



Post Point Resource Recovery Plant

Comments on the Puget Sound Nutrient General Permit Preliminary Draft

March 10, 2021

The City of Bellingham supports Ecology's initiative to reduce nitrogen in Puget Sound. Our community has a strong environmental ethic that has resulted in significant infrastructure investments to improve water quality, and we anticipate continued support as part of the upcoming nutrient reduction program.

Our ratepayers approved a \$50 million dollar upgrade to the Post Point secondary treatment system in 2014. In 2017 we began working on a major resource recovery project to replace our aging sewage sludge incinerators for a more sustainable solids management process solution. This project has the full support of our Council and will significantly reduce the Sewer Utility's CO₂ emissions (60-80 percent).

The City is actively addressing salmon recovery (e.g., Diversion Dam removal, Padden Creek daylighting, Squalicum Creek daylighting) and supports initiatives to improve water quality in Bellingham Bay. To advance our shared interest in reducing nitrogen discharged to Bellingham Bay, we have begun assessing potential nitrogen removal projects at Post Point, including assessing the likely rate impacts.

This nitrogen review identified substantial Post Point upgrades that would be required to achieve nitrogen removal. The scale of the required nitrogen removal upgrades along with the resource recovery project would be unprecedented for the City and could ultimately result in tripling the sewer rates. These potential utility rate increases could create hardship and affect affordability for our community.

Therefore, we have a strong interest in making sure the general permit requirements are appropriate for our community so that the outcome is the highest water quality we can attain with rates that support economic sustainability. We offer the following comments to this end in partnering with you to implement appropriate nitrogen reduction efforts to preserve and enhance water quality in Bellingham Bay and the Puget Sound.

Action levels should be raised, or postponed until the next permit cycle

Despite the goals of this initial general permit to monitor and optimize (setting the stage for future permit nutrient cycles to incrementally lower effluent nitrogen concentrations), it appears the proposed tiered approach may prematurely trigger major capital investments. As such, we propose either removing the action levels (ALs) entirely from the general permit, or increasing them to provide the necessary flexibility for the following reasons:



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- The monitoring, optimization, reporting and planning requirements are substantial, enforceable, and sufficient to achieve the primary goals of the general permit at this stage, which is to prevent increases in TIN loads beyond current levels.
- Ecology specifically states in the permit that it “is not intending to stop growth with the development and issuance of this permit”. Regardless of this intent, the permit essentially treats growth punitively since even modest growth could easily push facilities above AL0 or AL1. At this regulatory stage (early phase of the general permit), growth-driven exceedances should not trigger additional requirements if the facility remains within its Ecology-approved design capacity and has optimized its treatment process.
- There are equity issues with the ALs:
 - Lower ALs for facilities that have already optimized or otherwise gotten better treatment. (Although there is some advantage given to facilities already achieving <10 mg/L.)
 - Lower ALs for facilities with better process control and less variability in the effluent.
 - A large inequity in how much of the unused, Ecology-approved design capacity is available to WWTPs.
- Uncertainty with the Salish Sea Model (SSM) predictions of dissolved oxygen (DO) excursions and the level of treatment plant nitrogen reduction that will be needed to meet DO criteria.
- Limited effluent data with which to draw justified conclusions.
- To date, officially released results of the SSM as part of Ecology Publication 19-03-001 (Puget Sound Nutrient Source Reduction Project, Volume 1: Model Updates and Bounding Scenarios, January 2019) has only looked at improvements using a seasonal (April-October) nitrogen removal for the wastewater facilities. However, the nitrogen loads provided in the PSNGP are on a year-round basis. Given the limited data and model results available to justify a year-round limit, a seasonal load cap would be more appropriate.

Other Comments

- By definition, optimization is getting the best treatment you can with the existing plant. Because all the plants are required to optimize, it is unclear that other additional (Tier 2 or Tier 3) actions will be practical at any given plant without major capital investments, which are premature at this stage of the regulation and waste load allocation (WLA) development.
- The requirement for Tier 2 or Tier 3 actions should include off-ramps for exceedances related to uncontrollable circumstances, such as wet weather events.
- Ecology Question on Page 9 of 35 of draft GP: We agree with the use of the 99th percentile as identified for each facility over the course of the permit cycle for calculating the baseline action levels. In Bellingham’s case, the 95% confidence interval would be lower and fall below our current nitrogen loads.

