Public Works Department
City of Bellingham

October 7, 2024

Agata McIntyre, P.E.
Engineering Manager
Northwest Clean Air Agency
1600 South Second Street
Mount Vernon, WA 98273

RE: Request for Regulatory Order Establishing Limits on Potential to Emit Carbon Monoxide from Post Point Wastewater Treatment Plant (NWCAA ID 1318)

Dear Ms. McIntyre,

The Public Works Department of the City of Bellingham ("the City") operates the Post Point Wastewater Treatment Plant ("Post Point") located at 2221 Pacific Street in Bellingham. Following up our recent discussions, the City is submitting this request for a regulatory order that will limit the facility's CO potential to emit ("PTE") to 95 tons per year. This request is submitted pursuant to NWCAA Regulation 121.7 and WAC 173-400-091 and all requirements of those regulations are addressed herein as detailed below.

Requested Limit

Total emissions of CO from the Post Point Wastewater Treatment Plant shall not exceed 95 tons per year based on a rolling 12-month total.

Monitoring, Recordkeeping and Reporting

The City proposes monitoring, recordkeeping and reporting requirements generally comprising five primary parts.

Part 1—Existing Small Units. As shown in Attachment 1, Post Point includes twelve small combustion devices—ten small natural gas-fired combustion devices[1] and two diesel emergency power gensets[2]—in addition to the sewage sludge incinerators ("SSIs").

For simplicity and to avoid unnecessary recordkeeping burden associated with tracking of actual operating hours, in the monthly calculations required in Part 4 below, the City will assume that the small natural gas-fired devices emit at their potential to emit (*i.e.*, that they operate continuously at their maximum rated capacity for 8760 hours per year). For each device the order will calculate CO emissions as the product of the rated capacity of the device in MMBtu/hour, an operating rate of 8760 hours per year, and the emission factor for small natural gas-fired boilers from AP-42 Table 1.4-2.

[1] Seven space heaters ranging in size from 0.22 MMBtu/hr to 1.4 MMBtu/hr, two 1.59 MMBtu/hr boilers, and one 0.2 MMBtu/hr water heater.

[2] Each genset uses a Caterpillar Model 3512 Dita diesel engine with a fuel consumption of 80 gal/hr at maximum load. The gensets are used solely to provide backup power in case of a loss of electrical power.

Post Point also includes two diesel generator sets used solely to provide back-up power in the event of a power outage. For these gen sets, the City proposes to calculate CO emissions assuming operation for 500 operating hours per year[3] at the rated capacity of the gen set, multiplied by the CO emission factor for small diesel generators from AP-42 Table 3.4-1.

As documented in Attachment 1, the aggregate CO PTE of the 12 small combustion devices at Post Point is 7.4 tons per year.

Part 2—Sewage Sludge Incinerators. By no later than June 1, 2025, a continuous emissions rate monitoring system ("CERMS") satisfying the requirements of Section III of Appendix A of the NWCAA Regulations, Performance Specifications 4B and 6 in Appendix B to 40 CFR Part 60, and applicable quality assurance requirements in Appendix F to 40 CFR Part 60 shall be installed, calibrated, maintained, and operated on the exhaust stack of each SSI.

Continuous monitoring data for CO concentration and exhaust gas flow rate will be used to calculate monthly total CO mass emissions from each SSI.

Part 3—Interim Requirements for Sewage Sludge Incinerators. During our August 28 call, you advised that the Agency requests an "interim" monitoring plan to cover the interval between issuance of the regulatory order and the date of certification of the CERMS. You also advised that the Agency plans to publish a proposed synthetic minor order for public comment. In this scenario it appears unlikely that the final order will issue prior to January 1, 2025. Given that the City has already purchased the CERMS system and is working with the vendor to expedite installation, any "interim" monitoring plan for the SSIs is likely to be superseded within five months after issuance of the order. In this setting, the City urges the Agency to reconsider the need for an interim monitoring plan in the order.[4] If the Agency determines that an interim monitoring plan remains a necessary element of the order, the City proposes the following "interim" approach to quantify CO emissions from the SSIs prior to certification of the CERMS:

Beginning no later than 60 days after issuance of this order and continuing for each SSI until the CERMS is certified, monthly CO emissions will be calculated as follows. For the purposes of these calculations, "operation" means incinerating sewage sludge and is distinct from "standby."

