



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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May 13, 2022

Susan Poulsom, Manager
NPDES Permits Unit
United States Environmental Protection Agency - Region 10
1200 Sixth Avenue, Suite 155, OWW
Seattle, WA 98101
Sent by email: poulsom.susan@epa.wa.gov

RE: Second Amendment to Clean Water Act Section 401 Certification Order No. 16892 for EPA National Pollutant Discharge Elimination System Permit No. WA0023256—Suquamish Wastewater Treatment Plant

Dear Susan Poulsom:

Enclosed is the second amendment to Water Quality Certification Order No. 16892, for the Suquamish Wastewater Treatment Plant (WWTP). This certification was originally issued on December 16, 2019 and amended on November 12, 2020. We have also included a strikeout version of the Water Quality Certification that reflects the changes made since the first amendment. All other conditions of Water Quality Certification Order No. 16892 remain in effect.

Ecology modified this certification to include conditions consistent with the Puget Sound Nutrient General Permit (PSNGP) that Ecology issued on December 1, 2021. This amendment updates the Nutrient Control And Reduction requirements of the original and amended certifications to mimic the narrative permit limit in the final PSNGP for facilities of a similar size and waste loading characteristic as the Suquamish WWTP.

Administrative Order # 16892

May 13, 2022

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If you have any questions or would like to discuss these matters further, please contact Shawn McKone, P.E., at 206-594-0158 or shawn.mckone@ecy.wa.gov.

Sincerely,



Jeff Killelea, Manager
Program Development Services Section
Water Quality Program

Enclosures: Administrative Order #16892 – Second Amendment
Administrative Order #16892 – Second Amendment, Redlined

By Certified Mail # 9489 0090 0027 6096 5312 26

cc: Sally Goodman, NPDES Permit Writer, Region 10 EPA
Shawn McKone, P.E., WQ Program
Angela Zeigenfuse, 401 Certification Coordinator, WQ Program
Vincent McGowan, P.E., Water Quality Program Manager, WQ Program
Loree' Randall, 401 Policy Lead, SEA Program
ecyrefedpermits@ecy.wa.gov

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

IN THE MATTER OF GRANTING A WATER) ORDER # 16892
QUALITY CERTIFICATION TO) Second Amendment
U.S. Environmental Protection Agency) Revised Narrative Limit for Total Inorganic
in accordance with 33 U.S.C. 1341) **Nitrogen**
(FWPCA § 401), RCW 90.48.120, RCW)
90.48.260 and Chapter 173-201A WAC)

TO: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
ATTN: Susan Poulsom
1200 Sixth Ave, Suite 155, OWW
Seattle, WA 98101

On December 16, 2019, the Washington Department of Ecology (Ecology) issued a 401 Water Quality Certification to U.S. Environmental Protection Agency (EPA) for the above-referenced permit pursuant to the provisions of 33 U.S.C. 1341 (FWPCA § 401). On November 12, 2020, Ecology issued an amendment to the 401 Water Quality Certification due to a settlement agreement and made the following updates: In the first amendment, Ecology modified sample types to reflect grab sampling in the monitoring requirements table. Also, reporting and planning requirements were revised to provide additional clarity on the scope of the submittals. Submittal due dates for the formal engineering report were also modified.

The second amendment modifies the Nutrient Control and Reduction requirements included in the original and amended certifications to mimic the narrative permit limit in the final Puget Sound Nutrient General Permit (PSNGP) for facilities of a similar size and waste loading characteristic as the Suquamish WWTP. This generally includes updates to the influent and effluent monitoring requirements as well as changes to short-term and long-term planning requirements.

Order No. 16892 dated December 16, 2019, and amended November 12, 2020, is hereby amended as follows:

B. Water Quality

1. Nutrient Control and Reduction: (RCW 90.48.080, 90.54.020(3)(b))

Nutrients discharged from wastewater treatment plants contribute to low dissolved oxygen (D.O.) levels, below state water quality criteria, in Puget Sound. Nitrogen is the limiting nutrient in Puget Sound waters, and total inorganic nitrogen (TIN) is the form of nitrogen more available for algal growth that drives eutrophication and the dissolved oxygen impairment. All wastewater discharges to Puget Sound containing inorganic nitrogen contribute to the D.O. impairment.

The Permittee's discharge contains inorganic nitrogen, and the NPDES permit must require the Permittee to control nutrients consistent with the Clean Water Act and Washington's Water Pollution Control Act. Water quality based effluent limits (WQBELs) are required for wastewater treatment plants discharging to surface waters when the discharge has reasonable potential to cause or contribute to an in-stream excursion above a narrative or numeric State water quality criteria (40 CFR 122.44(d)(1)(iii)).

Washington State does not have numeric criteria for nitrogen from which to derive a WQBEL, and Ecology uses D.O. as a surrogate which requires modeling to demonstrate water quality impacts from a discharge.

The nitrogen in the Permittee's discharge has reasonable potential to contribute to far-field water quality impacts. For this permit, implementing a discharge-specific numeric WQBEL for nitrogen is infeasible. This is due to the additional modeling scenarios necessary to quantify both the Permittee's far-field water quality effect and the corresponding effluent limit necessary to prevent an exceedance of the D.O. standard.

