

STATE OF ALASKA  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
FINAL CERTIFICATE OF REASONABLE ASSURANCE

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A Certificate of Reasonable Assurance, as required by Section 401 of the Clean Water Act, has been requested by the Environmental Protection Agency (EPA) for the marine water discharge of primary treated domestic wastewater from the Borough of Petersburg (Petersburg) Wastewater Treatment Plant (WWTP).

The activity is located at 56.819594° north latitude, 132.923494° west longitude, near Petersburg, Alaska with discharges to Frederick Sound.

Water Quality Certification is required for the activity because the activity will be authorized by an EPA permit identified as National Pollutant Discharge Elimination Permit No. AK0021458 and because a discharge will result from the activity.

Public notice of the application for this certification is made in accordance with 18 Alaska Administrative Code (AAC) 15.180. Public notice of Petersburg's Antidegradation Form 2G, included as an attachment to this certification, is made in accordance with 18 AAC 70.016. In accordance with 18 AAC 70.016, *Antidegradation implementation methods for discharges authorized under the federal Clean Water Act*, the Alaska Department of Environmental Conservation (DEC or Department) reviewed Petersburg's Antidegradation Form 2G and determined that the information provided by Petersburg complies with the requirements of 18 AAC 70.016.

DEC has completed its review of EPA's Draft National Pollutant Discharge Elimination Permit (NPDES) No. AK0021458 and associated documents and by means of this Final Certificate of Reasonable Assurance conditionally certifies that there is reasonable assurance that the activity and the resulting proposed modified discharge from the Petersburg WWTP is compliant with the requirements of Section 401 of the Clean Water Act, 40 Code of Federal Regulations (CFR) 125.61, Alaska Statutes Title 46, and Alaska Water Quality Standards 18 AAC 70 provided that the proposed modified discharge adheres to the stipulations provided below in this certification. Furthermore, as per 40 CFR 125.64(b), the Department has determined that the proposed modified discharge will not result in an additional treatment pollution control or other requirement on any other point or nonpoint sources as Frederick Sound is not included on DEC's 2022 [Integrated Water Quality Monitoring and Assessment Report](#) as an impaired waterbody nor is the subject portion of Frederick Sound subject to a proposed or approved Total Maximum Daily Load.

The Final Certification of Reasonable Assurance is contingent on the inclusion of the following stipulations in NPDES Permit No. AK0021458:

1. In accordance with 18 AAC 70.240, DEC authorizes mixing zones in Frederick Sound for total ammonia as Nitrogen (N), enterococcus bacteria, fecal coliform bacteria, total residual chlorine, dissolved oxygen, temperature, and whole effluent toxicity contained in the discharge from the Petersburg WWTP. The mixing zones are defined as follows:

The chronic mixing zone has a dilution of 56:1 and is defined as a rectangular area with a length of 32 meters and width of 7.8 meters centered over the effective length of the diffuser with the length oriented parallel to the shoreline.

The acute mixing zone has a dilution of 7.3:1 and is defined as a rectangular area with a length of 7.6 meters and width of 3.6 meters centered over the effective length of the diffuser with the length oriented parallel to the shoreline.

*Rationale:* *In accordance with State Regulations 18 AAC 70.240, the department has authority to designate mixing zones in permits or certifications. The designated mixing zones will ensure that the most stringent water quality criteria for total ammonia as N (chronic 0.8 milligrams per liter (mg/L), acute 5.4 mg/L), total residual chlorine (chronic 0.0075 mg/L, acute 0.013 mg/L with 0.1 mg/L compliance level), dissolved oxygen (6.0 mg/L daily minimum (surface for a depth of 1 meter, no less than 4 mg/L at any depth below the surface), 17 mg/L daily maximum), temperature (15° Celsius), and whole effluent toxicity (1.0 chronic toxic units) are met at all points outside of the mixing zone.*

2. In order for Petersburg to achieve compliance with the fecal coliform and enterococcus bacteria final effluent limits, DEC requires the establishment of a Compliance Schedule in the permit. Final effluent limits must be met as soon as possible, but no later than 5 years after the effective date of the permit. Interim requirements that will lead to compliance with the final effluent limits with dates for their achievement must be established in the permit. The following interim requirements shall be included in the Compliance Schedule:

By one year after the effective date of the permit, the permittee shall develop a facility plan that evaluates alternatives to meet the final fecal coliform and enterococcus bacteria effluent limits and select their preferred alternative.

