



Submitted via Comment Portal

August 20, 2024

Dainis Kleinbergs, WA0037087 Permit Writer
Department of Ecology, Water Quality Program
PO Box 47600 Olympia, WA 98504-7600

Dear Mr. Kleinbergs,

The City of Tacoma (Tacoma, City), Environmental Services Department (Environmental Services) appreciates the opportunity to comment on the Department of Ecology (Ecology) draft National Pollutant Discharge Elimination System (NPDES) Permit and draft Fact Sheet for the Tacoma Central Wastewater Treatment Plant (CTP). Environmental Services operates two wastewater treatment facilities: the North End Treatment Plant No. 3 and the CTP. Both facilities discharge secondary effluent into Puget Sound at Commencement Bay.

Environmental health is a priority for the City of Tacoma. For decades, we have been a leader and steadfast partner in regional discussions on finding the right balance when it comes to water quality and protecting the health of the Puget Sound. We are continuing to work collaboratively on sensible and sustainable long-term solutions that protect the Puget Sound. The mission of Puget Sound clean water utilities has been focused on protection of water quality and successful compliance with regulatory requirements for secondary treatment, wet weather controls, toxics reduction, stormwater management, and beneficial use of biosolids.

These water quality protection efforts require utilities to extensively plan, fund, construct, operate, and maintain billions of dollars in investments in their complex wastewater infrastructure. New regulatory requirements with the potential to add significant technical, operational, and economic impacts need to be carefully balanced with the understanding of the necessity and expected benefits. It is especially important that uncertainties are addressed with permit structures that provide opportunities for adaptive management over time to ensure that investments are on-target, effective, and produce tangible results.

After reviewing the Draft Permit and Fact Sheet released by Ecology on May 10, Environmental Services provides the following comments and questions regarding the draft Permit and Fact Sheet.



Comments Related to Wastewater NDPEs Permit Specific Elements:

1. Change from BOD5 to CBOD

Environmental Services greatly appreciates Ecology considering and moving forward with this requested change.

2. Chlorine Effluent Limits, Page 6. Section S1. Discharge limits S1.A. Effluent limits Total Residual Chlorine Effluent Limits

The draft permit reduces the Average Monthly limit for Total Residual Chlorine from the current 0.109 mg/L to 0.091 mg/L (Fact Sheet Table 16). Section III.G(7) in the draft fact sheet (page 33) states the following:

“Ecology derived effluent limits for chlorine, which we determined have a reasonable potential to cause or contribute to a violation of the water quality standards. Ecology calculated effluent limits using methods from the Technical Support Document for Water Quality-Based Toxics Control (EPA/505/2-90-001) (USEPA, 1991) as shown in Appendix D.”

However, Ecology’s Reasonable Potential Analysis calculations in the Fact Sheet show **No** reasonable potential for exceedance of water quality standards (reference Fact Sheet Appendix D Technical Calculations, page 62). It appears from the PDF version of the reasonable potential calculation spreadsheet that the determination of **No** reasonable potential for exceedance has been overridden to “Yes” to force the calculation of water quality based effluent limits. This results in Fact Sheet Table 15 Chlorine Effluent Limits proposing water quality based effluent limits of Average Monthly 0.091 mg/L and Maximum Daily 0.286 mg/L.

This override of the reasonable potential analysis spreadsheet results in the calculation of new Average Monthly limits that are lower (0.091 mg/L), compared to the current permit (0.109 mg/L), which is unnecessary if there is no reasonable potential for exceedance. Therefore, the proposed Average Monthly limits should be restored to the current permit limits of 0.109 mg/L, or the technology based effluent Average Monthly limit of 0.5 mg/L as identified in Fact Sheet Table 8 Technology-based limits for Total Residual Chlorine.

Note that in reviewing Ecology’s Reasonable Potential Analysis calculations, it appears that a high value of the coefficient of variation Cv of 0.78 for the effluent chlorine data is controlling the override calculation of effluent limits. This resulted in the proposed water



quality based effluent limits of Average Monthly 0.091 mg/L. More recent effluent chlorine residual data reflects less variability resulting from improvements in effluent bacteria monitoring and chlorine dosing. More recent chlorine residual monitoring data from January 2023 to May 2024 has a coefficient of variation Cv of 0.48 that would result in an Average Monthly Limit of 0.126 mg/L.

REQUEST:

Since the reasonable potential analysis calculations show “No” potential for exceedance of water quality standards, the Table 2 Effluent limits: Outfall 001 Average Monthly limits for Total Residual Chlorine should be restored to the current permit limits of 0.109 mg/L, or the technology based effluent Average Monthly limit of 0.5 mg/L.