40 CFR 122.44(k) states that best management practices (BMPs) to control or abate the discharge of pollutants are acceptable when numeric effluent limitations are infeasible. For a facility the size of the Suquamish Wastewater Treatment Plant (WWTP), Ecology believes that a combination of the following actions constitute a suite of BMPs that comply with 40 CFR 122.44(k): conduct nutrient monitoring of influent and effluent, develop and implement treatment efficiency optimization strategies, and completion of an engineering analysis to determine the level of treatment that constitutes all known and reasonable treatment (AKART) for the facility. EPA must reevaluate this narrative limit in consultation with Ecology during development of the next permit iteration.

Optimization of treatment performance is an adaptive management strategy the Permittee can use to evaluate and implement operational strategies for maximizing nitrogen removal from the existing treatment plant during the permit term. Ecology expects these facility specific operational efforts to be initiated following permit issuance. See section 3.b of this certification for planning requirements related to optimization. Any permanent process changes resulting from optimization must be reflected in an update to the standard operating procedures in the Permittee's Operation and Maintenance manual. The Permittee must alert EPA of any updates made in their plan.

Citations: RCW 90.48.080, RCW 90.54.020(3)(b), 40 CFR 122.44(k), 40 CFR 122.44(d)(1)(iii), 40 CFR 122.44(k)

Justifications: The Permittee's discharge contains inorganic nitrogen, and the NPDES permit must require the Permittee to control nutrients consistent with the Clean Water Act and Washington's Water Pollution Control Act. Water quality based effluent limits (WQBELs) are required for wastewater treatment plants discharging to surface waters when the discharge has reasonable potential to cause or contribute to an in-stream excursion above a narrative or numeric State water quality criteria. A permit may express WQBELs as non-numeric effluent limits when numeric effluent limits are infeasible.

2. Monitoring Requirements: (WAC 173-220-210)

In accordance with the Quality Assurance Plan (QAP) required under the Permit, Permittee must monitor monthly and cumulative TIN loads and submit the results with the monitoring reports required under the Permit. The Permittee must report the monthly load and the cumulative load during the annual reporting period defined as each 12-month period following the effective date of the permit. Results must be submitted in the discharge monitoring report. The Permit must contain the following

influent and effluent monitoring frequencies to comply with the monitoring portion of the narrative limit described in Section B.1 of this certification.

Parameter	Units & Specifications	Minimum Sampling Frequency	Sample Type
Wastewater influent			
Wastewater influent means the raw sewage flow from the collection system into the treatment facility. Sample the wastewater entering the headworks of the treatment plant excluding any side-stream returns from inside the plant, if possible. The Permittee must collect total ammonia, nitrate plus nitrite, and TKN samples during the same sampling event.			
CBOD ₅	mg/L	2/month	24-Hour Composite
Total Ammonia	mg/L as N	2/month	24-Hour Composite
Nitrate plus Nitrite Nitrogen	mg/L as N	Monthly	24-Hour Composite
Total Kjeldahl Nitrogen (TKN)	mg/L as N	Monthly	24-Hour Composite

Parameter	Units & Specifications	Minimum Sampling Frequency	Sample Type
Final wastewater effluent			
Final Wastewater Effluent means wastewater exiting the last treatment process or operation. Typically, this is after or at the exit from the chlorine contact chamber or other disinfection process. The total ammonia and nitrate plus nitrite samples must be taken on the same calendar day.			
Flow ⁶ , monthly average	MGD	2/month ⁵	metered/recorded
CBOD ₅	mg/L	2/month ⁵	24-Hour Composite
Total Organic Carbon	mg/L	1/quarter	24-Hour Composite
Total Ammonia	mg/L as N	2/month ⁵	24-Hour Composite
Nitrate plus Nitrite Nitrogen	mg/L as N	2/month ⁵	24-Hour Composite
TKN	mg/L as N	Monthly	24-Hour Composite
Total Inorganic Nitrogen ¹	mg/L as N	2/month ⁵	Calculated
Total Inorganic Nitrogen Load ²	Lbs/day	2/month ⁵	Calculated
Cumulative Monthly Total Inorganic Nitrogen ³	Lbs	Monthly	Calculated

Parameter	Units & Specifications	Minimum Sampling Frequency	Sample Type
Annual Total Inorganic Nitrogen, year to date ⁴	Lbs	Monthly	Calculated

¹ Calculate the total inorganic nitrogen concentration (mg/L as N) using the following equation:
 $TIN\ concentration\ (mg/L\ as\ N) = Total\ Ammonia\ (mg/L\ as\ N) + Nitrate\ plus\ Nitrite\ (mg/L\ as\ N)$

If the Permittee conducts additional total ammonia and/or nitrate plus nitrite sampling during the month, the average of the concentration results must be used in the above equation.

² Calculate the total inorganic nitrogen load (lbs/day as N) using the following equation:
 $TIN\ load\ (lbs/day\ as\ N) = TIN\ concentration\ (mg/L\ as\ N) \times Daily\ flow\ (mgd) \times 8.34$

³ Calculate the monthly average total inorganic nitrogen load (lbs as N) using the following equation:

$$\begin{aligned} \text{Monthly average TIN load (lbs as N)} \\ = \text{TIN load (lbs/day as N)} \times \text{number of days in the calendar month} \end{aligned}$$

⁴ For each discrete 12-month period, calculate the cumulative annual total inorganic nitrogen, year to date using the following calculation:

$$\text{Annual TIN load (lbs as N)} = \sum \text{Monthly average TIN loads, to date}$$

⁵ 2/month means two (2) times during each month and on a rotational basis throughout the days of the week, except weekends and holidays.

⁶ Report flows only on days when collecting total ammonia and nitrate plus nitrite samples.