By two years after the effective date of the permit, the permittee must complete the design of the preferred alternative and request approval to construct from DEC's Engineering Support and Plan Review (ESPR).

By three years after the effective date of the permit, the permittee must secure funding and select a contractor to construct upgrades.

By four years after the effective date of the permit, the permittee must commence construction.

By five years after the effective date of the permit, the permittee must complete construction, complete optimization of facility upgrade operations, and achieve compliance with the final fecal coliform and enterococcus effluent limits. Final approval to operate must be requested from ESPR.

The permittee must submit progress or compliance reports on interim and final requirements no later than 14 days following the scheduled date of each requirement.

*Rationale:*

*In accordance with State Regulations 18 AAC 15.090, the Department may attach terms and reporting requirements, and the posting of a performance bond or other surety, that it considers necessary to ensure that conditions to a permit, variance, or approval, including operating, monitoring, inspection, sampling, access to records and all applicable criteria will be met.*

*According to 18 AAC 83.560, the Department has authority to specify a schedule of compliance leading to compliance with 33 U.S.C. 1251-1387 (Clean Water Act). Any schedule of compliance must require compliance as soon as possible, but no later than the applicable statutory deadline under 33 U.S.C. 1251-1387 (Clean Water Act). 18 AAC 83.560(b) requires interim requirements and dates for their achievement if the schedule of compliance exceeds one year from the date of permit issuance. Time between interim requirements must not exceed one year. Progress reports must be submitted no later than 14 days following each interim date and the final date of compliance.*

*According to 18 AAC 72.200, Application for department approval, (a) Except as otherwise provided in 18 AAC 72.035(d) and 18 AAC 72.200(b), a person must submit a plan to the department and obtain approval*

*of that plan before constructing, installing, or modifying any part of a domestic wastewater collection, treatment, storage, or disposal system. To obtain approval, a person shall provide to the department the information required by 18 AAC 72.205. 18 AAC 72.240, states that the department will issue final approval to operate if the information required by 18 AAC 72.235 confirms that (A) the system was constructed as originally approved or (B) the system, or a designated phase of that system, otherwise meets the requirements of AS 46.03 and 18 AAC 72. DEC plan approval requirements will ensure that the most stringent water quality criteria for fecal coliform and enterococcus bacteria are met at all points outside the mixing zone.*

3. DEC requires that the permit contain the following final fecal coliform effluent limits:

Monthly Average 200 fecal coliform per 100 mL (FC/100 mL)

Weekly Average 400 FC/100 mL

Daily Maximum 800 FC/100 mL.

*Rationale:*

*In accordance with State Regulations 18 AAC 15.090, the Department may attach terms and reporting requirements, and the posting of a performance bond or other surety, that it considers necessary to ensure that conditions to a permit, variance, or approval, including operating, monitoring, inspection, sampling, access to records and all applicable criteria will be met.*

*18 AAC 72.050(a)(3), Minimum treatment, states that the Department may authorize a person to discharge domestic wastewater into or onto water or land if the discharge to surface water has received secondary treatment and has been disinfected. 18 AAC 72.050(c) states that the Department may allow or require treatment different from the minimum set out in this section as necessary to protect public health, public and private water systems, or the environment. In deciding to evaluate alternative minimum treatment requirements, the Department will consider other permit or plan approval requirements, and the receiving environment.*

*Under Section 301(h) of the Clean Water Act, EPA determined that Petersburg qualifies for a continuation of their waiver from secondary treatment standards for 5-day biochemical oxygen demand (BOD<sub>5</sub>) and total suspended solid (TSS). To qualify, Petersburg must meet specific criteria including a requirement to achieve primary treatment. Therefore, DEC has determined that Petersburg may treat to less than the minimum secondary treatment requirement at 18 AAC 72.050(a)(3); however, less than secondary treatment only applies to BOD<sub>5</sub> and TSS and does not include disinfection. Therefore, the discharge of domestic wastewater to surface water must be disinfected.*