3. PFAS Pretreatment Program Requirements, Page 31. Section S6.E. Identification and control of PFAS Discharges

The proposed permit includes new monitoring and Pretreatment Program requirements for PFAS. These new requirements require a substantial investment of time and effort to identify and control potential industrial sources of PFAS. The City has a substantial number of industrial customers, including 16 categorical industries and 24 non-categorical significant industrial dischargers. Each of these industrial dischargers have unique, site-specific circumstances and each will be confronted with control of PFAS as a new parameter for the first time. This will require careful consideration by the City’s Pretreatment Program for each individual industrial customer that is sensitive to the site-specific circumstances, conditions, and configuration of current industrial facilities.

The draft permit identifies specific calendar dates for accomplishment of key tasks in Section S.6E. However, the timeframes proposed in Section S.6E are impractical for two key reasons. First, the date for issuance of the City’s permit is unknown making the specified calendar dates uncertain. Therefore, it is impossible to determine at this time whether or not specific calendar dates provide adequate time to actually conduct the specified tasks. Second, it is apparent from the calendar dates provided in the draft permit that the times contemplated for compliance with Section S6.E. tasks are inadequate. Therefore, the specific calendar dates should be replaced with the number of days following issuance of the City’s final permit. Adequate durations for the tasks specified in Section 6.E. should be provided. In order to accomplish the tasks in Section S.6E, the following periods of time should be provided for the City’s efforts:



1. For Section S6.E.1. Update Industrial User Inventory: 365 days (1 year).
2. For Section S6.E.2. Begin including PFAS requirements in pretreatment permits: 730 days (2 years).
3. For Section S6.E.3. Evaluate PFAS best management practices and pollution prevention strategies for pretreatment permits to control the discharge of PFAS: 1,095 days (3 years).

REQUEST:

Tacoma requests that Ecology replace the specific calendar dates in Section S.6E with durations from the issuance date of the final permit as follows:

1. Section S6.E.1. 365 days (1 year).
2. For Section S6.E.2. 730 days (2 years).
3. For Section S6.E.3. 1,095 days (3 years).

4. PFAS Identification and Control of PFAS Discharges, page 31. Section S6.E.:

Since Ecology is issuing multiple permits in Washington that all include similar requirements for Pretreatment Program requirements for PFAS, consideration should be given to streamlining the duplicative efforts required of multiple wastewater utilities. There may be many types of source control activities and best management practices for PFAS that are common for many wastewater utilities for the categories known or suspected to discharge PFAS such as organic chemicals, plastics and synthetic fibers (OCPSF); metal finishing; electroplating; electric and electronic components; landfills; pulp, paper, and paperboard; leather tanning and finishing; plastics molding and forming; textile mills; paint formulating, and airports. It is unnecessary for each individual wastewater utility to develop common control practices independently in a duplicative manner for standard practices. Furthermore, that repetitive creation of common PFAS control practices will detract from the time and resources available to Pretreatment Program staff to thoughtfully address the unique site-specific characteristics of their industrial customers discharging to their individual wastewater utilities.

Coordination and collaboration on the preparation of common PFAS source controls and best practices would streamline preparation and preserve valuable time and resources to address the site-specific needs of individual industrial customers. Sharing the information among the statewide community of wastewater utilities would avoid repetitive recreation of similar practices and may provide the opportunity to improve the approach to source controls and best practices by sharing and improving the effectiveness of PFAS



management practices by receiving feedback and learning from the experiences of multiple utilities.

REQUEST:

It is recommended that Ecology provide the initial templates for source controls and best practices for the industrial categories Ecology has identified in the draft permit as known or suspected to discharge PFAS, including organic chemicals, plastics and synthetic fibers (OCPSF); metal finishing; electroplating; electric and electronic components; landfills; pulp, paper, and paperboard; leather tanning and finishing; plastics molding and forming; textile mills; paint formulating, and airports. Ecology should maintain a resource bank of pretreatment program materials and updates available to all permittees managing common PFAS control issues for compliance with Section S6.E.

5. Additional Individual Permit Detailed Comments:

Document	Section	Page(s)	Description	Comment to Ecology
Fact Sheet	II.D.	14	Total Kjeldahl Nitrogen (TKN) in Wastewater Influent and Effluent Characterization Tables 3 and 4.	TKN needs to be changed to Total Nitrogen (or a note could be added) – Environmental Services has an existing letter approving our alternative testing procedure (ATP).
Fact Sheet	III.I.	36	"... if sampling indicates the possibility of problems, a more frequent and/or more comprehensive monitoring schedule would apply."	What is the definition of "problem"?