Citations: WAC 173-220-210, 40 CFR 122.44(k)

Justifications: Monitoring and reporting of influent and effluent wastewater is critical to ensure compliance with water quality standards. This monitoring constitutes one part of the suite of BMPs that make up a non-numeric WQBEL necessary to regulate the discharge of TIN from this facility.

3. Planning Requirements: (WAC 173-201A-510(4)(b)(ii), RCW 90.48.110)

- a. Nitrogen optimization planning – The Permittee must develop, implement, and maintain a Nitrogen Optimization Plan to evaluate and implement operational strategies for maximizing nitrogen removal from the existing treatment plant during the permit term. The Permittee must document their actions taken and apply an adaptive management approach at the WWTP. The Permittee will quantify results with required monitoring outlined in Section 2.

The actions described in this section must begin on the effective date of the permit. The Permittee must submit documentation of the nitrogen optimization plan implementation at least nine months prior to the expiration of the permit. The nitrogen optimization plan must include the following components:

- 1. Treatment Process Performance Assessment: the Permittee must assess the nitrogen removal potential of the current treatment process and have the ability to evaluate optimization strategies prior to implementation.
 - a. The Permittee must develop a treatment process assessment method for

- purposes of evaluating optimization approaches during the permit term.
- i. Evaluate current (pre-optimization) process performance. Determine the empirical TIN removal rate for the WWTP.
 - ii. Develop an initial assessment approach to evaluate possible optimization strategies at the WWTP prior to and after implementation.
 - iii. Determine the optimization goal for the WWTP. Develop and document a prioritized list of optimization strategies capable of achieving the optimization goal for the WWTP. Update this list as necessary to continuously maintain a selection of strategies for achieving each optimization goal identified.
 - iv. The Permittee may exclude from the initial selection any optimization strategy considered but found to exceed a reasonable implementation cost or timeframe. Documentation must include an explanation of the rationale and financial criteria used for the exclusion determination.
- b. Within 12-months of the permit effective date, identify the optimization strategy selected for implementation. Document the expected % TIN removal (or the expected reduction in effluent load) for the optimization strategy prior to implementation.
2. The Permittee must document implementation of the selected optimization strategy as it is applied to the existing treatment process during the reporting period. Permittees must document adaptive management applied to optimization strategies following initial implementation through the permit term.
- a. Strategy Implementation: Describe how the selected strategy was implemented during the reporting period, Including:
 - i. Initial implementation costs.
 - ii. Length of time for full implementation, including start date.
 - iii. Anticipated and unanticipated challenges.
 - iv. Any impacts to the overall treatment performance as a result of process changes.
 - b. Load Evaluation: The Permittee must review effluent data collected during the reporting period to determine whether TIN loads are increasing.
 - i. Using all accredited monitoring data, determine the facility's annual average TIN concentration and load for each year during the reporting period.
 - ii. Determine the treatment plant's TIN removal rate at the end of each year. Compare the removal rate with the pre-optimization rate identified in assessment described in Section 3.a.1.b.
 - c. Strategy Assessment: Quantify the results of the implemented strategy and compare to the performance metric identified in Section 3.a.1.b. If the TIN loading increased, apply adaptive management, re-evaluate the optimization strategies and the resulting performance to identify the reason. Select a new optimization strategy for implementation and/or revise implementation for

better performance. Document any updates to the implementation schedule and overall plan.

3. Influent Nitrogen Reduction Measures/Source Control: The Permittee must investigate opportunities to reduce influent TIN loads from septage handling practices, commercial, dense residential and industrial sources, and submit documentation as part of their documentation of the nitrogen optimization plan implementation. The investigation must:
 - a. Review non-residential sources of nitrogen and identify any possible pretreatment opportunities.
 - b. Identify strategies for reducing TIN from new multi-family/dense residential developments and commercial buildings.
- b. AKART Analysis – The Permittee must prepare and submit an approvable all known, available and reasonable methods of prevention, control and treatment (AKART) analysis to EPA and Ecology for purposes of evaluating reasonable treatment alternatives capable of reducing TIN.
 1. The Permittee must submit this report 12-months prior to the expiration of the permit. The requirement for this analysis may be waived if the Permittee maintains an annual TIN average of < 10 mg/L and does not document an increase in load through their DMRs.
 2. The analysis must contain appropriate requirements as described in the following guidance (or the most recent version):
 - a. The Criteria for Sewage Works Design (ECY Publication No. 98-37, 2019)
 - b. Reclaimed Water Facilities Manual: The Purple Book (ECY Publication No. 15-10-024, 2019)
 3. The AKART analysis must include the following elements:
 - a. Wastewater Characterization
 - i. Current volumes, flowrates and growth trends
 - ii. Current influent and effluent quality
 - b. Treatment Technology Analysis
 - i. Description of current treatment processes
 - ii. Identification and screening of potential treatment technologies for TIN reduction that achieves AKART for nitrogen removal
 - c. Economic Evaluation
 - i. Develop capital, operation and maintenance costs and 20 year net present value using the real discount rate in the most current Appendix C to Office of Management and Budget Circular No. A-9411 for each technology alternative evaluated.
 - ii. Provide cost per pound of nitrogen removed
 - iii. Provide details on basis for current wastewater utility rate structure, including:
 - a. How the utility allocates and recovers costs from customers.
 - b. How frequently rate structures are reviewed.