*18 AAC 72.990(21) defines disinfect to treat by means of a chemical, physical, or other process such as chlorination, ozonation, application of ultraviolet light, or sterilization, designed to eliminate pathogenic organisms, and producing an effluent with a 30-day 200 FC/100 mL monthly average and a seven-day 400 FC/100 mL average. These limits are required as final fecal coliform limits. A daily maximum final effluent limit of 800 FC/100 mL limit is also required. Establishment of a daily maximum limit will help ensure compliance with water quality criteria. Since these limits are dependent on the use of specific technological processes, DEC applies these final fecal coliform bacteria effluent limits as technology-based limits. These final fecal coliform bacteria effluent limits will ensure that the most stringent water quality criteria for fecal coliform bacteria are met at all points outside the mixing zone.*

4. DEC requires that based on the chronic dilution of the driving parameter of the mixing zone (total ammonia as N, with a chronic dilution of 56:1), the permit contain the following final enterococcus bacteria limits:

30-day Geometric Mean 1,960 colony forming units (CFU)/100 mL  
Daily Maximum 7,280 CFU/100 mL).

Rationale:

*In accordance with State Regulations 18 AAC 15.090, the Department may attach terms and reporting requirements, and the posting of a performance bond or other surety, that it considers necessary to ensure that conditions to a permit, variance, or approval, including operating, monitoring, inspection, sampling, access to records and all applicable criteria will be met.*

*Enterococcus bacteria has reasonable potential to exceed water quality criteria. Effluent limits based on the reasonable potential for enterococcus bacteria to exceed water quality criteria and the dilution required for the effluent to meet enterococcus water quality criteria were therefore developed using the chronic dilution of the driver of the mixing zone (total ammonia as N, 56:1). The final enterococcus bacteria limits will ensure that the most stringent water quality criteria for enterococcus bacteria are met at all points outside the mixing zone. DEC expects that after the implementation of disinfection, Petersburg may achieve compliance with enterococcus water quality criteria (30-day geometric mean 35 CFU/100 mL with not more than 10% of the samples exceeding a statistical threshold value of 130 CFU/100 mL), therefore these final enterococcus bacteria limits may be revised in the next permit reissuance.*

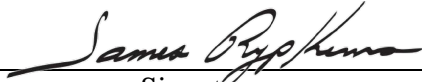
5. DEC requires the following total ammonia as N effluent limits:

Average Monthly 22 mg/L  
Daily Maximum 39 mg/L

Rationale:

*18 AAC 70.240(b)(2) requires the Department to consider the characteristics of the effluent after treatment of the wastewater. Additionally, 18 AAC 83.435(d) specifies that when the Department determines, using the procedures in 18 AAC 83.435(c), that a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the allowable ambient concentration of a state numeric criteria within a state water quality standard for and individual permit, the permit must contain effluent limits for that pollutant.*

*DEC used the process described in the Technical Support Document (TSD) for Water Quality-Based Toxics Control (Environmental Protection Agency, 1991) and DEC's guidance, Alaska Pollutant Discharge Elimination System Permits Reasonable Potential Analysis and Effluent Limits Development Guide (June 30, 2014) to determine the reasonable potential for total ammonia as N to exceed water quality criteria. The results of the reasonable potential analysis indicated that total ammonia as N, with a maximum expected concentration of 39 mg/L, has reasonable potential to exceed Alaska total ammonia as N marine water quality criteria (chronic 0.8 mg/L, acute 5.4 mg/L) which were calculated using the 85<sup>th</sup> percentile receiving water pH and temperature and the 15<sup>th</sup> percentile receiving water salinity. Effluent limits, using the available dilution for total ammonia as N were therefore developed (average monthly 22 mg/L, daily maximum 39 mg/L). These effluent limits will ensure that the most stringent total ammonia as N water quality criteria are met at all points outside the mixing zone.*