Document	Section	Page(s)	Description	Comment to Ecology
Fact Sheet	Appendix C	57	"Soluble BOD5 – ... filtering the raw sample through at least a 1.2 um filter prior to running the standard BOD5 test is sufficient to remove the particulate organic fraction."	Environmental Services has typically been using a 1.5 um filter size for soluble BOD5. This should not be different for CBOD5. Please change this requirement to 1.5 um.
Permit	S2.A. Monitoring Schedule. Table 6	9	TKN Requirement	TKN needs to be changed to Total Nitrogen (or a note could be added) – Environmental Services has an existing letter approving our ATP.
Permit	Appendix A Table 2	51	TKN Requirement	TKN needs to be changed to Total Nitrogen (or a note could be added) – Environmental Services has an existing letter approving our ATP.
Permit	Cover Page	1	Plant Zip Code	Please correct CTP's zip code to 98421.
Permit	S2	9	BOD/CBOD sampling before or after disinfection Table 5 (Final Wastewater Effluent) text states, "The Permittee may take effluent samples for BOD5 and CBOD5 analysis before or after the disinfection process."	Both instances of BOD/CBOD mention following, at the end of S2.A. there is a footnote stating that "Take effluent samples for BOD5/CBOD5 analysis after the disinfection process," which appears to be inconsistent with that language. Table 5 also contains the text, "If taken after, the Permittee must dechlorinate and reseed the sample." SM5210B (section 4.b2), listed as a list of approved inorganic test procedures in Appendix A Table 1 (page 49) (and 40CFR136) states that, "If residual chlorine is present, dechlorinate sample. Sometimes chlorine will dissipate from sample within 1 to 2 h of standing in light; this often occurs during transport and handling."



Document	Section	Page(s)	Description	Comment to Ecology
				Tacoma suggests a change of language to reflect that dichlorination may not be required if chlorine residual is undetectable prior to BOD analysis, and to change “reseed,” to “seed.”
Permit	Table 7	10	Sampling Sites	Please add a column for each sampling site Influent/Effluent/sludge with an x for each parameter by matrix. Please clarify biosolids or sludge? S6.B is for the sludge not biosolids.
Permit	Table 7	10	Sludge	Sludge has been reported as a solid mg/Kg dry is this okay or are ug/L needed?
Permit	Table 7	10	Dioxin requirements	What is the rational for adding Dioxin? If we must do why is there no sunset clause?
Permit	S2	10	Pesticides and PCB's	Footnote s (page 12) for PP-Pesticides/PCBs mentions only pesticides. Will PCBs be on a similar monitoring schedule for only the first two years or are those considered separately (they can be extracted from the same sample, but are run separately)? Environmental Services acknowledges that we had three reportable analytes in the chlorinated pesticides list that prompted this additional monitoring. Please consider modifying the subset, that was included on the quarterly schedule, to only include the pesticides that had reportable detections.
Permit	S2	11	Sample Type	Sample Type has changed from 24-hour time versus flow weighted. Was that an error?



Document	Section	Page(s)	Description	Comment to Ecology
Permit	S2	11	BOD and TSS	BOD and TSS Footnotes - added rotational basis for week except for holidays and weekends. Need clarification.
Permit	S2	11	Footnote J on taking CBOD and BOD samples "after disinfection process".	Footnote J on taking CBOD and BOD samples "after disinfection process". Is this intended to include Contact Time or after dosing?
Permit	S2	12	Footnote s: "Monitoring of pesticides will occur quarterly during the first two years of the permit period. If sampling discloses no problems, monitoring may be reduced to once per year."	What is the definition of a "problem"?
Permit	S2.E.	13	Frequency	Can there be a reduction in frequency after twelve months of monitoring for analytes that are only tested annually or quarterly after a 12-month period or must it be 12 months where the frequency is 1 month or less?
Permit	Table 11	35	Acute Toxicity Testing has second species.	Is it correct to have a second species?
Permit	Appendix A	49	CBOD	CBOD is not listed in Appendix A.
Permit	S.2, Table 4, footnote e	8, 11	Table 4 list Influent CBOD5 minimum sample frequency at 3/week with the foot note "e". -Page 8 "e 3/week means (3) times during each calendar week and on a rotational basis throughout the days of the week, except weekends and holidays" -Page 11	Our current lab staffing is not covering weekends, with the nature of a five-day CBOD test this would necessitate adjusting our staffing to create weekend coverage. Environmental Services would like to request removing the requirement of rotational sampling on the CBOD Influent.
Permit	Appendix A, Table 2	50	Table 2 lists a Quantitation Limit requirement for COD of 10 mg/L	Our current lab Quantitation Limit for COD is 15 mg/L. We would like to request that the Quantitation