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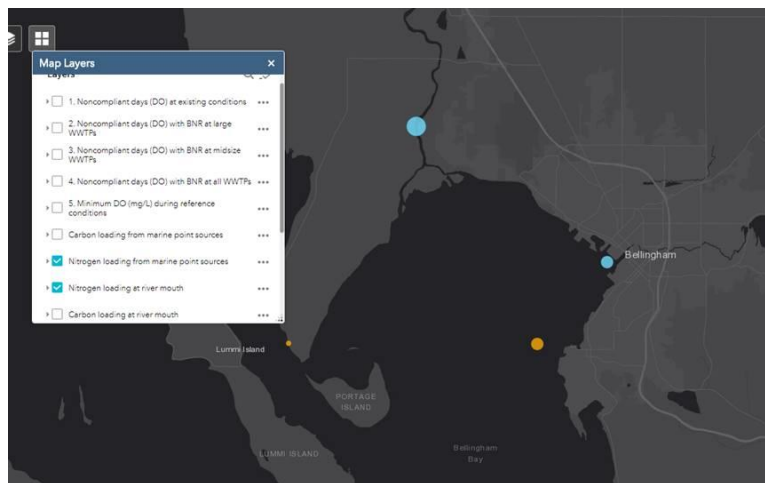
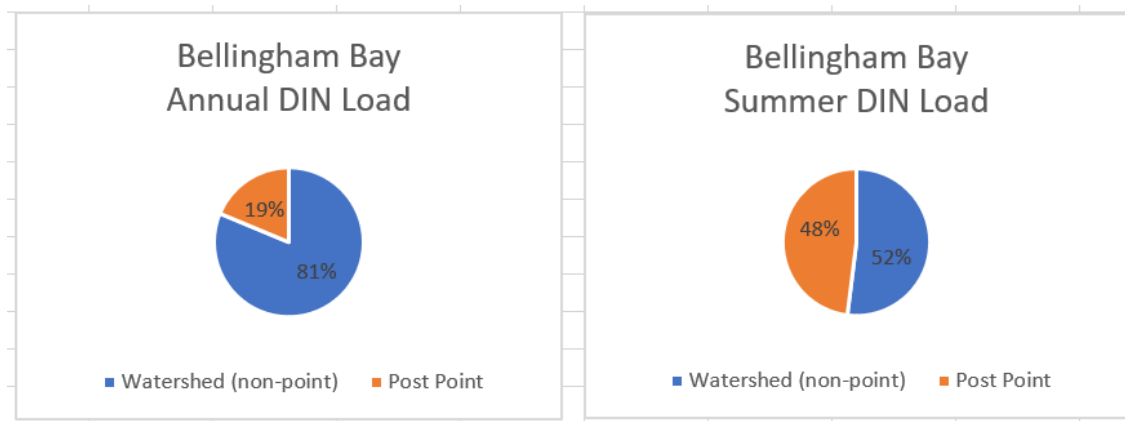
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Watershed nutrient-reduction strategies should receive more attention

Ecology’s Bounce Scenarios report (BSR) indicates that even if WWTPs were “turned off”, anthropogenic watershed sources alone produce DO depletions in Bellingham Bay. Based on Ecology’s data (<https://waecy.maps.arcgis.com/apps/webappviewer/index.html>), most of the nitrogen loading into Bellingham Bay is from non-point sources (NPS) as indicated in the graphics below.



Therefore, we propose that Ecology allows for evaluation of watershed solutions as part of the general permit to address these other obvious sources of nitrogen into Bellingham Bay. These evaluations should include a non-point source offset feasibility study to review the NPSs in the watershed and what treatment measures could be implemented. In addition, we request that Ecology consider the implementation of a NPS nutrient trading program in parallel to investing in upgrades at Post Point. These NPS actions could be part of Tier 3 and ultimately help achieve nutrient reduction more quickly and at the highest cost/benefit ratio than solely focusing on point source dischargers.

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Sampling requirements should be less stringent for medium-sized plants

The minimum sampling and analysis schedule detailed in section IV the draft PSNGP is overly ambitious for a treatment plant in a community the size of Bellingham. While we appreciate the tiered monitoring approach as it recognizes the economies/personnel of scale at the state's treatment plants, we believe the monitoring should also be consistent with the wastewater treatment plant impact categories as set forth and modeled in the Salish Sea Model (SSM) as part of Ecology Publication 19-03-001 (Puget Sound Nutrient Source Reduction Project, Volume 1: Model Updates and Bounding Scenarios, January 2019). The draft PSNGP currently proposes to have Bellingham (categorized in the Ecology publication as a mid-sized treatment plant) with our treatment plant's average flow (2018-2020) of <12 mgd, a maximum month flow of <20 mgd, and a population of 91,000, performing the same level of monitoring as large plants (Ecology, 2019) in Seattle (3.4 million persons).