- c. The last time rates were adjusted and the reason for that adjustment.
 - iv. Provide impact to current rate structure for each alternative assessed.
- d. Environmental Justice (EJ) Review
 - i. Evaluate the demographics within the sewer service area to identify communities of color, Tribes, indigenous communities, and low income populations.
 - ii. Identify areas within the service area that exceed the median household income.
 - iii. Include an affordability assessment to identify how much overburdened communities identified in 3.b.d.i can afford to pay for the wastewater utility.
 - iv. Propose alternative rate structures or measures that can be taken to prevent adverse effects of rate increases on populations with economic hardship identified in Section 3.b.3.d.i.
 - v. Provide information on how recreation and commercial opportunities may be improved for communities identified in Section 3.b.3.d.i as a result of the treatment improvements identified.
- e. Selection of most reasonable treatment alternative.
- f. Attainable implementation schedule that includes funding, design and construction of infrastructure improvement capable of achieving and maintaining AKART.

Citations: WAC 173-201A-510(4)(b)(ii), RCW 90.48.110, 40 CFR 122.44(k)

Justifications: Schedules of compliance must be developed and submitted to Ecology to ensure final compliance with all water quality-based effluent limits and the water quality standards. Development and implementation of a Nitrogen Optimization Plan along with conducting an AKART analysis constitute parts of the suite of BMPs that make up a non-numeric WQBEL necessary to regulate the discharge of TIN from this facility.

No other conditions or requirements of the above referenced Order are affected by this amendment.

Failure to comply with this amended Order may result in the issuance of civil penalties or other actions whether administrative or judicial, to enforce the terms of this amended Order.

YOUR RIGHT TO APPEAL

You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do all of the following within 30 days of the date of receipt of this Order:

- File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503	Department of Ecology Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel Road SW; STE 301 Tumwater, WA 98501	Pollution Control Hearings Board PO Box 40903 Olympia, WA 98504-0903

CONTACT INFORMATION

Please direct all questions about this Order to:

Shawn McKone, P.E.
Department of Ecology
PO BOX 330316
Shoreline, WA 98133-9716
Phone: 206-594-0158
Email: shawn.mckone@ecy.wa.gov

MORE INFORMATION

- [Pollution Control Hearings Board Website](#)¹
- [Chapter 43.21B RCW - Environmental and Land Use Hearings Office – Pollution Control Hearings Board](#)²
- [Chapter 371-08 WAC – Practice And Procedure](#)³
- [Chapter 34.05 RCW – Administrative Procedure Act](#)⁴
- [Chapter 90.48 RCW – Water Pollution Control](#)⁵
- [Chapter 173.204 Washington Administrative Code \(WAC\) Sediment Management Standards](#)⁶
- [Chapter 173-200 WAC Water Quality Standards for Ground Waters of the State of Washington](#)⁷
- [Chapter 173-201A WAC Water Quality Standards for Surface Waters of the State of Washington](#)⁸

SIGNATURE



Jeff Killelea, Manager
Program Development Services Section
Water Quality Program
Department of Ecology
State of Washington

¹ <http://www.eluho.wa.gov/Board/PCHB>

² <http://apps.leg.wa.gov/RCW/default.aspx?cite=43.21B>

³ <http://apps.leg.wa.gov/WAC/default.aspx?cite=371-08>

⁴ <http://apps.leg.wa.gov/RCW/default.aspx?cite=34.05>

⁵ <http://apps.leg.wa.gov/RCW/default.aspx?cite=90.48>

⁶ <https://apps.leg.wa.gov/WAC/default.aspx?cite=173-204>

⁷ <https://apps.leg.wa.gov/WAC/default.aspx?cite=173-200>

⁸ <https://apps.leg.wa.gov/WAC/default.aspx?cite=173-201A>

IN THE MATTER OF GRANTING A WATER) ORDER # 16892
QUALITY CERTIFICATION TO) Second Amendment
U.S. Environmental Protection Agency) Revised Narrative Limit for Total Inorganic
in accordance with 33 U.S.C. 1341) Nitrogen
(FWPCA § 401), RCW 90.48.120, RCW) First Amendment
90.48.260 and Chapter 173-201A WAC) Planning Requirements –November 12, 2020
)

TO: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
ATTN: Susan Poulsom
1200 Sixth Ave, Suite 155, OWW
Seattle, WA 98101

On September 17, 2019, the U.S. Environmental Protection Agency (EPA) requested a Section 401 Water Quality Certification for the NPDES permit authorizing discharges to a water of the state (defined in RCW 90.48) from the Suquamish Wastewater Treatment Plant (WWTP). This Order and 401 Certification (Certification) imposes additional conditions, beyond the conditions of the draft NPDES permit, on the Applicant or Permittee.

The draft NPDES permit covers the discharge of pollutants from the Suquamish WWTP to Port Madison, Puget Sound.