Document	Section	Page(s)	Description	Comment to Ecology
				limits be updated to the lab Quantitation limits for these compounds.
Permit	Appendix A, Table 3	52	Table 3 lists Quantitation Limit requirements for Cadmium, Hexavalent Chromium, Chromium, Silver, Thallium, Zinc and Phenols of 0.25(Cd), 1.2(Cr6+), 1(Cr), 0.2(Ag), 0.36(Tl), 2.5(Zn) and 100(Phenol) ug/L.	Partly based on the CFR 136 MDL studies, our current lab Quantitation limits are 0.5(Cd), 10(Cr6+), 1.5(Cr), 0.5(Ag), 0.5(Tl), 5(Zn) and 100(Phenols) ug/L. We would like to request that the Quantitation limits be updated to the lab Quantitation limits for these compounds.
Permit	Appendix A, Table 5	53	Table 5 lists Quantitation Limit requirements for Acrylonitrile of 2 ug/L.	Partly based on the CFR 136 MDL studies, our current lab Quantitation limit for Acrylonitrile is 5 ug/L. We would like to request that the Quantitation limits be updated to the lab Quantitation Limit.
Permit	Appendix A, Table 8	56, 57	Table 8 lists Quantitation Limit requirements for the following Pesticide compounds at < 50 ng/L; Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Chlordane, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, Dieldrin, alpha-Endosulfan, bata-Endosulfan, Endosulfan Sulfate, Endrin and Heptachlor.	Based on the CFR 136 MDL studies, our current lab Quantitation limit for all these compounds is 50 ng/L. We would like to request that the Quantitation limits be updated to the lab Quantitation Limit for Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Chlordane, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, Dieldrin, alpha-Endosulfan, bata-Endosulfan, Endosulfan Sulfate, Endrin and Heptachlor.



Comments Related to Wastewater NPDES Permit and Puget Sound Nutrient General Permit Elements:

6. Ecology reliance on the Puget Sound Nutrient General Permit (PSNGP) is misplaced – the PSNGP is currently Stayed and Partially Invalidated

Through ongoing litigation, Ecology has been deemed to be in violation of APA rulemaking requirements as to its decision to impose annual loading limits for nutrients. The Total Inorganic Nitrogen (TIN) action levels in the PSNGP have also been invalidated. Ecology is accordingly required to address TIN within the context of the individual permit and cannot reference the general permit through the draft fact sheet. In addition, Ecology should recognize that it cannot regulate the CTP through both an individual and general permit.

Ecology regulations are clear; the discharge of pollutants to water of the state from a point source are prohibited “except as authorized by an individual permit issued pursuant to chapters 173-216 and 173-220 WAC, *or* as authorized through coverage under a general permit issued pursuant to this chapter.” WAC 173-226-020 (emphasis added). Further, a general permit is defined to mean a permit that “covers multiple dischargers of a point source category within a designated geographical area, in lieu of individual permits being issued to each discharger.” WAC 173-216-030(7); WAC 173-220-030(11); WAC 173-226-030(13). This definition is used consistently throughout Ecology regulations, applying across chapters 173-216, 173-220, and 173-226 WAC.

The term “in lieu of” is not defined in either United States Environmental Protection Agency (EPA) or Ecology regulations and is a common or ordinary term; therefore, it should be given its ordinary meaning. *See Tingey v. Haisch*, 159 Wn.2d 652, 658, 152 P.3d 1020, 1023 (2007) (“When a term has a well-accepted, ordinary meaning, a regular dictionary may be consulted to ascertain the term’s definition.”). The dictionary definition of “in lieu of” is “in the place of” or “instead of.” WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY 1306 (2002). Therefore, under Ecology regulations, a general permit operates *instead of* individual permits being issued to each discharger, not in *addition to* the individual permits. A general permit is an alternative, not a supplement, to an individual permit.

This reading of the regulations is in harmony with other provisions of Ecology and EPA regulations. For example, Ecology regulations provide that general permits may be written to cover categories of dischargers that meet four specific criteria, including categories of dischargers that “in the opinion of the director are more appropriately



controlled under a general permit than under individual permits.”¹ WAC 173-226-050(3)(b)(iv). In other words, a general permit for a category of dischargers, such as the PSNGP, can only be issued if the Director of Ecology determines that individual permits are inappropriate; this is so because the general permit would be issued in the place of the individual permits. Additionally, the Ecology regulations for permits issued under the state Water Pollution Control Act, ch. 90.48 RCW, provide discharges “otherwise subject to this chapter but which are covered under a general permit issued pursuant to 173-226 WAC” are not subject to individual waste discharge permits. WAC 173-216-050(1)(f).

Therefore, under Ecology regulations, Ecology may not issue a general permit unless it determines that a discharger is more appropriately controlled under a general permit than under an individual permit. But Ecology cannot make that determination if it requires coverage under both a general permit and an individual permit; therefore, Ecology reliance on both an individual permit and a general permit violates WAC 173-226-050.

