is disinfected with ozone at 2 parts per million and held in contact tanks for four minutes to kill all pathogens and reduce the biochemical oxygen demand prior to discharge into the contaminant well.

The three large habitat tanks at the ASLC operate as semi-closed systems. Seawater in the habitat tanks circulates through high rate pressure sand and gravel filters at a rate of 1,238 gpm; the daily average of the systems. Because there are regular backwashes for filtration, and the system cycles regularly, there is no way to measure the maximum flow rate. Each habitat tank has two skimmers. The skimmers are simple grates whose purpose is to collect any surface solids or debris so that only water is in the waste stream. Wastewater from all three habitat systems is piped to the contaminant well through the first discharge line at a maximum flow rate of 1,300 gpm. The habitat filters, pumps and valve controls are automated by a RCK Controls, Inc. control system that also measures salinity, pH, temperature and oxidation-reduction potential. RCK control information is stored on a computer in the life support office.

The Quarantine and Rescue and Rehabilitation facilities also operate as semi-closed systems to provide a stable environment isolated from outside contamination while protecting the external environment from contamination

by the quarantined animals. The semi-closed recirculating life support systems consist of combinations of circulating pumps, pressure sand filters, and UV disinfection that supplies seawater to all quarantine areas at an approximate capacity of 150 gpm.

Other tanks with sand and UV disinfection at the ASLC are the aquaria exhibit tanks. Aquaria exhibit tanks receive a continuous flow of seawater and fresh water or have semi-closed recirculating life support systems. Discharge water, including filter backwash, from the rescue, research and quarantine areas and aquaria tanks is piped to the contaminant well through the first discharge line; the same discharge line as the habitat tanks. Wastewater from the fish research tanks is discharged to a separate, second wastewater line; however, both wastewater discharge lines are directed to the contaminant well.

The outdoor research pools have seawater supplied at a rate of 600 gpm. The maximum capacity for flow to SSBF is 3,200 gpm if there is no intake flow to all other tanks or pools. The average flow rate is 600 gpm since the water is shared with the other tanks and pools, while the indoor research tanks' seawater is supplied at a rate of 250 gpm. The indoor research tanks discharge wastewater to the contaminant well through the first discharge line, while ODL tanks 7 and 8 discharge wastewater to the contaminant well through the wastewater line from the same line as the fish research tanks, the second discharge line.

Discharge water from the 19 pools in the Eiders' ODL is not disinfected with ozone or UV before being piped to the contaminant well through the first discharge line.

The SSBF receives a continuous flow of untreated seawater from the ASLC saltwater well to four pools used for marine mammal research. Pool wastewater discharges without treatment to a common concrete deck trench drain, then to a six-inch buried pipeline connected to the ASLC first wastewater line. Before the major facility modification in 2017, wastewater from the SSBF discharged through a buried 24-inch storm drain directly into Resurrection Bay through an above-water outfall, Outfall 001B. The previous permit authorized Outfall 001B and it remains as a potential discharge port. However, it is presently inactive and the permit does not authorize wastewater discharges from Outfall 001B. All references to Outfall 001B in this document are included as historical information about discharges from August 1, 2014 to January 31, 2017.

Wastewater collected in the 4,620-gallon contaminant well from the two discharge lines is disinfected with ozone before being pumped into the 125,000-gallon wastewater discharge well. Wastewater flows from the wastewater discharge well through a 225-foot long outfall pipe to a depth of 50 feet into Resurrection Bay at Outfall 001A. Outfall 001A is a single port discharge unit without a diffuser. The maximum daily flow rate discharge to Outfall 001A is 5,625 gpm and has an estimated average daily flow rate of 2,500 gpm.

Design criteria for the ASLC and SSBF are provided in Table 2.

**Table 2: Design Criteria for ASLC and SSBF**

Average Daily Flow Rate ASLC	3.8 million gallons per day (mgd)
Design Flow Rate ASLC	8.1 mgd
Average Daily Flow Rate SSBF	N/A; intermittent flows
Design Flow Rate SSBF	1.7 mgd

### **2.3 Wastewater Characterization and Pollutants of Concern**

The ASLC and SSBF discharge only spent seawater, filtered and treated from animal habitats and tanks. Pollutants of concern known to be present in the effluent of the ASLC and SSBF are limited to fecal coliform (FC) bacteria, enterococci bacteria, dissolved oxygen (DO), temperature, and pH. Additional information on the pollutants of concern can be found in the Fact Sheet Appendix A.