This Certification is based on the terms and conditions contained in the proposed draft NPDES permit. If EPA issues a final NPDES permit that contains any changes from the draft NPDES permit that do not include requirements outlined in this Certification, Ecology reserves the right to either modify or revoke this Certification. In accordance with 40 CFR 124.53(e)(3), Ecology has determined that no condition in the draft NPDES permit may be made less stringent without violating requirements in Washington State law. **Ecology reserves the right to modify or revoke this Certification if there is no longer reasonable assurance that there will be compliance with 33 U.S.C §§ 1311, 1312, 1313, 1316 and 1317 due to changes in the operation of the facility, changes in the characteristics of the waters into which discharges occur, changes in water quality criteria applicable to those waters, or changes to applicable effluent limits or other requirements.**

AUTHORITIES:

In exercising authority under 33 U.S.C. § 1341, 16 U.S.C. § 1456, RCW 90.48.120, and RCW 90.48.260, Ecology has examined EPA's request for CWA 401 certification of the draft permit pursuant to the following:

1. Conformance with applicable water quality-based, technology-based, and toxic or pretreatment effluent limitations as provided under 33 U.S.C. §1311, 1312, 1313, 1316, and 1317 (FWPCA §301, 302, 303, 306 and 307);
2. Conformance with the state water quality standards contained in Chapter 173-201A WAC and authorized by 33 U.S.C. §1313 and by Chapter 90.48 RCW, and with other applicable state laws; and
3. Conformance with the provision of using all known, available and reasonable methods to prevent and control pollution of state waters as required by RCW 90.48.010.
4. Conformance with Washington's prohibition on discharges that cause or tend to cause pollution of waters of the state of Washington. RCW 90.48.080

WATER QUALITY CERTIFICATION CONDITIONS:

With this Certification and through issuance of this Order, Ecology certifies that the discharge as proposed and conditioned by this Certification will comply with applicable water quality standards or other appropriate requirements of State law. In view of the foregoing and in accordance with 33 U.S.C. §1341, 40 CFR Part 121, RCW 90.48.120, RCW 90.48.260, chapter 173-200 WAC, and chapter 173-201A WAC, water quality certification is granted to the Project Proponent subject to the conditions within this Order and NPDES Permit No. WA 0026867, US Bureau of Reclamation – Grand Coulee Dam.

Certification of the proposed draft permits does not authorize the Project Proponent to exceed applicable state surface water quality standards (chapter 173-201A WAC), ground water standards (chapter 173-200 WAC) or sediment quality standards (chapter 173-204 WAC), standards in the EPA's Revision of certain Federal water quality criteria applicable to Washington (40 CFR 131.45), and other appropriate requirements of State law.

With this Certification and through issuance of this Order, Ecology certifies that it has reasonable assurance that the activity as proposed and conditioned by this Certification will be conducted in a manner that will not violate applicable water quality standards

and other appropriate requirements of state law. In view of the foregoing and in accordance with 33 U.S.C. §1341, RCW 90.48.120, RCW 90.48.260 Chapter 173-200 WAC and Chapter 173-201A WAC, water quality certification is granted to the Applicant subject to the conditions within this Order and NPDES Permit No. WA0023256.

Certification of the Applicant's proposed final permits does not authorize the Permittee to exceed applicable state surface water quality standards (Chapter 173-201A WAC), ground water standards (Chapter 173-200 WAC) or sediment quality standards (Chapter 173-204 WAC), standards in the EPA's Revision of certain Federal water quality criteria applicable to Washington (40 CFR 131.45), and other appropriate requirements of State law.

General Conditions

1. For purposes of this Order, the term "Applicant" shall mean U.S. Environmental Protection Agency.
2. For purposes of this Order, the term "Permittee" shall mean Kitsap County.
3. The Applicant shall enforce the permit and ensure that the Permittee complies with the conditions of the permits at all times.
4. Nothing in this Certification waives Ecology's authority to issue additional orders if Ecology determines that further actions are necessary to implement the water quality laws of the state. Further, Ecology retains continuing jurisdiction to make modifications hereto through supplemental orders, if additional impacts due to project construction or operation are identified (*e.g.*, violations of water quality standards, downstream erosion, etc.), or if additional conditions are necessary to further protect water quality.
5. In the event of changes or amendments to the state water quality, ground water quality, or sediment standards, or changes in or amendments to the state Water Pollution Control Act (RCW 90.48) or the federal Clean Water Act, Ecology may issue an amendment to this Certification to incorporate any such changes or amendments applicable to this project.
6. Failure of any person or entity to comply with this Certification may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce the terms of this Certification.

B. Water Quality

1. This Certification does not authorize exceedances of water quality standards established in WAC 173-201A. (WAC 173-201A-510(1), 173-240-080)
2. This Certification authorizes a mixing zone per WAC 173-201A-400.
3. Nutrient Control and Reduction: (RCW 90.48.080, 90.54.020(3)(b))

Nutrients discharged from wastewater treatment plants contribute to low dissolved oxygen (D.O.) levels, below state water quality criteria, in Puget Sound. Nitrogen is the limiting nutrient in Puget Sound waters, and total inorganic nitrogen (TIN) is the form of nitrogen more available for algal growth that drives eutrophication and the dissolved oxygen impairment. All wastewater discharges to Puget Sound containing inorganic nitrogen contribute to the D.O. impairment.

The Permittee's discharge contains inorganic nitrogen, and the NPDES permit must require the Permittee to control nutrients consistent with the Clean Water Act and Washington's Water Pollution Control Act. Water quality based effluent limits (WQBELs) are required for wastewater treatment plants discharging to surface waters when the discharge has reasonable potential to cause or contribute to an in-stream excursion above a narrative or numeric State water quality criteria (40 CFR 122.44(d)(1)(iii)).

Washington State does not have numeric criteria for nitrogen from which to derive a WQBEL, and Ecology uses D.O. as a surrogate which requires modeling to demonstrate water quality impacts from a discharge.

The nitrogen in the Permittee's discharge has reasonable potential to contribute to far-field water quality impacts. For this permit, implementing a discharge-specific numeric WQBEL for nitrogen is infeasible. This is due to the additional modeling scenarios necessary to quantify both the Permittee's far-field water quality effect and the corresponding effluent limit necessary to prevent an exceedance of the D.O. standard.