This reading of the regulations is supported by subsequent rules that ensure a discharge is not covered by both an individual and a general permit. “When an individual NPDES permit is issued to an owner or operator otherwise subject to a general NPDES permit, the applicability of the general permit to the individual NPDES permittee is automatically terminated on the effective date of the individual permit. WAC 173-226-080(4), -200(7); *see also* 40 C.F.R. § 122.28(b)(3). Even if Ecology had the authority to provide an exception to this rule, it does not attempt to do so. Under the language of this rule, coverage under the PSNGP would be terminated upon issuance of the individual permit; a consequence Ecology clearly does not intend because the draft individual permit indicates that “the Permittee may use analytical results from effluent samples collected to satisfy the monitoring requirements under the Puget Sound Nutrient General Permit” to satisfy the monitoring requirements under the individual permit. Draft NPDES Permit § S2.A.

Similarly, for a discharger to obtain coverage under a general permit where an individual permit is already in place, the individual permit must be revoked. “A source excluded from a general permit solely because it already has an individual permit may request that the individual permit be revoked, and that it be covered by the general permit.” 40 C.F.R. § 122.28(b)(3)(v); *see also* 40 C.F.R. § 123.25(11) (requiring state programs to comply with 40 C.F.R. § 122.28). Under these regulations, it is not possible for CTP discharges

¹ This is consistent with EPA regulations which similarly require a permitting agency to determine that discharges “are more appropriately controlled under a general permit than under individual permits.” 40 C.F.R. § 122.28(a)(2)(ii)(E).



to be regulated under both an individual permit and a general permit; whichever is issued subsequently would necessarily terminate coverage under the other.

Given the current state of the PSNGP (partially stayed) and unlawful action levels, Tacoma encourages Ecology to provide coverage for the CTP solely under the individual permit and to work with Tacoma to develop a long-term nutrient management strategy consistent with the long-term plans in place and in development. Coverage under an individual permit will also need to address the issues of concern Tacoma has previously shared through the nutrient forum, prior comments and ongoing litigation regarding the PSNGP, including, but not limited to the issues discussed below.

7. Solely Relying on an Individual Permit Would Allow Ecology and Tacoma to Develop a Long-Term Approach Nutrient Loading for the Central Treatment Plant

The PSNGP does not include a long-term solution to the nutrient loading, taking into account the planning and public processes necessary for municipalities, such as Tacoma. Under the Clean Water Act (“CWA”), the CTP is subject to long-term NPDES permit coverage, which includes obligations to maintain and update general sewer plans under RCW 90.48.110 and WAC 173-240-050. Tacoma is also obligated under the terms of its NPDES permit to maintain capacity to provide wastewater treatment services within its service area. This capacity is essential to meet the obligations under comprehensive land use plans applicable to the subject service area including goals to absorb additional growth and to meet goals for housing, affordable housing, and low-income housing.

Tacoma manages the CTP as required by its individual permit, in accordance with the requirements of chapter 173-240 WAC, including the submission to Ecology for approval: a general sewer plan and facility plans under WAC 173-240-050; engineering reports including technology review and assessment under WAC 173-240-060; construction plans and specifications under WAC 173-240-070, a construction quality assurance plan under WAC 173-240-075; and an operations and maintenance manual under WAC 173-240-080. Planning and implementing updates to the CTP is a complicated, long-term process to prioritize efforts, engage in required planning and engineering efforts subject to Ecology review and approval, and funding the actual construction of facility upgrades. The proposed dual permit does not take into consideration current long-term planning.



8. Modeling concerns for a Better Scientific Foundation

Ecology's decision to move forward with the PSNGP, are based on Ecology's application and interpretation of the Salish Sea Model (SSM) to evaluate compliance with the State's Dissolved Oxygen (DO) Standard. Better and more transparent explanations are needed around input data assumptions and the basis for Ecology's conclusions about DO impairment in Puget Sound including, but not limited to: using non-representative data from the wastewater treatment plants (monthly, quarterly, and annual data), addressing scientific uncertainties, identifying the dominant species or beneficial use to evaluate impairment and identifying where the standard should apply to protect that species or beneficial use. While portions of the model have been peer reviewed, it is the City's understanding that Ecology's application (e.g. input assumptions and post processing) of the model has not been peer reviewed. This issue as well as other key concerns about the scientific basis of the PSNGP were commented on by Mr. Gordon Holtgrieve, Associate Professor at the University of Washington's School of Aquatics and Fishery Sciences as part of the Public Comment period for the PSNGP on August 16, 2021. Ecology's modeling effort should be transparent and available for other users to replicate and study the issue further.