The parameters monitored in the previous APDES permit cycle were FC bacteria, enterococci bacteria, dissolved oxygen (DO) and pH. Based on the monitoring results, the same parameters remain as pollutants of concern, with continued monitoring. New water quality-based effluent limits (WQBELs) for FC and enterococci bacteria are applied in the permit. A new monitoring requirement for temperature is applied in the

permit, in order to determine if non-contact heating operations within the facility affect water temperatures of the effluent. Results for detected pollutants from the previous permit cycle are summarized in Table 3 and Table 4.

**Table 3: Outfall 001A Effluent Data Summary**

Pollutant	Units <sup>a</sup>	Range (Minimum – Maximum)	Average
Dissolved Oxygen (DO)	mg/L	7.5 – 12.7	9.9
Fecal Coliform (FC) Bacteria	FC/100 mL	ND - 433	56.8 <sup>b</sup>
Enterococci Bacteria	cfu/100 mL	ND – 1,373	78.1 <sup>c</sup>
pH	SU	6.7 – 8.7	7.7

Footnotes:

- a. Units: mg/L = milligrams per liter, FC/100 mL = fecal coliform per 100 milliliters, cfu/100 mL = colony forming units per 100 milliliters, SU= standard units.
- b. Averages of Numeric Results: 3 results exceeded 14 FC/100 mL WQS, 25 results Non-Detect (ND) or within WQS.
- c. Averages of Numeric Results: 5 results exceeded 35 cfu/100 mL WQS, 21 results ND or within WQS.

**Table 4: Outfall 001B Effluent Data Summary**

Pollutant	Units <sup>a</sup>	Range (Minimum – Maximum)	Average
Fecal Coliform (FC) Bacteria	FC/100 mL	ND - 860 & TNTC <sup>b</sup>	N/A
Enterococci Bacteria	cfu/100 mL	ND - 36	N/A
pH	SU	7.6 – 9.6	8.0

Footnotes:

- a. Units: FC/100 mL = fecal coliform per 100 milliliters; cfu/100 mL = colony forming units per 100 milliliters, SU= standard units
- b. TNTC = Too numerous to count.

## 2.4 Compliance History

DEC reviewed Discharge Monitoring Reports (DMRs) from August 1, 2014 to May 31, 2019 to determine the facility’s compliance with effluent limits. The pH daily maximum limit of 8.5 SU was exceeded one time in July 2016 at Outfall 001A and also at Outfall 001B during the same month. Non-compliance notifications received during the previous permit cycle are listed in Table 5. No citizen complaints were lodged against the facility during the previous permit cycle.

**Table 5: ASLC Non-Compliance Notifications 2014 – 2019**

Parameter/ Problem	Date	Non-Compliance Notification Description
Unanticipated Bypass of Contaminated Waste Discharge from Outfall 001A	May 2 - 13, 2015	Electrical short in ozone generator bank triggered small fire. No ozone available for disinfection until May 13, 2015, when ozone treatment system was repaired
Unanticipated Bypass of Contaminated Waste Discharge from Outfall 001A	November 3 -15, 2015	Mechanical breakdown in the ozone treatment air compressor. Repair completed November 13, 2015

Two facility inspections were performed during the previous permit cycle; the first on December 11, 2014 and the second on April 25, 2019. The December 11, 2014 facility inspection report documented that the permittee was required to develop and implement a Best Management Practices (BMP) Plan, including records of monitoring information. Additionally, the permittee was required to develop a quality assurance project plan

(QAPP) for all monitoring required by this permit. The permittee was required to submit a letter to the Department within 180 days of the effective date of this permit stating that the plan had been implemented. The issues identified in the December 11, 2014 inspection were resolved on February 27, 2015. SAAMS delivered a BMP plan to DEC for review and notified DEC that the required QAPP had been implemented. On March 5, 2015, DEC approved both deliverables.

