

Agenda for AC Meeting #5

Thursday, August 20, 2020 from 9:30 a.m. to 3:00 p.m.

Digital Platform login <https://global.gotomeeting.com/join/341999589> and phone (571) 317-3112; 341999589

ROLE OF ADVISORY COMMITTEE:

To advise Ecology's permit writer as to which **conceptual approaches** are preferred for reducing nutrient loads from WWTPs discharging directly to Puget Sound through a general permit, and the reasons why.

- This committee will not be drafting permit language; that is the job of the permit writer.
- Ecology envisions a continuing role for this committee in providing a venue and voice for input during the active permit term.

THE MEETING'S GOALS:

1. Continue to get to know each other and make progress towards our goals
2. Share feedback on PSNGP conceptual approaches that members gathered from their constituents
3. Begin to further understand, discuss, and gather feedback about the monitoring requirements
4. Continue to discuss conceptual approaches to the planning, cap, and optimization requirements
5. Work towards areas where the AC can come to agreement
6. Continue to formulate draft recommendations for further discussion
7. Discuss future AC meeting schedule and agree on next steps

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9:20 Log onto meeting platform and troubleshoot any technical issues

9:30 Welcome and AC member introductions; review the meeting's agenda, goals (chair)

- During today's meeting we will have our last in-depth topical discussions in preparation for our last two meetings working on our package of final recommendations to Ecology for writing the PSNGP.
- The guests we invited to the July 16 meeting will return to join our planning discussion at 1:00pm.

9:35 Share feedback gathered from PSNGP AC caucus groups (facilitator)

- Each PSNGP AC caucus lead, in turn, will share an overview of the feedback gathered in discussions with constituents since our last AC meeting. Caucuses were asked to discuss:
 - What types of adaptive management should be required to support optimization and keep plants from exceeding the cap?
 - What types of short-term planning should be required to support nutrient reduction in both the short and long terms? (examples were given in the July 16 meeting agenda)
 - What types of long-term planning should be initiated to support further nutrient reduction in the long term? (examples were given in the July 16 meeting agenda)
 - What concepts/principles do you agree with? Why?
 - What concepts/principles do you disagree with? Why?
 - What planning requirements could apply to all dischargers (except those that already have nutrient reduction technologies)?
- Did caucuses have additional discussion around preferred options for the cap calculation or optimization?
- Do AC members have questions about other caucuses' reports? Caucus members please email your report out notes to our facilitator.

10:15 Begin our discussion about monitoring (permit writer)

- Review context for PSNGP monitoring requirements:
 - Monitoring, recording, and reporting helps verify treatment process function and compliance with permit conditions.
 - Current monitoring frequencies vary from facility to facility.
 - Monitoring results should be used to evaluate optimization efforts and drive adaptive management.
 - Data will be reported to Ecology on a monthly basis through the electronic discharge monitoring report within the Water Quality Permitting Portal.
 - Individual permits will be modified to remove nutrient monitoring so that the requirements are in one permit only.
- Discuss possible PSNGP monitoring requirements:
 - Should the permit standardize monitoring across all treatment plants regardless of size and type of treatment?
 - Is there value in requiring TKN monitoring or TN reporting for the effluent?
 - Should influent monitoring be required for the whole permit term? If not, what length of time is appropriate?
 - Is there a need for more/less frequent monitoring?
 - What do you agree with in the following monitoring table? What adjustments can/should be made?

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. Wastewater influent monitoring must be conducted during the first 2 years of the permit. The total ammonia, nitrate plus nitrite, and TKN samples must be taken on the same calendar day.			
Total Ammonia	mg/L as N	Monthly	24-hr Composite
Nitrate plus Nitrite Nitrogen	mg/L as N	Monthly	24-hr Composite
Total Kjeldahl Nitrogen	mg/L as N	Monthly	24-hr Composite
Total Alkalinity	mg/L as CaCO ₃	Monthly	24-hr Composite
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, monthly average	MGD	Monthly	Metered/recorded
Total Ammonia	mg/L as N	Monthly	24-hr Composite
Nitrate plus Nitrite Nitrogen	mg/L as N	Monthly	24-hr Composite
Total Alkalinity	mg/L as CaCO ₃	Monthly	Grab
Total Inorganic Nitrogen ¹	mg/L as N	Monthly	Calculated
Total Inorganic Nitrogen ²	Lbs/day	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 a 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 Calculate the annual total inorganic nitrogen, year to date using the following calculation:

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

- Questions for AC members to gather feedback from constituents on monitoring:
 - What concepts/principles do you agree with? Why?
 - What concepts/principles do you disagree with? Why?
 - What monitoring requirements should apply to all dischargers?