Questions:

I. What steps has Ecology taken to update the science, model inputs, etc. as well as the use of the Salish Sea Model?

II. Is Ecology using the updated monitoring data with the Salish Sea Model?

9. Concerns about the DO standard:

The City shares the concerns of other wastewater treatment plant operators, scientists, and academics that the current water quality standard was adopted in 1967 with no demonstrated scientific basis supporting the standard and that a new water quality standard has not been developed in compliance with statutory and regulatory requirements adopted over the years. Furthermore, there have been comments and formal petitions by operators and the scientific community going back to the 1990s to request that Ecology update this important water quality standard to be biologically based and scientifically defensible using currently available science. In its rescinding of the Natural Conditions Provision, EPA encouraged Ecology to update this standard to be locally and site-specific in Puget Sound and throughout the state. In addition, there has been research to indicate that these standards may not actually result in a measurable change to



dissolved oxygen levels in the Puget Sound despite the extraordinary cost for wastewater treatment plants to upgrade. We need to understand the specific present day needs of aquatic life in the Puget Sound to make informed decisions and ensure that any measures put into place will actually result in improvements.

Question:

III. What steps has Ecology taken to update this standard?

10. Concerns about Natural Conditions Provision Rulemaking

On November 19, 2021, prior to the PSNGP being issued, the United States Environmental Protection Agency (EPA) rescinded its approval of the following:

- WAC 173-201A-260(1)(a): Natural and irreversible human conditions
- WAC 173-201A-200(1)(c)(i) and WAC 173-201A-210(1)(c)(i): Allowable human contribution to natural conditions provisions for aquatic life temperature (fresh water and marine water, respectively)
- WAC 173-201A-200(1)(d)(i) and WAC 173-201A-210(1)(d)(i): Allowable human contribution to natural conditions provisions for aquatic life dissolved oxygen (fresh water and marine water, respectively)

This provision was a pivotal part of Ecology's evaluation of the SSM results and Reasonable Potential Analysis for DO impacts from anthropogenic sources, including Tacoma's two wastewater treatment plants. Ecology is currently working through rulemaking to update these water quality standards, including a public comment period that ended on July 26th. Tacoma submitted comments on this rulemaking. In its disapproval letter, EPA also encouraged Ecology to consider magnitude, frequency, and duration components in setting water quality criteria.

Questions:

IV. EPA disapproved the DO Natural Conditions Provision. What is Ecology's reasoning to not delay the issuance of the PSNGP considering the Reasonable Potential Analysis and Bounding Scenarios Report relied upon using this Provision?

V. How will the rulemaking process impact the future nutrient removal requirements and next steps?



VI. What is the timing of this process to be fully implemented, including approval from the United States Environmental Protection Agency (EPA)?

11. Cost Benefit Analysis

Ecology has not demonstrated how the PSNGP requirements will produce benefit to Puget Sound's ecosystem. The PSNGP requirements will require significant investment of ratepayer funds beyond the grant funding that has been provided. It has not been demonstrated by Ecology that this will have any impact on dissolved oxygen levels that will measurably benefit aquatic life. It is unreasonable for Ecology to proceed on this basis without first considering the cost to the ratepayers as compared to the commensurate benefit that may be achieved.

12. Need for Investigation of other TIN Sources

Ecology needs to evaluate and provide a better explanation about how TIN sources other than Washington wastewater treatment plants (WWTPs) are affecting DO in Puget Sound waters, specifically the role of ocean inputs, freshwater inputs, and discharges originating in British Columbia. This evaluation is needed to ensure potential significant investments made by Puget Sound WWTPs have a reasonable nexus to the actual level of impact to Puget Sound.

Questions:

VII. What steps has Ecology taken to further identify opportunities to reduce other TIN sources besides domestic wastewater treatment plants?

VIII. What is the status of the Puget Sound Nutrient Reduction Plan? Environmental Services has not seen an update since the PSNGP was issued.

13. Need for a Targeted Reasonable Potential Analysis

Based on the Bounding Scenarios Report, it does not appear that Ecology did an analysis to look at each WWTP discharge separately or even at a watershed basin level to confirm every wastewater treatment plant has a reasonable potential to cause or contribute to DO impairment based on near or far field impacts. In addition, 40 CFR 122.44(d)(1)(iii) requires that the Reasonable Potential Analysis consider "the variability of the pollutant or pollutant parameter in the effluent". The variability of TIN would not be available in



the available monthly, quarterly or annual nutrient data points from the WWTPs. Ecology has made no effort to evaluate this variability.

14. Ecology does not have sufficient information to conclude total inorganic nitrogen discharges from the Central Treatment Plant are causing or contributing to a violation of the applicable DO standard

Ecology does not have sufficient information to conduct a reasonable potential analysis to determine if effluent from the CTP is causing or contributing to a violation of DO criteria. The Bounding Scenarios Report and SSM Ecology, on which Ecology made a reasonable potential analysis for the Puget Sound Nutrient General Permit, is incomplete and inconclusive as to the impact of the CTP on DO conditions in Puget Sound.