The April 25, 2019 facility inspection report documented that the permittee facilities' director and BMP committee had not reviewed and certified the BMP plan on an annual basis, as required by the permit. The facility inspection report also included the suggestions that the permittee disclose to the City of Seward all sources of domestic wastewater discharges and evaluate all potential waste streams discharging to Outfall 001A. On June 24, 2019, SAAMS delivered a BMP plan to DEC for review and notified DEC that the required information had been included in the QAPP. On August 20, 2019, DEC accepted both corrective actions.

### **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 FC and enterococci bacteria.

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 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 WQBELS only. The following summarizes the proposed effluent limits. More details are provided in the Fact Sheet Appendix A. The permit contains new WQBELS for FC and enterococci bacteria and it contains a new monitoring requirement for enterococci bacteria.

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).

### **3.3.1 Outfall 001A**

The permit carries forward Outfall 001A effluent limits and monitoring requirements for FC bacteria, enterococci bacteria, pH, and DO from the previous permit. The permit includes new effluent limits for FC and enterococci bacteria to meet WQS and a new monitoring requirement for temperature of the effluent.

Monthly DO monitoring was a requirement in the previous permit and is carried forward in the permit. DO monitoring was included previously to monitor the potential WQS impacts due to the use of ozone disinfection of contaminated water. SAAMS conducted monthly DO monitoring throughout the previous permitting cycle. A total of 60 DO samples were collected, within a range of 7.54 – 12.7 mg/L, compliant with the most stringent WQS for marine water.

A new QBEL for FC bacteria is included in the permit. In the previous permit cycle, FC bacteria monitoring was required on a quarterly basis, however SAAMS occasionally reported FC bacteria results more often. DEC reviewed 31 FC bacteria results from the previous permitting cycle. A result from the spring of 2018 (April – June) was measured at 273 FC/100 mL and two results from the fall of 2016 (August and October) were measured at 120 and 433 FC/100 mL, respectively. However, for the majority of the previous permit cycle, the ASLC disinfection system was effective at controlling the bacteria levels. In 25 of the 28 FC bacteria samples, the results were at or below the limit required by the most stringent WQS of 14 FC/100 mL. The ASLC has demonstrated that it can meet WQS for FC at the end of the pipe through appropriate disinfection methods. Therefore, the Department has determined the effluent limits of 43 FC/100 mL (Daily Maximum) and 14 FC/100 mL (Monthly Average), consistent with the WQS for FC bacteria, are appropriate. 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 bacteria can be found in the Fact Sheet Appendix A.

A new QBEL for enterococci bacteria is included in the permit. In the previous permit cycle, enterococci bacteria monitoring was required on a quarterly basis, however SAAMS occasionally reported enterococci results more frequently. DEC reviewed 22 enterococci bacteria results from the previous permitting cycle. 17 of the 22 enterococci bacteria results were at or below the WQS of 35 cfu/100 mL as the geometric mean criterion. One result from the spring of 2015 was measured at 283 cfu/100 mL, a result from November, 2015 was 446 cfu/100 mL and three results from the fall of 2016 (September - November) were measured at 150, 433 and 1,373 cfu/100 mL, respectively. The 2016 enterococci exceedances were likely due to the failure of the contaminant waste discharge ozone generator. The exceedances of the enterococci WQS notwithstanding, the ASLC has demonstrated that it can meet the Alaska WQS for enterococci at the end of the pipe through its disinfection methods. For the present permit requirements, the Daily Maximum limit for enterococci bacteria is 130 cfu/100 mL and the Monthly Average limit is 35 FC/100 mL, consistent with the Alaska marine WQS for enterococci. Quarterly monitoring for enterococci bacteria is included in the present permit, as it was in the previous permit cycle, but the monitoring requirement frequency has been revised. In the previous permit cycle, enterococci bacteria monitoring was required on a quarterly basis, year-round. In this permit, enterococci monitoring is not required during the months of November – April because the water quality standard for enterococci bacteria, 18 AAC 70.020(b)(14)(B)(i) is for water recreation- contact recreation. Contact recreation is not expected during the winter months in Resurrection Bay. More information about enterococci bacteria can be found in the Fact Sheet Appendix A.