Clarify maximum month daily flow

In addition, should the sample frequency continue to be based on maximum month daily flow [question: is the intent (1) the maximum month *daily* flow as cited at Table 5 or (2) the maximum month *design* flow as cited in ECY's Potential Permittee List for a Puget Sound Nutrients General Permit?], the intended value will need to be clarified.

- If as written in the draft PSNGP: Section III details the nutrient action levels that have been calculated for each facility based on actual representative flows and so the rationale for then using sampling tiers based on maximum flows is needed.
- If sampling and analysis tier categories are based on design flows: this defies the stated goal of collecting empirical data on nutrient loading. Design flow values apply an artificially high flow value to present loading contributions and, in a way, penalize plants that have worked to build future capacity into their current treatment systems (not utilized). In Bellingham's case, our maximum month design flow is 14.5 mgd above our actual maximum month – which will not be realized in many of our lifetimes. This capacity is advantageous to receiving water quality under extreme-weather events and should be lauded and not made a basis for increased monitoring obligations.

Sampling tiers should be based on average annual plant flows which corresponds to the actual loading to the Puget Sound. If the desire is to make predictions about future loading to Puget Sound, like the approach taken in establishing the nutrient action levels, actual average flow data best represents possible future observations in the absence of changing conditions, and any predictions about future loadings are best made using the current hydraulic distributions. Furthermore, with 5-year permit cycles, there is a mechanism for adjusting monitoring obligations based on increases in the actual flow and loading from Washington's treatment plants through time.



Make Sampling Frequency Consistent with Ecology's Bounding Report

It would be consistent with the SSM if the monitoring and analysis were revised to be based on the issued results (Ecology, 2019) which classified Bellingham as a mid-sized plant (see table below):

Tier / Size	Average Annual Flow (mgd)	CBOD (influent & effluent)	Total Ammonia (influent & effluent)	NO3+NO2 (influent & effluent)	TKN (influent & effluent)	TOC (effluent)
I Large	≥ 25 mgd	4/week	4/week	4/week	4/week	1/week
II Mid*	3- 25 mgd	1/week	1/week	1/week	1/week	1/week
III Small	< 3 mgd	2/month	2/month	2/month	2/month	1/month

* Bellingham's Post Point plant as categorized in the SSM (Ecology, 2019)

Requiring a minimum of 2 years sampling at the interval detailed in Table 5 of the draft PSNGP (plus sampling to be determined for the following years) will create a hardship for the bulk of treatment plants that do not have the ratepayer base of more highly urbanized communities. Currently Bellingham staff are taking unpaid furlough days in 2021 and there is a freeze on any new positions. Bellingham will need to sub out the required analysis and the nearest laboratory on the state contract for such a large sampling effort is located over 100 miles away. Staff time and expenses will be incurred from the proposed sampling schedule not the least of which is from transporting samples offsite to a ground courier. Also realize there will be a delay in the receipt of sample results which needs to be factored into submittal deadlines in the general permit. Electronic permit reporting would be beneficial here.

A conservative estimate of the costs of sampling influent and effluent as proposed currently in Table 5 of the PSNGP are broken down below. The table below represents 2020 lab prices in the state lab contract that Bellingham can utilize. Note the cost presented do not include cost associated with employee sample processing, data processing, data management, database reconfigurations, sampling issues resulting in resample, transport issues, quality assurance samples, future increases in lab analysis costs, tax, or any samples in addition to what is detailed as those minimum requirements in Table 5.