(i) For each hour of operation, record the cake (dry solids) feed rate in pounds per hour.
(ii) For each hour of operation, calculate and record the estimated maximum exhaust gas volumetric flow rate using an assumed normalized flow rate of 600 ft^3, dry standard basis, per lb dry solids.
(iii) For each hour of operation, determine the average CO concentration in the furnace combustion gas stream, expressed in parts per million by volume, dry basis ("ppmvd"), using a plant CO analyzer installed at a location upstream of the manifold where the combustion gas stream and the shaft cooling air are combined. The plant CO analyzers are not CEMS. The plant CO analyzers shall be maintained, calibrated, and operated in accordance with manufacturer's recommendations.

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[3] EPA guidance recommends that PTE for emergency generators be calculated based on an assumed 500 operating hours per year. See, https://www.epa.gov/sites/default/files/2015-08/documents/emgen.pdf.

[4] Although not useful for enforceability of the synthetic minor emission cap, the City reiterates here its prior commitment to continue monitoring CO emissions voluntarily during the interim period. Calculations performed using the procedure described here show average total CO emissions of 83.6 lbs per day from the two sewage sludge incinerators from June 17, 2024 through Sept. 24, 2024, or a projected CO annual emission rate of 15 tons per year.

(iv) For each hour of operation, calculate and record the average CO concentration in the exhaust gas in pounds per ft^3, dry standard basis, by multiplying the CO concentration as measured by the plant CO analyzer:
   a. by 0.75 in order to account for the shaft cooling air, and
   b. by a conversion factor of 7.26×10^{-8}.

(v) For each hour of operation, calculate and record the CO emissions as the product of the exhaust gas volumetric flow rate calculated in paragraph (ii) and the CO concentration in the exhaust gas calculated in paragraph (iv).

(vi) For each hour in a standby condition, calculate CO emissions as the product of natural gas usage and the emission factor small natural gas-fired boilers from AP-42 Table 1.4-1.

(vii) For each calendar month, calculate the total CO emissions as the sum of the CO emissions for each operating hour for the SSI.

The prescribed factors in paragraphs (ii) and (iv)—the normalized exhaust gas flow rate and the ratio of CO concentrations in the exhaust gas and in the furnace combustion gas, respectively—are highly conservative and will overstate actual emissions. As shown in Attachment 2 to this letter, the normalized exhaust gas flow rate is higher than the measured ratio during any of the performance tests performed at the Post Point SSIs from 2018 through 2024. The ratio of CO concentrations in the exhaust gas and in the furnace combustion gas is higher than the calculated average ratio (0.69) during the engineering test performed at Post Point SSI #2 on June 19-20, 2024.

Part 4—Monthly and Annual Facility-Wide CO Emission Calculations. Within 30 calendar days after the end of each calendar month, emissions of CO for the calendar month for each device or unit and for the facility-wide total will be calculated and recorded and the updated rolling 12-month facility-wide total will be calculated and recorded. The City will report the facility's rolling 12-month total CO emissions within 30 days after the end of each calendar year and will report any exceedance of the CO limit established by this order within 30 days after the end of any calendar month in which the rolling 12-month total CO emission rate exceeds 95 tons.

Part 5—New Small Units. The City proposes that the regulatory order include a condition requiring the City to include, in the CO emissions calculations required in Part 4, any newly installed equipment that emits CO. The City further proposes that any such equipment will be included at its PTE, using the same calculation approach described for small combustion devices in Part 1 above, and that reopening the regulatory order is not required.[5] In the annual reports required in Part 4 above, the City will include notification of any small combustion devices installed or removed during the last calendar year or, as applicable, attest that there have been no changes to the inventory of such equipment.

WAC 173-400-091 Requirements

Section 121 of the NWCAA regulations requires that the Agency will issue a synthetic minor order "consistent with the requirements of WAC 173-400-091 . . ." That section provides that the limit approved by the order must be lower than the source's otherwise allowable annual emissions of the contaminant regulated by the order. The proposed order will meet that requirement because Post Point is not currently subject to an annual CO mass emission limit.

[5] Reopening of the regulatory order would be required only if the City were to propose to increase the rolling 12-month total CO emission cap or to include emissions from a non-SSI unit at a rate less than the PTE for that unit. This condition is not intended to exempt any project from new source review; it waives only the requirement to reopen this order when the City adds a new small combustion device to the facility.