The QBEL and monitoring frequency for pH is carried over from the previous permit. While ASLC no longer adds hydrochloric acid to any of its waters for pH control, pH was added as a parameter due to the fact that animal waste may affect pH levels in the effluent. The WQS-QBEL pH limits are 6.5 to 8.5 SU. During the previous permit cycle, SAAMS recorded the effluent pH once each month. DEC evaluated 60 pH measurements in a range of 6.65 – 8.74 SU. The single pH value of 8.74 SU, exceeding the WQS was recorded in July 2016.

The permit requires the applicant to monitor effluent temperature one time per month and report the daily maximum observed temperature on the discharge monitoring report submitted each month. The ASLC uses a heat exchange system, removing heat from influent seawater to raise the ambient temperature of the facility. The effluent temperature monitoring requirement will be used to create a dataset to determine whether there is reasonable potential for temperature of the effluent to affect marine temperature WQS.

Table 6 presents the effluent monitoring requirements for Outfall 001A.

**Table 6: Outfall 001A - Effluent Limits and Monitoring Requirements**

Parameter	Effluent Limits					Monitoring Requirements		
	Units <sup>a</sup>	Daily Minimum	Monthly Average	Weekly Average	Daily Maximum	Sample Location	Sample Frequency	Sample Type
Total Discharge Flow	mgd	N/A	8.1	Report	8.1	Effluent	1/Week	Estimated
pH	SU	6.5	N/A	N/A	8.5	Effluent	1/Month	Grab
Temperature	° C	N/A	N/A	N/A	Report	Effluent	1/Month	Grab
Dissolved Oxygen (DO)	mg/L	Report	N/A	N/A	Report	Effluent	1/Month	Grab
Fecal Coliform Bacteria (FC)	FC/100 mL	N/A	14 <sup>b</sup>	N/A	43 <sup>c</sup>	Effluent	1/Quarter <sup>d</sup>	Grab
Enterococci Bacteria	cfu/100 mL	N/A	35 <sup>b</sup>	N/A	130 <sup>c</sup>	Effluent	1/Quarter <sup>e</sup>	Grab

**Footnotes:**

- a. Units: mgd = million gallons per day, SU = standard units, °C = degrees Celsius, mg/L = milligrams per liter, FC/100 mL = Fecal Coliform per 100 milliliters, and cfu/100 mL = colony forming units per 100 milliliters.
- b. If more than one FC bacteria 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  $(100 \times 200 \times 300)^{1/3} = 181.7$ .
- c. If less 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.
- d. Once per quarter means the time period of three months based on the calendar year: Jan-March, April-June, July-Sept, and Oct-Dec
- e. 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.

**3.3.2 Outfall 001B**

Drainage from the habitat tanks at the SSBF is presently routed to Outfall 001A at the ASLC and Outfall 001B is inactive. More information about how wastewater is discharged from the SSBF can be found in Fact Sheet Part 2.2. Therefore, the permit does not authorize effluent discharge from Outfall 001B. The Outfall 001B effluent was not treated prior to discharge previously. Although quarterly monitoring was required for the previous permit cycle, it was only conducted and reported during eight months when the SSBF was occupied.

DEC reviewed 11 FC bacteria results from the previous permitting cycle. The FC bacteria levels ranged from non-detectable to TNTC. Nine of the 11 FC bacteria results were non-detectable. A result from July 2015 was measured at 860 FC/100 mL and a result from July 2016 was recorded at TNTC FC/100 mL.

As with FC monitoring, SAAMS reported enterococci bacteria results regularly in monthly DMRs, when there was a discharge through Outfall 001B. DEC reviewed 11 enterococci bacteria results from the previous permitting cycle. Nine of the 11 enterococci bacteria results were non-detectable. Two results from the summer of 2016 (June and July) were slightly above the 35 cfu/100 mL WQS; both results were 36 cfu/100 mL.

During the previous permit cycle, SAAMS recorded the effluent pH once each month. DEC evaluated nine pH measurements in a range of 7.6 – 9.6 SU. The single pH value of 9.6 SU, exceeding the WQS of pH in the range of 6.5 – 8.5 SU, was recorded in July 2016, the same month as the pH exceedance occurred at Outfall 001A.

### **3.4 Receiving Waterbody Limits and Monitoring**

Resurrection 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 APDES permit and no receiving water monitoring is required in the current permit.

