Notice of Construction (NOC) Worksheet

PUGET SOUND
Clean Air Agency

Source: Bonney-Watson Washington Memorial Park	**NOC Number:** 12349
Installation Address: 16445 International Blvd | SeaTac, WA 98188	**Registration Number:** 29111
Contact Name: Laura Frampton	**Contact Email:** LFrampton@bonney-watson.com
Applied Date: 05/03/2023	**Contact Phone:** (206) 242-1787
Engineer: Carl Slimp	**Inspector:** James Moore

A. DESCRIPTION

For the Order of Approval:
To install and operate an American Crematory Equipment Co, Model A-250- Instant Access after the removal of one Matthews Power Pak II cremator.

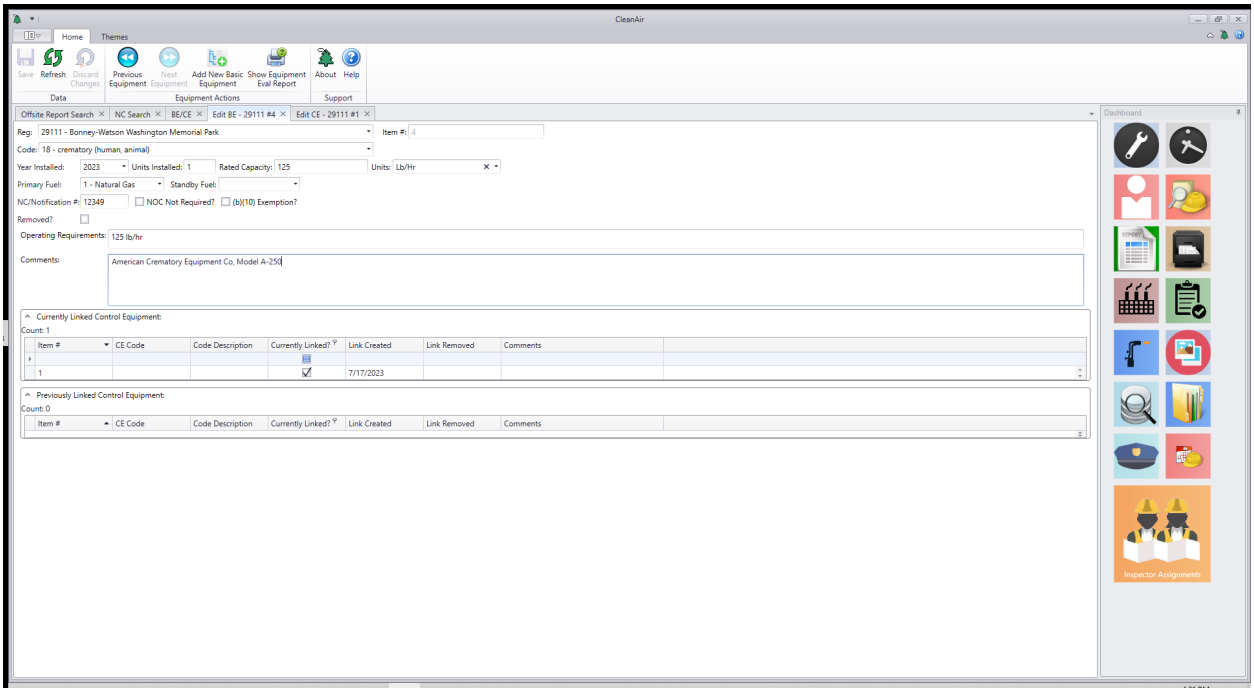
Additional Information (if needed):
Facility