The Bounding Scenarios Report, despite its updates, remains inconclusive as to how much a WWTP must reduce its TIN discharges to ensure all of Puget Sound meets DO standards, and the data it uses to determine noncompliance goes against state water quality standards. The Bounding Scenarios Report applies the DO criteria in a manner that is inconsistent with the water quality standards. WAC 173-201A-210(d)(iii). Many, if not most, of the model cells that Ecology deems to be impaired in the Bounding Scenarios Report are from modeled results in the deepest of ten layers for each cell in the SSM. This is contrary to the DO water quality standard under where the standard must be applied to the “dominant aquatic habitat.” Since the standards are based on salmon habitat, there is no basis for finding an impairment or interpreting the model results from deep layers in the model cells to make a reasonable potential determination. Additionally, Ecology Water Quality Policy (WQP) 1-11 is clear that data, or in this case model results, should not be used “if a water column meets the criterion except at depths close to the sediment interface.” WQP 1-11, Ch. 1, Page 50 (Ecology 2020) (Pub. No. 18-10-035). Ecology’s own policy states that it is not appropriate to attribute a criterion exceedance to the data since “DO levels near the sediment interface are naturally depleted in certain waters.” WQP 1-11, Ch. 1, Page 51. It is clear Ecology is not following its own standards when evaluating whether the CTP is “causing or contributing to” a violation of the DO standard. Given these faults and inconsistencies, Ecology cannot use its Bounding Scenarios Report as a reliable tool to accurately and confidently conclude discharges from the CTP violate current DO standards.

In the Fact Sheet issued for the CTP, Ecology states that it evaluated the cumulative impact of anthropogenic sources using the SSM and model simulations predict that nutrients discharged from WWTPs have a reasonable potential to contribute to existing low DO levels in the Salish Sea. Fact Sheet at 31. However, the SSM is not fit for use in regulatory



determinations due to uncertainties in the model that substantially change the assessment of compliance. Additionally, the SSM does not represent *in situ* DO conditions well enough to determine if a particular point on the map is not in compliance at the level of certainty expressed in the Bounding Scenarios Report. By using the root mean squared error (RMSE), the SSM substantially underestimates its own uncertainty. In order to be 95% confident that a given area of Puget Sound is in fact out of compliance, the model must predict a ≥ 0.9 mg/L depletion of DO; a very small fraction of the areas deemed out of compliance in the Bounding Scenarios Report meet this 0.9 mg/L threshold for conclusively determining a human effect.² Model skill assessment of the SSM presented in the Journal of Geophysical Research³ and in Ecology's Model Updates and Bounding Scenarios Report⁴ indicate overall Sound wide mean error (bias) ranging for DO from -0.7 to 1.0 mg/L and RMSE ranging from 0.6 to 1.6 mg/L. These two statistics measure the difference between observed data and the model predictions with the model performance varying in the different regions of the Sound (i.e., Bellingham, Samish and Padilla Bays, Whidbey Basin, Admiralty Inlet, Main Basin, Hood Canal, South Sound). Although these model statistics results are similar to other complex marine DO modeling studies, the accuracy of the model needs to be accounted for, especially if it is to be used in reasonable potential analysis determinations that WWTPS like CTP are in violation of the DO standard. Ecology cannot utilize a model in ways that may impact compliance assessment, and may go against both Ecology and EPA standards, to determine the CTP is in violation of the DO standard. The SSM is not sufficiently precise or accurate to determine compliance with the DO standard and therefore cannot be used to conclude the CTP's reasonable potential to violate the standard; model uncertainty when predicting current conditions is too large to say the standard is likely not being met.⁵

The Puget Sound Institute recently published a review and recommendations to improve confidence in the application of the SSM.⁶ Chief among these recommendations is for Ecology to adopt an open and transparent process for the configuration and application of the SSM. Ecology should engage in such an open process to refine the model inputs and the application of the model results before using the model for a reasonable potential analysis.

² Gordon Holtgrieve and Mark Scheuerell, *Opinion on Puget Sound Nutrient Source Reduction Project Dissolved Oxygen Modeling and Bounding Scenarios* (Ahmed et al. 2019) (Mar. 27, 2020).

³ Khangaonkar, T., Nugraha, A., Xu, W., Long, W., Bianucci, L., Ahmed, A., Mohamedali, T., & Pelletier, G., 2018. Analysis of hypoxia and sensitivity to nutrient pollution in Salish Sea. *Journal of Geophysical Research: Oceans*, 123, 4735–4761. <https://doi.org/10.1029/2017JC013650>.

⁴ Washington State Department of Ecology, 2019. Puget Sound Nutrient Source Reduction Project, Volume 1: Model Updates and Bounding Scenarios. Publication No. 19-03-001, January 2019.

⁵ Gordon Holtgrieve, Comment Letter on Proposed Puget Sound Nutrient General Permit (August 16, 2021).

⁶ S. Mazzilli, J. Baker, M. Larson, *Salish Sea Model Evaluation and Proposed Actions to Improve Confidence in Model Application*, Puget Sound Institute (June 26, 2024).