## **4.0 RECEIVING WATER BODY**

### **4.1 Description of Receiving Waterbody**

Resurrection Bay is a fiord on the eastern side of the Kenai Peninsula. 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 2014-16 Integrated Water Quality Monitoring and Assessment Report* (Alaska's 2014-16 Integrated Report), April 23, 2019. The bay has a maximum length of 18 miles and a maximum width of 5 miles. Resurrection Bay is surrounded by mountains in the Chugach Range on three sides and opens to the North Pacific Ocean to the south. The bay has a maximum depth of 972 feet and is ice-free throughout the year. The primary fresh water inflow to the bay are the Resurrection River and Fourth of July Creek, although there are many smaller tributaries. The community of Seward is the main settlement in Resurrection Bay and is located at the head of the bay. The seafloor of the bay is composed of glacial sediments overlying metasedimentary bedrock.

### **4.2 Outfall Description**

The ASLC discharges treated effluent from Outfall 001A into Resurrection Bay at a depth of 250 feet below the surface of the water. The outfall pipe, placed 50 feet below mean lower low water level, is located approximately 50 feet to the east of the building, at a bearing of approximately S36 33" 50"E and extends 225 feet. Geographic coordinates of the outfall terminus are 60° 05'57" North latitude and 149°26'30" West longitude. The Outfall 001A terminus is a single port discharge unit without a diffuser and does not have intermittent or periodic discharges. The discharge flow is not metered. The flow in mgd is estimated, based on pump capacity. DEC suggests installing a continuous flow monitor to measure total discharge flow, instead of estimating flow by pump capacity.

The SSBF discharges untreated effluent (previously discharged from Outfall 001B) to a contaminant well at the ASLC where it is treated and discharged through Outfall 001A.

### **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, Resurrection Bay, has not been reclassified, nor have site-specific water quality criteria been established. Therefore, existing uses and designated uses are the same and Resurrection 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

Resurrection Bay has not been reclassified in Alaska’s 2014-16 Integrated Report. Effluent limits have changed from those set forth in the previous permit; new WQS-WQBELs are in effect for FC and enterococci bacteria. More information about the new WQS-WQBELs for bacteria 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 effluent limitations in this permit reissuance are consistent with 18 AAC 83.430. Therefore, the permit effluent limitations, standards, and conditions in AK0052566 are as stringent as in the previously issued permit. Accordingly, no further backsliding analysis is required for this permit reissuance.

### **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 Resurrection Bay) on DEC's most recent Integrated Report (Alaska's 2014-16 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;*

*(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.

The conventional pollutant of concern in non-process wastewater in an industrial facility categorized as a Zoo and Botanical Garden is pH. Additional wastewater pollutants are FC and enterococci bacteria, 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;*

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;*

*(2) any minimum treatment standards identified in 18 AAC 72.050;*

*(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 pH, FC and enterococci bacteria and monitoring for other applicable WQS pollutants.

The Department reviewed available information on known point source discharges to receiving waters covered under the permit, and found no outstanding noncompliance issues. The Seward Wastewater Treatment Facility (Seward WWTF), APDES permit AK0021890, exceeded FC bacteria effluent limits for Daily Maximum, Weekly Average geomean and Monthly Average geomean in September 2017, but the problem did not reoccur. The Fox Island Wastewater Treatment Facility (Fox Island WWTF); APDES permit AKG572103 had DMR Non-receipt Violation, Non-Monthly Average violations for FC and enterococci bacteria in October 2017 and June 2018, but were back in compliance within a month of each violation. The Fox Island WWTF also had exceedances of FC bacteria in September 2018 and June 2019, but the violations were not repeated in subsequent DMRs. The ASLC will be able to meet marine WQS for bacteria 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 APDES permit for the ASLC and SSBF. The Department reviewed the FC and enterococci bacteria monitoring results from the previous permitting cycle and determined that the ASLC would be able to meet marine WQS for bacteria at the end of the pipe and is requiring new WQS-WQBELS for FC and enterococci bacteria, pollutants which were previously not regulated. This meets the definition of a new or expanded discharge. However, since the facility is expected to meet marine WQS for bacteria at the end of the pipe, the Department determined that an alternatives analysis would not be necessary, since an