40 CFR 122.44(k) states that best management practices (BMPs) to control or abate the discharge of pollutants are acceptable when numeric effluent limitations are infeasible. For a facility the size of the Suquamish Wastewater Treatment Plant (WWTP), Ecology believes that a combination of the following actions constitute a suite of BMPs that comply with 40 CFR 122.44(k): conduct nutrient monitoring of influent and effluent, load cap based on current nutrient discharge levels and develop and implement treatment efficiency optimization strategies, and completion of an engineering analysis to determine the level of treatment that constitutes all known and reasonable treatment (AKART) for the facility. constitutes a suite of BMPs that complies with 40 CFR 122.44(k). EPA must reevaluate this narrative limit in consultation with Ecology during development of the next permit iteration.

EPA provided Ecology with effluent data collected from 2016 to 2019. Ecology calculated an annual TIN load cap of 14,691 lbs, which must be included as a Permit condition. Compliance with the annual TIN cap is assessed at the end of each 12-month period following the effective date of the permit.

Optimization of treatment performance is an adaptive management strategy the Permittee can use to evaluate and implement operational strategies for

maximizing nitrogen removal from the existing treatment plant during the permit term. reduce the discharge of TIN to [sic] as much as possible during the permit term and stay below the annual average load cap. Ecology expects these facility specific operational efforts to be initiated following permit issuance. See section 5.b of this certification for planning requirements related to optimization. Any permanent process changes resulting from optimization must be reflected in an update to the standard operating procedures in the Permittee’s Operation and Maintenance manual. The Permittee must alert EPA of any updates made in their plan.

Citations: RCW 90.48.080, RCW 90.54.020(3)(b), 40 CFR 122.44(k), 40 CFR 122.44(d)(1)(iii), 40 CFR 122.44(k)

Justifications: The Permittee’s discharge contains inorganic nitrogen, and the NPDES permit must require the Permittee to control nutrients consistent with the Clean Water Act and Washington’s Water Pollution Control Act. Water quality based effluent limits (WQBELs) are required for wastewater treatment plants discharging to surface waters when the discharge has reasonable potential to cause or contribute to an in-stream excursion above a narrative or numeric State water quality criteria. A permit may express WQBELs as non-numeric effluent limits when numeric effluent limits are infeasible.

4. Monitoring Requirements: (WAC 173-220-210)

In accordance with the Quality Assurance Plan (QAP) required under the Permit, Permittee must monitor monthly and cumulative TIN loads and submit the results with the monitoring reports required under the Permit. The Permittee must report the monthly load and the cumulative load during the annual reporting period defined as each 12-month period following the effective date of the permit as described in Section B.3 of this certification. Results must be submitted in the discharge monitoring report. The Permit must contain the following influent and effluent monitoring frequencies to comply with the monitoring portion of the narrative limit described in Section B.3 of this certification. for purposes of tracking compliance with the annual TIN cap.

Parameter	Units & Specifications	Minimum Sampling Frequency	Sample Type
Wastewater influent			
Wastewater influent means the raw sewage flow from the collection system into the treatment facility. Sample the wastewater entering the headworks of the treatment plant excluding any side-stream returns from inside the plant, if possible.			

Parameter	Units & Specifications	Minimum Sampling Frequency	Sample Type
The Permittee must collect total ammonia, nitrate plus nitrite, and TKN samples during the same sampling event.			
CBOD ₅	mg/L	2/month	24-Hour Composite
Total Ammonia	mg/L as N	2/month	24-Hour Composite
Nitrate plus Nitrite Nitrogen	mg/L as N	Monthly	24-Hour Composite
Total Kjeldahl Nitrogen (TKN)	mg/L as N	Monthly	24-Hour Composite

Parameter	Units & Specifications	Minimum Sampling Frequency	Sample Type
Final wastewater effluent			
Final Wastewater Effluent means wastewater exiting the last treatment process or operation. Typically, this is after or at the exit from the chlorine contact chamber or other disinfection process.			
The total ammonia and nitrate plus nitrite samples must be taken on the same calendar day.			
Flow ⁶ , monthly average	MGD	Monthly ² /month ⁵	metered/recorded
CBOD ₅	mg/L	2/month ⁵	24-Hour Composite
Total Organic Carbon	mg/L	1/quarter	24-Hour Composite
Total Ammonia	mg/L as N	2/month ⁵ Monthly	24-Hour Composite
Nitrate plus Nitrite Nitrogen	mg/L as N	2/month ⁵ Monthly	24-Hour Composite
TKN	mg/L as N	Monthly	24-Hour Composite

Parameter	Units & Specifications	Minimum Sampling Frequency	Sample Type
Total Inorganic Nitrogen ¹	mg/L as N	2/month ⁵ Monthly	Calculated
Total Inorganic Nitrogen Load ²	Lbs/day	2/month ⁵ Monthly	Calculated
Average Monthly Total Inorganic Nitrogen ³	Lbs	Monthly	Calculated
Annual Total Inorganic Nitrogen, year to date ⁴	Lbs	Monthly	Calculated

¹ Calculate the total inorganic nitrogen concentration (mg/L as N) using the following equation:

$$\text{TIN concentration (mg/L as N)} = \text{Total Ammonia (mg/L as N)} + \text{Nitrate plus Nitrite (mg/L as N)}$$

If the Permittee conducts additional total ammonia and/or nitrate plus nitrite sampling during the month, the average of the concentration results must be used in the above equation.