10:50 Break

11:00 Continue our discussion about monitoring (permit writer)

11:55 Wrap up discussion about monitoring (chair and facilitator)

- Questions for AC members to gather feedback from constituents on monitoring:
 - What concepts/principles do you agree with? Why?
 - What concepts/principles do you disagree with? Why?
 - What planning requirements could apply to all dischargers (except those that already have nutrient reduction technologies)?

12:00 Break for lunch

1:00 Continue our discussion of planning (permit writer and chair)

- What were some key themes from this morning's caucus reports about planning?
- Some key themes from the August 11 discussion with invited planners included:
 - Because targets are not yet known, some "bookending" of future requirements will be helpful to planners making 2024 Comprehensive Plan updates
 - It could take about two years to conduct a study that provides sufficiently reliable cost estimates; care should be taken not to rush this effort
 - Some type of analysis of impacts to affordable housing would also be helpful
 - Outreach to the building community is needed
- Specific future effluent limits will remain unknown until additional Salish Sea Model runs are completed. Planning as part of this permit should be structured to provide a high level understanding of the range of facility upgrade alternatives and their associated cost estimates.
 - Do you support an evaluation of different effluent treatment goals in this permit's planning requirement? If so, what effluent tiers should be evaluated? If not, how do you propose to assess viable treatment alternatives during this permit term?

- What, if any, planning is necessary for facilities that already utilize a nutrient removal process?
- Do we have an emerging consensus around some concepts and principles for short-term planning? for long-term planning?

1:30 Continue our discussion of the cap (permit writer and chair)

- At our last meeting a consensus was emerging around the approach of a cap exceedance triggering actions that would result in achieving nutrient reductions faster, rather than a violation that results in penalties.
- How can the cap and optimization requirements both accommodate plants' contracted capacity and achieve nutrient reductions in the first PSNGP?
 - Should the cap calculation accommodate existing rates of growth by including some sort of growth factor? If so, how should an appropriate growth factor be determined?
- Outstanding questions on the cap calculation approach:
 - Does the AC agree on an averaging period: seasonal (May-Oct, or July-Sept) or annual?
 - Annual period yields the largest cap, may increase operational flexibility
 - A seasonal period decreases the amount of data available for analysis
 - The following is a comparison of loads from outputs using the 99% UCL from the bootstrapping calculation using a combined facility's data set. Note that there's been an improvement in the resampling method.
 - WWTP** resamples the population based on the number of compliance samples in the averaging period (*i.e.*, annual n=12; April – October n=7; July- Sept n=3). WWTP_{all} results resample the entire population. Both methods are shown for comparison. All results are rounded to 3 significant figures. Values in the following tables would be multiplied by days in the compliance period to get the total load figures.

2009-2019

	Annual	April - October	July - Sept
WWTP**	20,400 lbs/day	20,200 lbs/day	21,500 lbs/day
WWTP_{all}	18,900 lbs/day	18,500 lbs/day	18,600 lbs/day

2015-2019

	Annual	April - October	July - Sept
WWTP**	19,900 lbs/day	20,300 lbs/day	22,400 lbs/day
WWTP_{all}	18,800 lbs/day	18,900 lbs/day	19,600 lbs/day

Note that this [Shiny App](#) developed by an Ecology employee is another tool that follows the same approach as the Excel calculator.

- Does the AC agree on a definition of the best available the AC agree on a definition of the best available data for the calculation at each plant?
 - Minimum of 3 years preferred
- Does the AC agree that the cap should focus on a plant's overall pattern, not a single maximum day discharge?
- Does the AC agree on a preferred calculation approach or have a suggestion for a different calculation approach?
- What are AC members' evolving thoughts about the cap forming the action level as part of a narrative limit?
- What do AC members think about how should Ecology assess/determine compliance with the cap?
- Also at our last meeting, Ecology's permit writer was asked to come up with a layman's definition/explanation of the bootstrapping approach:
 - Bootstrapping is a recognized statistical technique that is used for a variety of purposes but especially when there is a need to increase the size of the available data set. It is especially useful when you do not have a large data set and cannot assume a normal distribution. In this instance, the bootstrapping method calculates the average discharge load for the given data and resamples that data set with replacement to develop a probability distribution of averages by ranking the results. The method

Ecology has proposed selects the 99th percentile of those ranked averages. In other words, we are saying that if the averaged load is at or below this value, we're 99% sure the facility's nutrient load is not increasing.