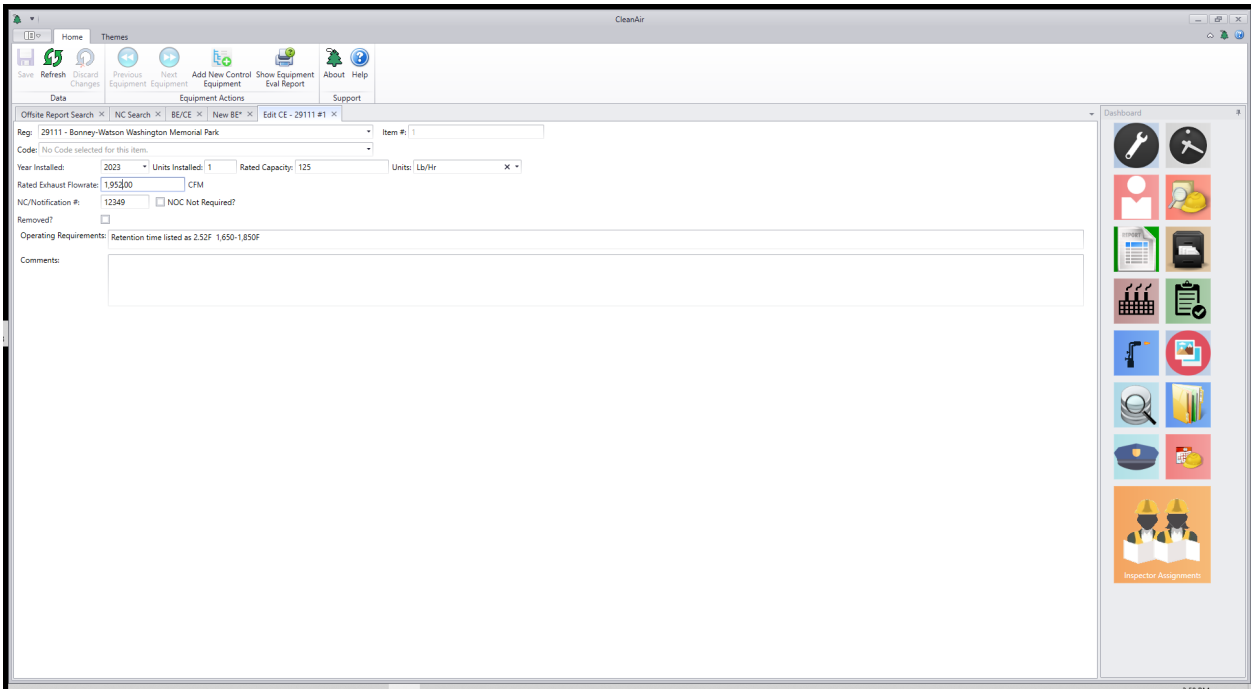
This facility currently operates two cremation units:

1 Matthews Power-Pak II, Power-Pak II Cremator installed in 2010 and permitted under 10187
1 Mathews Super Power-Pak III installed in 2018 and permitted under 11722

Permit History
The unit being replaced operates under NOC 10187, which was approvedin October 2015.

B. DATABASE INFORMATION





New NSPS due to this NOCOA?	**No**	**Applicable NSPS: N/A**	**Delegated? N/A**
New NESHAP due to this NOCOA?	**No**	**Applicable NESHAP: N/A**	**Delegated? N/A**
New Synthetic Minor due to this NOCOA?	**No**		

C. NOC FEES AND ANNUAL REGISTRATION FEES

NOC Fees:

Fees have been assessed in accordance with the fee schedule in Regulation I, Section 6.04. All fees must be paid prior to issuance of the final Order of Approval.

Fee Description	Cost	Amount Received (Date)
Filing Fee	$ 1,550	
Equipment	$ 1,000	
SEPA (DNS)	$ 1,200	
Document Review to Determine the Notice of Construction Permitting History of an Emissions Unit	$ 650	
Review of Engineering Source Testing submitted in support of application	$ 1,000	
Agency Review of Refined Dispersion Modeling (provided by applicant)	$ 1,500	
Public Notice (under WAC 173-400-171) plus	$750 plus publication costs	
Filing received		$ 1,550 (5/2/2023)
Additional fee received		$ 6,100 (not yet paid)
Total	**$ 7,650**	

Registration Fees:
Registration fees are assessed to the facility on an annual basis. Fees are assessed in accordance with Regulation I, Section 5.07. The previous years registration is shown below, and this permit will not change the registration fees that are applicable. It should be noted that Reg I, 5.07(c) has changed from $1,150 to $1,350.

PUGET SOUND
Clean Air Agency

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Puget Sound Clean Air Agency

1904 Third Avenue, Suite 105
Seattle, WA 98101-3317
Tax ID: 91-0823558
206.689.4072

Invoice for Year 2023 Registration Fees

Bill To:
Bonney-Watson Washington Memorial Park **16445 International Blvd** **Sea-Tac, WA 98188** **Attention: Accounts Payable**

Invoice Date:	Invoice #:
November 19, 2022	20230612
Due Date:	**Terms:**
January 03, 2023	Net 45 Days
Facility ID (Registration #):	
29111	

Site Address: ***Bonney-Watson Washington Memorial Park***
16445 International Blvd, SeaTac, WA 98188

The annual registration fee is required by Washington State law and Puget Sound Clean Air Agency's Regulation I.

Facility Fees and Applicable Regulations	Charges
Base Fee for Registered Sources. Reg I, 5.07(c)	**$** 1,150.00
Reg I, 5.03(a)(4)(A) - Facilities with incinerators	
Fee Totals	
TOTAL REGISTRATION FEE	**$ 1,150.00**
The Total Registration Fee is due by January 03, 2023. If unpaid after January 03, 2023, the facility may be subject to enforcement action with civil penalties (Reg I, 5.07(b)).	

Pay online and confirm payment: www.pscleanair.gov/annualfee
This copy is for your records. If paying by check, please mail the yellow copy with your payment.
Your canceled check is your receipt.