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Signature

James Rypkema

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Printed Name

December 6, 2024

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Date

Program Manager

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Title

**Alaska Department of Environmental Conservation (DEC or the Department) Response to Comments for the Draft Certificate of Reasonable Assurance for the Borough of Petersburg Wastewater Treatment Plant (WWTP) National Pollutant Discharge Elimination System (NPDES) Permit No. AK0021458.**

**Summary**

The Environmental Protection Agency (EPA) and DEC jointly public noticed NPDES Permit AK0021458 and DEC's Draft Certificate of Reasonable Assurance for the Borough of Petersburg (Petersburg) WWTP between August 8, 2024 and September 23, 2024. DEC received comments on the Draft Certificate of Reasonable Assurance, all from the Borough of Petersburg. This document summarizes the comments and the justification for any action taken or not taken by DEC in response to the comments.

**1. Ammonia Effluent Limitations**

**Comment Summary**

Petersburg states that DEC did not provide sufficient documentation for the mixing zone size and the ability for Petersburg to comply with the effluent limitations. They state that it does not appear that DEC considered Petersburg's mixing zone submittal and that DEC's proposed mixing zone is infeasible for compliance with ammonia. Petersburg also states that the ammonia effluent limits are unachievable and a review of the mixing zone input parameters and resulting dilution is necessary to revise the effluent limits.

Petersburg requests DEC to revise the mixing zone to avoid noncompliance issues with the permit.

**DEC Response**

DEC considered and reviewed Petersburg's mixing zone application. DEC's review process includes verifying the accuracy of the reasonable potential analysis (RPA) inputs and calculations upon which the mixing zone and effluent limits are based. Petersburg did not identify in their mixing zone submittal the effluent data set that they used for their calculations. They supplied a maximum observed concentration (MOC) of 30 mg/L and a maximum expected concentration (MEC) of 33 mg/. DEC could not verify the MOC nor the MEC using the information supplied by Petersburg. Petersburg calculated ammonia water-quality (WQ) criteria on one temperature value (no indication for what the temperature value represents) as it were stated in the 2001 NPDES Petersburg Fact Sheet, and the highest pH and the lowest salinity between 1996-1999 as they were stated in the 2001 NPDES Petersburg Fact Sheet. The values that Petersburg selected are not consistent with procedures in DEC's *Alaska Pollutant Discharge Elimination System (APDES) and RPA Effluent Limits Development Guide (June 30, 2014)*.

DEC conducted an RPA using Petersburg's ammonia effluent monitoring data that they reported to EPA between March 2019 and February 2024. During this period of record, the MOC was 33 mg/L. DEC derived ammonia WQ criteria (5.39 mg/L acute, 0.81 mg/L chronic) from pH, temperature, and salinity receiving water data from August 2002 and August 2005 that Petersburg submitted with their 2006 application for permit reissuance using procedures consistent with 18 AAC 70 and DEC's *APDES and RPA Effluent Limits Development Guide (June 30, 2014)*.

The RPA calculations produced a MEC of 38.57 mg/L; therefore, Petersburg's discharge has reasonable potential to exceed ammonia state numeric water-criteria concentrations at the end of the pipe. In accordance with 18 AAC 83.435(d) which specifies that when the Department determines, using the procedures in 18 AAC 83.435(c), that a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the allowable ambient concentration of a state numeric criteria within a state water quality standard for an individual permit, the permit must contain effluent limits for

that pollutant; therefore, DEC developed ammonia water-quality based effluent limits (WQBELs). The WQBELs are calculated to be protective of ammonia WQ criteria at the boundary of the authorized mixing zone; as long as the performance-based WQBELs at the end of the pipe are not exceeded, WQ criteria at the boundary of the mixing zone will be met. These WQBELs are those specified in the Draft Certificate of Reasonable Assurance, 39 mg/L maximum daily limit and 22 mg/L average monthly limit.