- Ecology's permit writer recommends the Birch Bay Permit Fact Sheet, p. 31, for another explanation.
- For more on resampling with replacement, see: [Statistic Solutions](#); and <https://statisticsbyjim.com/hypothesis-testing/bootstrapping/>

1:55 Continue our discussion of optimization (permit writer and chair)

- At our last meeting a consensus was emerging around this definition of optimization and adaptive management:
 - The purpose of optimization and adaptive management is to evaluate existing treatment processes for opportunities to reduce nutrients to the greatest possible extent and as soon as possible without requiring capital investments.
- We generally agreed that:
 - Nutrient removal is one of many factors for which plants may optimize operations
 - The PSNGP needs to identify what all plants are currently capable of and fully incentivize optimization, but not penalize plants who have already gone above and beyond to reduce their nutrient loadings
 - Ecology should provide guidance for plants to develop the optimization plan
 - *For information/example, see the phosphorus management plan sent with the meeting agenda*
 - Ecology should take a collective regional approach and consider having a single entity evaluate all of the plants, learn what has worked best for plants elsewhere, and identify appropriate strategies if optimization for nutrients is not feasible at a plant
 - Plants should not invest in short term solutions that will not be useful in the long term
 - Optimization (if required) should be implemented through an adaptive management approach to achieve improvements and encourage continuous progress
 - Early progress toward reducing nutrients should not result in future limitations on plant capacity
 - Building moratoriums should not be required
- We disagreed about:
 - Whether optimization should be a primary focus of the first PSNGP as a means for plants to comply with a cap in the short term
 - Plants would report what was tried, share what was learned, and list what is planned
 - What is "minimal cost" of optimization actions – operational/staff costs need to be considered in addition to the equipment budget
 - Plants at or near capacity and with less flexibility might focus on doing more planning to get upgrades online sooner rather than optimizing their current operations
- Many additional ideas were raised and captured in the 7/30 "evolving recommendations" document. Are there any in particular that AC members would like to discuss today?
- Ecology's permit writer wants to know AC members' thoughts about:
 - If the permit required an annual optimization action plan, what successive corrective actions would be appropriate if the action level was exceeded?
 - What are some approaches to incentivize utilities to pursue optimization efforts?
 - What are alternative actions for facilities that demonstrate that they do not have the ability to experiment or cannot optimize after performing an initial performance and capacity assessment?

2:20 Break

2:30 Open Public Comment (facilitator)

- People will be called upon in the order in which we received your request to comment as indicated upon registration for today's virtual meeting platform.
- Please limit your comment/question to about 30 seconds

2:45 Future AC meetings and expected discussion topics (chair and facilitator)

- In addition to the monitoring questions, caucuses are asked to discuss the next version of the “evolving recommendations” document so that we all come to the September meeting prepared to make decisions about the committee’s package of recommendations to Ecology.
- Meetings are scheduled on September 30, and October 21. Please mark your calendars!
 - These meetings will be held from 9:30am-3:00pm with a one-hour lunch break.
- Here are the proposed discussion topics for future meetings:
 - Wednesday, September 30: continue discussion of all topics, determine where our agreements lie, and begin to finalize the committee’s draft recommendations.
 - Wednesday, October 21: review and adopt final recommendations. This will be our last meeting prior to Ecology issuing draft permit language for an informal public review. We will discuss plans for future meetings.
- *Process reminder: We have discussed each topic during at least two meetings, so that we can discuss evolving recommendations with our colleagues before finalizing our draft recommendations. Please take some time to read the updated “evolving recommendations” document after each meeting. Look for instructions from the facilitator to participate in shared editing/commenting of the next version.*

2:50 Recap of today’s meeting (chair and facilitator)

- Summarize emerging agreements, decisions, action items, and next steps from today’s meeting
- Caucus leads are reminded to send the facilitator their written reports from discussions with constituents

3:00 Adjourn