Tacoma Environmental Services is moving forward with the PSNGP requirements including monitoring, optimization strategies, and the Nutrient Reduction Evaluation (NRE). The PSNGP requirements are being completed while Ecology continues to work on modeling efforts and rulemaking. Regulating for wastewater treatment plant nutrients is a complex endeavor that requires a more transparent and scientifically defensible regulatory process that will result in meaningful and measurable change before significant investments using ratepayer funds occur. Tacoma wants to ensure we are responsibly investing public dollars where the benefits are greatest for water quality, salmon recovery, and the ecosystem of Puget Sound.

15. PSNGP Public Comment Response Concerns

The following are responses from Ecology to Public Comments on the PSNGP and further questions from Tacoma regarding those responses.

A. PSNGP Ecology Summary of Changes: Removing Bubble Permit Option for Tacoma

Question:

IX. Why did Ecology remove the bubble permit option for Tacoma in the PSNGP?

B. Best Management Practices (BMPs) for Nutrient Removal

Question:

X. Please list the resources available for Nutrient Removal BMPs or Guidance for wastewater treatment plants (that were not designed for nutrient removal) when the PSNGP was issued.

C. Ecology Response Regarding All Known and Available Reasonable Technologies (AKART)

Ecology Response: *“As discussed above, most permittees have historically only evaluated treatment necessary to meet secondary standards for conventional pollutants, and have not evaluated the reasonableness of nutrient removal treatment alternatives. The permit requires permittees to determine AKART for nitrogen*



removal during the permit term, and Ecology will use that information to ensure each facility is implementing AKART for nutrients.”

Tacoma Response:

Tacoma Environmental Services will conduct a site specific AKART analysis to determine what constitutes AKART for the Central Treatment Plant in consideration of the unique characteristics of the Central Plant as part of the PSNGP requirements for the NRE. This evaluation will include considerations of the existing facilities at the Central Plant, adaptability of the current treatment technology to nitrogen removal, the physically constrained plant site space available, affordability, Environmental Justice, and balancing other impacts (e.g. greenhouse gas emissions, risk of stranded assets, etc.). Removing nutrients from wastewater can significantly impact housing affordability and utility rates. Preliminary estimates suggest monthly wastewater utility bills could increase by \$100-\$300 for many households and would disproportionately burden low-income residents. In addition, treating wastewater to remove nitrogen is energy-intensive and uses chemicals, such as methanol as a carbon source, generates nitrous oxide plant emissions, a potent greenhouse gas, and also results in greenhouse gas emissions resulting from electrical power generation. The result is that the nutrient removal process will increase greenhouse gas emissions, which are harmful to the climate. We need to find balanced solutions addressing all of these issues.

EPA advises careful consideration of the potential water quality benefits of increasing levels of nutrient removal treatment in light of the environmental impacts and costs of that treatment at levels as low as the 3 mg/L identified in the PSNGP for NRE evaluation. As part of the NRE AKART evaluation, Tacoma will be using the August 2023 EPA Publication EPA 832-R-21-006A, “Life Cycle and Cost assessments of Nutrient Removal Technologies in Wastewater Treatment Plants” (EPA Nutrient Lifecycle Guidance) to inform balanced consideration of the extent of nutrient removal treatment in light of the associated environmental impacts. In its Executive Summary, EPA stated the following:

“Overall, two key findings emerged from this analysis. First, clear trade-offs in cost and potential environmental impact were demonstrated between treatment level configurations. This suggests that careful consideration should be given to the benefits from lower nutrient levels compared to the potential environmental and economic costs associated with treatment processes used to achieve those levels. Combining outcomes into metrics such as nutrients removed per dollar or per unit energy may help to identify



configurations that strike an efficient balance between these objectives. For example, this analysis found that electricity per unit of total N and P equivalents removed remained consistent from Level 2 through Level 4 but was 2-3 times higher for Level 5 configurations. Second, this analysis demonstrated the value of a life cycle approach to assessing costs and benefits. For example, considering trace pollutants from a life cycle perspective illuminated that the benefits of increased trace pollutant removal from effluent could be outweighed by trace pollutant emissions from materials and energy usage for the Level 5 configuration, an insight that would not have been gained by analyzing on-site WWTP processes alone. In summary, considering multiple economic, social, and environmental costs and benefits from a life cycle perspective can provide critical insights for informed decision making about wastewater treatment technologies.”

Thank you for this opportunity to comment on the draft Tacoma Central Treatment Plant Permit and Fact Sheet. We trust our comments are useful. If you have any questions or would like additional information please contact Teresa Peterson, P.E. at 253.591.5766 or tpeterson@cityoftacoma.org.

Sincerely,

Signed by:

Geoffrey M. Smyth, P.E.

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Geoffrey M. Smyth, P.E.

Interim Director, Environmental Services