The prior NPDES permit required ammonia monitoring once per month. Therefore, if Petersburg only monitored ammonia once per month, the result must be reported on the Discharge Monitoring Report (DMR) as both the maximum daily and monthly average result. The NPDES Draft Permit proposes ammonia monitoring once per week. All samples must be used for averaging. More samples reduces the likelihood of a monthly average exceedance. According to Petersburg's NPDES Draft Permit, Section III.D., *Additional Monitoring by Permittee*, Petersburg can elect to monitor more frequently than required by the permit and then the results, if they were obtained using test procedures approved under 40 CFR 136, must be used in calculations, and reported on the DMR.

## **2. Fecal Coliform and Enterococcus Bacteria Compliance Schedule**

### **Comment Summary**

Petersburg stated that the five-year compliance schedule is not enough time due to numerous challenges and including construction challenges, supply chain issues, escalating costs and inflation, budget, contractor and equipment availability, procurement delays, the hiring of qualified individuals, and limited and expensive housing for construction crews and staff hires.

Furthermore, because Petersburg has a small staff, it is difficult for them to manage multiple projects at the same time. The disinfection project they state, will be a very large project that will take considerable attention and time to complete. Petersburg commented that DEC should consider a ten-year schedule as it is more reasonable and will allow them the time to seek various grant possibilities as well as provide the time to mitigate that to the greatest extent possible. Since no grant funding seems to be available for this project, Petersburg declares that debt financing is currently the only option on the horizon. As the annual debt service on what is likely a \$10M project could raise local wastewater rates by over 100%, Petersburg needs significant time to seek a grant, or grants, in support of this mandated yet unfunded project.

Petersburg proposed an alternate schedule that with the exception of construction startup, (the compliance schedule in the Draft Certificate of Reasonable Assurance specifies that construction commence four years after the effective date of the permit vs seven years proposed by Petersburg), doubles the allowable time for each sequential interim requirement.

### **DEC Response**

40 Code of Federal Regulations, Duration of permits §122.46(a), limits the length of NPDES permits to a fixed term not to exceed five years. Alaska implements the NPDES program as the APDES program. DEC regulations at 18 Alaska Administrative Code (AAC) 83.020, Term of permit (a), states that an APDES permit is effective for a fixed term that must be listed in the permit and must not exceed five years. The fecal coliform and enterococcus compliance schedule is a condition of the permit; therefore, the compliance schedule cannot extend beyond the five-year permit term.

18 AAC 83.560, Schedules of compliance, states that any schedule of compliance must require compliance as soon as possible. 18 AAC 83.560(b)(1) specifies that the time between interim requirements must not exceed one year. The interim requirements contained in the Draft Certificate of Reasonable Assurance that will lead to compliance with the final fecal coliform and enterococcus bacteria effluent limits and the dates for their achievement are attainable progressive actions that will ensure that

Petersburg complies with the final effluent limits as soon as possible, but no later than 5 years after the effective date of the permit.

### **3. Determination of Criteria and RPA**

#### **Comment Summary**

Petersburg states that the DEC did not completely explain how the criteria were computed, what data were used, or the resulting percentiles. They request greater description such that every step in the process is documented for the determination of criteria and RPA calculations.

#### **DEC Response**

DEC used the process described in the *Technical Support Document for Water Quality-Based Toxics Control* (EPA, 1991) and DEC's guidance, *APDES Permits RPA and Effluent Limits Development Guide* (June 30, 2014), and 18 AAC 70 to determine WQ criteria and reasonable potential for the Petersburg discharge to exceed WQ criteria at the end of the pipe.

Petersburg, in their comments on the Draft Certificate of Reasonable Assurance, referenced NPDES Draft Permit comment number 11 in which they stated that DEC had shared DEC's RPA spreadsheet with the ammonia calculations with Petersburg. The RPA spreadsheet that DEC provided to Petersburg contains all RPA and effluent limit calculation steps including the data used in the calculations as well as the pH, temperature, and salinity percentile calculations. The spreadsheet also indicates that the *AK Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances* were used for the determination of the appropriate ammonia WQ criteria. The period of record, March 2019- February 2024, had also been provided to Petersburg.

### **4. Latitude Correction**

DEC corrected the latitude of the facility with that provided by Petersburg.