² Calculate the total inorganic nitrogen load (lbs/day as N) using the following equation:

$$\text{TIN load (lbs/day as N)} = \text{TIN concentration (mg/L as N)} \times \text{average monthly flow (mgd)} \times 8.34$$

³ Calculate the monthly average total inorganic nitrogen load (lbs as N) using the following equation:

$$\text{Monthly average TIN load (lbs as N)} = \text{TIN load (lbs/day as N)} \times \text{number of days in the calendar month}$$

⁴ For each discrete 12-month period, calculate the cumulative annual total inorganic nitrogen, year to date using the following calculation:

$$\text{Annual TIN load (lbs as N)} = \sum \text{Monthly average TIN loads, to date}$$

⁵ 2/month means two (2) times during each month and on a rotational basis throughout the days of the week, except weekends and holidays.

⁶ Report flows only on days when collecting total ammonia and nitrate plus nitrite samples.

Citations: WAC 173-220-210, 40 CFR 122.44(k)

Justifications: Monitoring and reporting of influent and effluent wastewater is critical to ensure compliance with water quality standards. This monitoring constitutes one part

of the suite of BMPs that make up a non-numeric WQBEL necessary to regulate the discharge of TIN from this facility.

5. Planning Requirements: (WAC 173-201A-510(4)(b)(ii), 173-240-060, 173-240-080)

- a. Nitrogen optimization planning – The Permittee must develop, implement, and maintain a Nitrogen Optimization Plan to evaluate and implement operational strategies for maximizing nitrogen removal from the existing treatment plant during the permit term. The Permittee must document their actions taken and apply an adaptive management approach at the WWTP. The Permittee will quantify results with required monitoring outlined in Section 4.

The actions described in this section must begin on the effective date of the permit. The Permittee must submit documentation of the nitrogen optimization plan implementation at least nine months prior to the expiration of the permit. The nitrogen optimization plan must include the following components:

1. Treatment Process Performance Assessment: the Permittee must assess the nitrogen removal potential of the current treatment process and have the ability to evaluate optimization strategies prior to implementation.
 - a. The Permittee must develop a treatment process assessment method for purposes of evaluating optimization approaches during the permit term.
 - i. Evaluate current (pre-optimization) process performance. Determine the empirical TIN removal rate for the WWTP.
 - ii. Develop an initial assessment approach to evaluate possible optimization strategies at the WWTP prior to and after implementation.
 - iii. Determine the optimization goal for the WWTP. Develop and document a prioritized list of optimization strategies capable of achieving the optimization goal for the WWTP. Update this list as necessary to continuously maintain a selection of strategies for achieving each optimization goal identified.
 - iv. The Permittee may exclude from the initial selection any optimization strategy considered but found to exceed a reasonable implementation cost or timeframe. Documentation must include an explanation of the rationale and financial criteria used for the exclusion determination.

- b. Within 12-months of the permit effective date, identify the optimization strategy selected for implementation. Document the expected % TIN removal (or the expected reduction in effluent load) for the optimization strategy prior to implementation.
2. The Permittee must document implementation of the selected optimization strategy as it is applied to the existing treatment process during the reporting period. Permittees must document adaptive management applied to optimization strategies following initial implementation through the permit term.
 - a. Strategy Implementation: Describe how the selected strategy was implemented during the reporting period, including:
 - i. Initial implementation costs.
 - ii. Length of time for full implementation, including start date.
 - iii. Anticipated and unanticipated challenges.
 - iv. Any impacts to the overall treatment performance as a result of process changes.
 - b. Load Evaluation: The Permittee must review effluent data collected during the reporting period to determine whether TIN loads are increasing.
 - i. Using all accredited monitoring data, determine the facility's annual average TIN concentration and load for each year during the reporting period.
 - ii. Determine the treatment plant's TIN removal rate at the end of each year. Compare the removal rate with the pre-optimization rate identified in assessment described in Section 5.a.1.a.i.
 - c. Strategy Assessment: Quantify the results of the implemented strategy and compare to the performance metric identified in Section 5.a.1.b. If the TIN loading increased, apply adaptive management, re-evaluate the optimization strategies and the resulting performance to identify the reason. Select a new optimization strategy for implementation and/or revise implementation for better performance. Document any updates to the implementation schedule and overall plan.
3. Influent Nitrogen Reduction Measures/Source Control: The Permittee must investigate opportunities to reduce influent TIN loads from septage handling practices, commercial, dense residential and industrial sources,

and submit documentation as part of their documentation of the nitrogen optimization plan implementation. The investigation must:

- a. Review non-residential sources of nitrogen and identify any possible pretreatment opportunities.
 - b. Identify strategies for reducing TIN from new multi-family/dense residential developments and commercial buildings.
- b. AKART Analysis – The Permittee must prepare and submit an approvable all known, available and reasonable methods of prevention, control and treatment (AKART) analysis to EPA and Ecology for purposes of evaluating reasonable treatment alternatives capable of reducing TIN.
1. The Permittee must submit this report 12-months prior to the expiration of the permit. The requirement for this analysis may be waived if the Permittee maintains an annual TIN average of < 10 mg/L and does not document an increase in load through their DMRs.
 2. The analysis must contain appropriate requirements as described in the following guidance (or the most recent version):
 - a. The Criteria for Sewage Works Design (ECY Publication No. 98-37, 2019)
 - b. Reclaimed Water Facilities Manual: The Purple Book (ECY Publication No. 15-10-024, 2019)
 3. The AKART analysis must include the following elements:
 - a. Wastewater Characterization
 - i. Current volumes, flowrates and growth trends
 - ii. Current influent and effluent quality
 - b. Treatment Technology Analysis
 - i. Description of current treatment processes
 - ii. Identification and screening of potential treatment technologies for TIN reduction that achieves AKART for nitrogen removal
 - c. Economic Evaluation
 - i. Develop capital, operation and maintenance costs and 20 year net present value using the real discount rate in the most current Appendix C to Office of Management and Budget Circular No. A-9411 for each technology alternative evaluated.
 - ii. Provide cost per pound of nitrogen removed