appropriate disinfection treatment alternative is already in place to prevent a temporary lowering of water quality to the receiving water. 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 ASLC has been discharging non-process wastewater to Resurrection Bay under the Alaska wastewater permitting program since 1994 and under the APDES program since 2014. The ASLC is the only facility in Alaska that combines a public aquarium with marine research, education, and wildlife response as well as being the only permanent marine mammal rescue and rehabilitation facility in the state. 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. As such, the lowering of water quality is necessary in order for the facility to operate and continue providing social and educational benefits. The ASLC and SSBF generate and share scientific knowledge that promotes understanding and stewardship of Alaska's marine ecosystems. The ASLC's and SSBF'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 ASLC 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. The BMP Plan shall include measures to address the following areas of concern identified in a 2019 DEC inspection:

The BMP plan shall include measures to review periodically the effectiveness of preventative maintenance and tests of operational integrity of the ozone and UV disinfection systems.

### **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](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 from the southern tip of Resurrection Peninsula at Cape Resurrection and extends southwest, across Resurrection Bay to Aialik Cape. The ASLC and SSBF discharge 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 August 22, 2019, NOAA was contacted regarding information on any threatened or endangered species that would be affected in the area of the discharge location. DEC was directed to consult the NOAA ESA mapper at <https://alaskafisheries.noaa.gov/portal/apps/webappviewer/index.html?id=0c4a81f75310491d9010c17b6c081c81/>.

On August 28, 2019, NMFS was contacted regarding information on any threatened or endangered species that would be affected in the area of the discharge location. DEC was directed to consult the NOAA ESA mapper at <https://alaskafisheries.noaa.gov/portal/apps/webappviewer/index.html?id=0c4a81f75310491d9010c17b6c081c81/>. On August 29, 2019, DEC received an email message from Ms. Jenna Malek of NOAA who provided the following list of threatened or endangered species for Resurrection Bay:

Humpback whale, Western North Pacific DPS: Endangered

Humpback whale, Mexico DPS: Threatened

Fin whale: Endangered

North Pacific right whale: Endangered

Sperm whale: Endangered

Steller sea lion, Western DPS: Endangered

Species such as Steller sea lions and possibly humpback whales are more likely to be in closer proximity to the location of the outfall than the others on the list. Steller sea lion critical habitat does overlap with the lower half of the bay, but not with areas adjacent to ASLC.

DEC did not receive a response from USFWS.

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.

NMS and FWS were contacted about EFH, as described in Fact Sheet Part 8.2.

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 Resurrection Bay near the ASLC location and did not identify EFH in Resurrection 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 2018, *State of Alaska 2014/2016 FINAL Integrated Water Quality Monitoring and Assessment Report*, November 2, 2018

Alaska Department of Fish and Game, *Anadromous Waters Catalog*, Interactive Map for the SEWARD SEW250, available at <http://www.sf.adfg.state.ak.us/AnadromousRegPDFs/scn/SEW250.pdf>

Alaska Department of Fish and Game, *Catalog of Water Important for Spawning, Rearing, or Migration of Anadromous Fishes – Southcentral Region*, Effective June 1, 2019.

Gill, Verena, ([verena.gill@noaa.gov](mailto:verena.gill@noaa.gov)). “Re: APDES Permit AK0052566 Alaska Sea Life Center Discharge, Permit Reissuance”. August 29, 2019

Malek, Jenna, ([jenna.malek@noaa.gov](mailto:jenna.malek@noaa.gov)). “Re: APDES Permit AK0052566 Alaska Sea Life Center Discharge, Permit Reissuance”. August 29, 2019.

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](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> .

U.S. Fish and Wildlife Service, *Threatened and Endangered Species, A Consultation Guide for South Central Alaska*, available at <https://www.fws.gov/midwest/endangered/section7/index.html>. Updated May 20, 2019

USEPA, 40 CFR§ 122.44 – Establishing limitations, standards, and other permit conditions.

USEPA, Guidance Manual for Developing Best Management Practices (BMP). October, 1993.  
No. 833/B-93-004, NTIS No. PB 94-178324.