WAC 173-400-091(3) provides that any order must include monitoring, recordkeeping and reporting provisions sufficient to ensure that the source complies with any condition established in the order. Along the same lines, your email of July 3, 2024 cautioned that Region 10 has urged permitting authorities to ensure that their regulatory orders are "practically enforceable." Three elements of the City's proposal fully address these concerns. First, Post Point includes only the SSIs and the small emission units listed in Attachment 1. Second, the City proposes to monitor CO emissions from the SSIs using the CERMS system, which will be certified and the data from which will be quality-assured in accordance with EPA performance specifications. Third, the City is proposing to incorporate emissions from the 10 heaters and boilers at their unrestricted potential to emit, and to follow EPA guidance in calculating emissions from the emergency diesel gen sets at their unrestricted potential to emit for up to 500 hours per year per gen set. This allowance greatly exceeds the actual utilization rate of the gen sets.

These provisions taken together ensure that the 95 ton per year CO limit in the order will be practically enforceable.

Finally, WAC 173-400-091(4) provides that a voluntary emission limit order must comply with applicable public notice and comment procedures. The Agency intends to publish the proposed order for comment, and the City supports that approach.

State Environmental Protection Act

Construing this letter as an application for a synthetic minor regulatory order, the City is submitting with this letter a SEPA checklist for the proposed order. As a practical matter, the proposed order will neither authorize nor result in any increase in emissions of any contaminant from Post Point or any change in operations at Post Point. As a result, the checklist accurately supports the Determination of Non-Significance for this project.

Fee Payment

As required by NWCAA Regulation 324.7, this request is accompanied by a check for $1,456 to cover the required filing fee. It is our understanding that NWCAA will invoice the City of Bellingham for the regulatory order fee and other applicable fees.

If you have any questions or comments about this request, please do not hesitate to contact me at (360) 778-7892.

Sincerely,

Steven R. Bradshaw
Superintendent of Plants

cc: Colin Campbell, RTP Environmental
Matt Cohen, Stoel Rives
Stephen Nelson, Coal Creek Environmental

Attachment 1. CO PTE of Existing Small Units

Natural Gas-Fired Equipment Other than Sewage Sludge Incinerators

Activity	Item	No.	Rating	Units	Optg Hours	Total Annual Power Amount	Units	CO Emission Factor		CO PTE, tpy
Boiler/water heater	Boiler Burnham V1107H	2	1.5881	MMBtu/hr	8,760	27,824	MMBtu	0.0816	lb/MMBtu	1.13
	Rheem G100-200	1	0.2	MMBtu/hr	8,760	1,752	MMBtu	0.0816	lb/MMBtu	0.07
	King	2	1.4	MMBtu/hr	8,760	24,528	MMBtu	0.0816	lb/MMBtu	1.00
HVAC	King	3	0.225	MMBtu/hr	8,760	5,913	MMBtu	0.0816	lb/MMBtu	0.24
	King	1	0.52	MMBtu/hr	8,760	4,555	MMBtu	0.0816	lb/MMBtu	0.19
	Dayton 4LX64	1	0.249	MMBtu/hr	8,760	2,181	MMBtu	0.0816	lb/MMBtu	0.09
Diesel Gensets	CAT 3512 Dita (uncertified)	2	80	gal/hr diesel	500	11,072	MMBtu	0.85	lb/MMBtu	4.71
									totals:	***7.43***

Attachment 2. Supporting Data.

Ratio of exhaust gas flow rate to solids feed rate				
SSI #1			SSI #2	
Date	dscf/lb		Date	dscf/lb
2/26/2018	376		2/21/2018	331
2/27/2018	341		2/22/2018	345
10/9/2018	291		10/1/2018	295
10/15/2018	297		10/3/2018	288
9/24/2019	299		9/30/2019	362
9/25/2019	304		10/1/2019	323
9/26/2019	396		10/2/2019	387
9/17/2020	303		9/22/2020	356
9/18/2020	390		9/24/2020	534
10/4/2021	479		9/27/2021	572
10/4/2022	467		10/11/2022	536
9/19/2023	391		9/26/2023	434
6/20/2024	268		6/19/2024	404

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