- iii. Provide details on basis for current wastewater utility rate structure, including:
 - a. How the utility allocates and recovers costs from customers.
 - b. How frequently rate structures are reviewed.
 - c. The last time rates were adjusted and the reason for that adjustment.
 - iv. Provide impact to current rate structure for each alternative assessed.
- d. Environmental Justice (EJ) Review
- i. Evaluate the demographics within the sewer service area to identify communities of color, Tribes, indigenous communities, and low income populations.
 - ii. Identify areas within the service area that exceed the median household income.
 - iii. Include an affordability assessment to identify how much overburdened communities identified in 5.b.3.d.i can afford to pay for the wastewater utility.
 - iv. Propose alternative rate structures or measures that can be taken to prevent adverse effects of rate increases on populations with economic hardship identified in Section 5.b.3.d.i.
 - v. Provide information on how recreation and commercial opportunities may be improved for communities identified in Section 5.b.3.d.i as a result of the treatment improvements identified.
- e. Selection of most reasonable treatment alternative.
- f. Attainable implementation schedule that includes funding, design and construction of infrastructure improvement capable of achieving and maintaining AKART.
- c. The Permittee must submit a TIN Compliance Plan identifying standard procedures and potential operational adjustments to maintaining [sic] compliance with the TIN cap. The Plan shall be submitted no later than one year following the permit effective date as an addendum to the required Operations and Maintenance Plan described in the Permit.
- d. The Permittee must submit a TIN Optimization Plan identifying operational improvements of existing treatment processes to potentially reduce total inorganic nitrogen loads. The Plan should identify process improvements through operational adjustments designed to enhance nitrification and denitrification, such as side-stream management opportunities or

incorporation of anoxic zones. The Plan should also describe previously made process improvements and a list of future potential improvements requiring further study or capital investment. When possible, the Plan should provide estimates in nutrient load reductions resulting from process improvements using plant specific monitoring data collected between each annual update. The Permittee must submit a status report identifying the Permittee's work to date on the Plan no later than two-years following the permit effective date. The Plan shall be submitted no later than three-years following the permit effective date. The Permittee must update the plan annually to evaluate the effectiveness of adopted strategies.

- e. With the next permit application, or eighteen (18) months following any exceedance of the annual TIN load cap, whichever comes first, the Permittee must submit a Facility Feasibility Study, for evaluating different levels of TIN reduction through facility modifications. The Feasibility Study should evaluate actual operating conditions obtained from the TIN Optimization and Compliance Plan and develop potential facility upgrades with associated planning level and operating costs to reduce TIN discharges. The Feasibility Study should also incorporate treatment process improvements, including consideration of reclaimed water use and incremental approaches to phased nitrogen reduction. Ancillary benefits for each potential treatment modification should be part of this evaluation.
- f. If Ecology develops a facility-specific numeric WQBEL for TIN during the permit term for the Suquamish Wastewater Treatment Plant, Ecology will provide formal written notice to the Permittee. If the Permittee does not meet the facility-specific numeric WQBEL, the Permittee must develop a formal engineering report with selection of a preferred design alternative. This engineering report must be submitted as follows:
 1. If the Facility Feasibility Study, as described in 5.c of this certification, has been submitted, then within 24 months after formal written notice by Ecology. In the event that Permittee is unable to secure an outside engineering firm to complete the engineering report that meets Permittee's required qualification as listed in its Request for Qualifications (RFQ), Permittee is entitled to extend the 24 month deadline by a further 12 months following notice to Ecology at least 90 days prior to the expiration of the deadline.
 2. If the Facility Feasibility Study has not been submitted, then within 36 months after formal written notice by Ecology.

Citations: WAC 173-201A-510(4)(b)(ii), RCW 90.48.110, 40 CFR 122.44(k)

Justifications: Schedules of compliance must be developed and submitted to Ecology to ensure final compliance with all water quality-based effluent limits

and the water quality standards. Development and implementation of a Nitrogen Optimization Plan along with conducting an AKART analysis constitute parts of the suite of BMPs that make up a non-numeric WQBEL necessary to regulate the discharge of TIN from this facility.

No other conditions or requirements of the above referenced Order are affected by this amendment.

Ecology retains continuing jurisdiction to make modifications hereto through supplemental order, if it appears necessary to further protect the public interest.

Failure to comply with this amended Order may result in the issuance of civil penalties or other actions whether administrative or judicial, to enforce the terms of this amended Order.

C. Timing Requirements

1. This Certification is valid until the expiration date including any administrative extension or termination date of NPDES Permit No. WA0023256.

D. Notification Requirements

1. The Applicant shall enforce and the Permittee must comply with all the reporting and notification conditions of the NPDES permit, including conditions of the permit requiring the Permittee to report to Ecology.