## **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 (SU). DEC reviewed 60 pH effluent monitoring results from the Alaska SeaLife Center (ASLC) Outfall 001A from August 2014 – May 2019 and 9 pH effluent monitoring results from the Steller South Beach Facility (SSBF). During this time period, the lowest daily maximum pH value observed at Outfall 001A from the ASLC was 6.65.SU and the highest daily maximum pH value was 8.74 SU. Also, during this time period, the lowest daily maximum pH value observed at Outfall 001B from the SSBF was 7.59.SU and the highest daily maximum pH value was 9.6 SU. The previous permit implemented WQBELs for pH that required a minimum of 6.5.SU and a maximum of 8.5.SU, monitored at a frequency of once per month. This WQBEL and monitoring frequency requirement is carried forward in the present permit.

### **A.1.2.3 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 permit requires the applicant to monitor effluent temperature one time per month and report the daily maximum observed temperature each month on the discharge monitoring report.

### **A.1.2.4 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 (FC)/100 milliliters (mL) and not more than 10% of the samples may exceed a most probable number of 43 FC/100 mL, using the five-tube decimal dilution test.

The DEC review of 31 ASLC effluent monitoring data for FC bacteria from July 2014 –May, 2019 indicated a range of results from “0” (non-detect) to 433 FC/100 mL. WQS. The review revealed that 28 of the 31 FC bacteria results were at or below the 18 AAC 70.020(b)(14)(D) geometric mean criterion of 14 FC/100 mL. In these four years, the facility’s performance demonstrated that the effluent could consistently meet FC bacteria effluent limits at the point of discharge, as long as the ozone and ultraviolet (UV) disinfection system was working properly. Therefore, a mixing zone for FC is not required and the WQS-WQBEL corresponding to the water quality criteria (WQC) for FC of a 30-day geometric mean of 14 FC/100 mL and the Maximum Daily Load of 43 FC/100 mL will be required for this permit. Effluent monitoring for FC bacteria is required on a quarterly basis, year-round.

### **A.1.2.5 Enterococci Bacteria**

Enterococci bacteria are indicator organisms of harmful pathogens recommended by EPA as the best indicator of health risk in marine water used for recreation. Enterococci bacteria 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 bacteria into the Alaska WQS by the April 10, 2004 deadline; therefore 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 bacteria as the recommended contact recreation WQ criteria for fresh waters. The water quality criteria for enterococci bacteria is a monthly geometric mean of 35 colony forming units (cfu)/100 mL and a statistical threshold value of 130 CFU/100 mL. Effluent monitoring 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 bacteria monitoring will be performed in conjunction with FC bacteria monitoring.

DEC review of 22 ASLC effluent monitoring data for enterococci bacteria from July 2014 –September 2019 indicated a range of results from “0” (non-detect) to 1,373 colony forming units (cfu)/100 mL. WQS. The review revealed that 17 of the 22 enterococci bacteria results were at or below the 18 AAC 70.020(b)(14)(B)(i) geometric mean criterion of 35 cfu/100 mL. The ASLC has demonstrated that it can meet the Alaska WQS for FC bacteria at the end of the pipe through its disinfection methods, as long as the ozone and ultraviolet (UV)

disinfection system was working properly. Therefore, DEC determined that the same disinfection methods would also be effective against enterococci bacteria and assume that WQS for enterococci can be met at the end of the pipe. Therefore, a mixing zone for enterococci is not required and the Monthly Average effluent limit and the WQS-WQBEL corresponding to the WQC for enterococci of a 30-day geometric mean of 35 cfu/100 mL and the Maximum Daily Load of 130 cfu/100 mL will be required for this permit. Effluent monitoring for enterococci bacteria is required on a quarterly basis, between May and September.

#### **A.1.2.6            *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. DO may not be reduced below 4 mg/l at any point beneath the surface. DO concentrations in estuaries and tidal tributaries may not be less than 5.0 mg/l except where 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 previous permit required DO in the effluent to be monitored once per month and reported on monthly DMRs. A DEC review of 60 ASLC effluent monitoring results for DO from July 2014 –September 2019 indicated a range of results from 7.54 milligrams per liter (mg/L) to 12.7 mg/L. The review revealed that all results met the WQS at 18 AAC 70.020(b)(15)(A)(i). The ASLC has demonstrated that it can meet the Alaska WQS for DO at the end of the pipe.