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Analyte	Cost Range per Sample	Draft PNSP Sampling for Large Plant (yearly cost for 4/week)	Proposed Mid-Sized Plant Categorization for Post Point** (yearly cost for 1/week)
CBOD	\$40-\$55	\$16-23k	\$4-6k
NH3	\$22-\$25	\$9-11k	\$2-3k
NO2/NO3	\$25-\$35	\$10-15k	\$2-4k
TKN	\$35-\$69	\$14-29k	\$3-7k
TOC	\$45-\$55	\$2-3k	\$2-3k
Transport*	\$65	\$3-4k	\$3-4k
DMR-QA	\$100	\$100	\$100
Total		\$55-80k	\$19-25k

*includes conservative estimate of city employee driving samples to transportation courier and cost to ship via next day ground

** Bellingham’s Post Point plant as categorized in the SSM (Ecology, 2019)

Reduce Influent Sampling Frequency

Because the PSNGP action levels apply only to the treated effluent at 60 public wastewater plants, mandating sampling on the untreated influent is unnecessary. All treatment plants will undoubtedly conduct additional sampling either at the influent of the plant and/or at the influent to unit processes at targeted intervals to assess TIN-removal effectiveness. The state’s objective for mandating such a high interval of sampling at the untreated influent needs to be detailed or this requirement reduced or eliminated altogether. Treatment plants should be given the autonomy to assess when best to target efforts at non-effluent monitoring for those times that removal or optimization data are pertinent to nitrogen-reduction objectives.

Reduce TKN Sampling Frequency

With respect to effluent TKN sampling requirements, the TKN test represents a large fraction of the cost for nitrogen monitoring and eliminating the effluent monitoring for TKN would save significant costs. Furthermore, TKN is a measure of combined ammonia and organic nitrogen in the effluent, with the large majority being in the ammonia form. As the permit is written to address TIN, which Ecology has stated is used as a surrogate for dissolved inorganic nitrogen (DIN) of concern in Puget Sound, the ammonia and nitrate/nitrite species sampling would be sufficient to meet this requirement. Therefore, we would recommend reducing the sampling frequency for effluent TKN to 1x/month from the current limit. This would provide Ecology with information on the effluent organic nitrogen load without adding

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to the sampling and monitoring burden of treatment facilities for a parameter that is not needed for the current PSNGP limits.

If action levels are kept in the permit, Post Point action levels should be recalculated

We have three comments related to the ALO calculation for Post Point.

1. **We think the current timeframe used for the load cap analysis should be extended to include February and March of 2020.** The current ALO was established using data collected between 2017 through January 2020, conservatively excluding data after January 2020 to avoid potential pandemic related effluent impacts. However, we believe that the Post Point nitrogen loading data should extend to include the February 4th and March 2nd 2020 samples considering these samples were taken prior to local pandemic related events which unfolded in the weeks thereafter:
 - a. The World Health Organization declared pandemic status on March 11, 2020.
 - b. The Washington State Stay-At-Home order was put into place on March 23, 2020.
 - c. Bellingham followed with a public urge for stay-at-home on March 26th, 2020.
2. **We believe all effluent TIN data should be represented with equal frequency.** Currently, the ALO for Post Point has been established in such a way such that January loadings have less weight (limiting frequency to 1/12) based on the observation that two of the three highest effluent nitrogen loads occurred during the month of January (1/6/2020 and 1/7/2019). However, we believe that this observation is coincidental from the limited once per month sampling and not due to inherent increased likelihood for peak loadings to occur during the month of January.
 - a. With the proposed extended ALO data set (including February and March 2020), the four highest daily effluent TIN loads become:
 - i. **1/6/2020 (3,855 ppd)**
 - ii. 3/2/2020 (3,245 ppd)
 - iii. **1/7/2019 (3,143 ppd)**
 - iv. 10/7/2019 (2,818 ppd)
 - b. However, the four lowest daily effluent TIN loads also include two January periods
 - i. 12/5/2017 (1,541 ppd)
 - ii. 2/6/2017 (1,649 ppd)
 - iii. **1/2/2017 (1,708 ppd)**
 - iv. **1/1/2018 (1,716 ppd)**
 - c. Insufficient data is available to correlate peak effluent TIN loads with effluent BOD loads since effluent BOD loads were only collected on the same day as two of the top five effluent TIN load days. However, it should be noted that the highest 2nd percentile effluent BOD load days occurred in the months of January, February, March, May, September, October and December.



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3. **We would like the City to be granted a one-year review period for the ALO calculation.** With the increased nitrogen sampling occurring as part of the General Permit, the City will have a better understanding of their true current loads than can be captured from the current once per month sampling. We would like the ALO calculation to be revisited after one year to determine whether a higher or lower level is warranted.

Thank you for the opportunity to comment on the Puget Sound Nutrient General Permit. Moving forward we support continuing collaboration to reduce nitrogen loading and improve water quality in our communities.

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