10/27/2022

Applicability		
Regulation I	Description	Note
Reg I, 5.04(a)(4)(A)	Refuse burning equipment subject to Section 9.05 of Regulation I (including crematories)	
Annual Registration Fee		
Regulation I	Description	Fee
Reg I, 5.07(c)	registered sources shall be assessed a fee of $1,350	$1,350
	Total =	$1,350

D. STATE ENVIRONMENTAL POLICY ACT (SEPA) REVIEW

State Environmental Policy Act (SEPA) review was conducted in accordance with Regulation I, Article 2. The SEPA review is undertaken to identify and help government decision-makers, applicants, and the public to understand how a project will affect the environment. A review under SEPA is required for projects that are not categorically exempt in WAC 197-11-800 through WAC 197-11-890. A new source review action which requires a NOC application submittal to the Agency is not categorically exempt.

11722-dns.pdf 10187-dns.pdf

A new SEPA determination is not required because the potential impacts from this project were reviewed under SEPA by Carole Cenci and a DNS was issued by PSCAA with NOC 10187, on 10/14/15 A copy of this DNS is included below and is being relied upon for this project.

The city of Seatac was consulted for comments on June 6, 2023 and replied that the replacement of the cremator would trigger a mechanical permit , and perhaps electrical permit, from the City. However, those permits and the type of work does not trigger SEPA in SeaTac and would be SEPA exempt.

Based on the proposed action and the information in the checklist, the project will not: adversely affect environmentally sensitive or special areas, or endangered or threatened species; conflict with local, state, or federal laws or requirements for the protection of the environment, or establish a precedent for future actions with significant effects. This proposal is not likely to have a probable significant adverse environmental impact, and I recommend the issuance of a Determination of Non-Significance with no public comment.

E. TRIBAL CONSULTATION

On November 21, 2019, the Agency's Interim Tribal Consultation Policy was adopted by the Board. Criteria requiring tribal consultation are listed in Section II.A of the policy and include establishment of a new air operating permit source, establishment of a new emission reporting source, modification of an existing emission reporting source to increase production capacity, or establishment or modification of certain equipment or activities. In addition, if the Agency receives an NOC application that does not

meet the criteria in Section II.A but may represent similar types and quantities of emissions, the Agency has the discretion to provide additional consultation opportunities.

This project does not meet any of the criteria for consultation listed in Section II.A of the Agency's Interim Tribal Consultation Policy.

F. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) REVIEW

Best Available Control Technology (BACT)

New stationary sources of air pollution are required to use BACT to control all pollutants not previously emitted, or those for which emissions would increase as a result of the new source or modification. BACT is defined in WAC 173-400-030 as, "an emission limitation based on the maximum degree of reduction for each air pollutant subject to regulation under Chapter 70.94 RCW emitted from or which results from any new or modified stationary source, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each pollutant."

An emissions standard or emissions limitation means "a requirement established under the Federal Clean Air Act or Chapter 70.94 RCW which limits the quantity, rate, or concentration of emissions of air contaminants on a continuous basis, including any requirement relating to the operation or maintenance of a source to assure continuous emission reduction and any design, equipment, work practice, or operational standard adopted under the Federal Clean Air Act or Chapter 70.94 RCW."

Best Available Control Technology for Toxics (tBACT)

New or modified sources are required to use tBACT for emissions control for TAP. Best available control technology for toxics (tBACT) is defined in WAC 173-460-020 as, "the term defined in WAC 173-400-030, as applied to TAP."

Similar Permits

Origin	Emissions Limitation	Operational and Design Limitation
PSCAA (No 11869)	**$PM_{2.5}$, PM_{10}, TSP:** ▪ PM emissions shall not exceed 0.06 grains per dry standard cubic foot corrected to 7% O_2 **Visible Emissions:** ▪ Visible emissions shall not exceed 5% for more than 3 minutes in any 1 hour **NO_x:** ▪ NOx concentration shall not exceed 140 ppmv corrected to 7% O_2 dry basis **CO:** CO concentration shall not exceed 50 ppmv corrected to 7% O_2 dry basis	**$PM_{2.5}$, PM_{10}, TSP, Visible Emissions, NO_x, CO, VOC:** ▪ Dual-chambered cremator design ▪ A minimum secondary chamber temperature of 1,600 degrees Fahrenheit during cremation cycle ▪ A minimum secondary chamber residence time of 1.2 seconds or more **Visible Emissions:** ▪ Implementation of an opacity monitoring system and temperature control system interlocked to a combustion control system **SO_2:** ▪ Combustion of natural gas ▪ 651,000 lbs 12-month rolling average limit
PSCAA (No. 11808)	**$PM_{2.5}$, PM_{10}, TSP:** ▪ PM emissions shall not exceed 0.06 grains per dry standard cubic foot corrected to 7% O_2 **Visible Emissions:** ▪ Visible emissions shall not exceed 5% for more than 3 minutes in any 1 hour **NO_x:** ▪ NOx concentration shall not exceed 140 ppmv corrected to 7% O_2 dry basis **CO:** ▪ CO concentration shall not exceed 50 ppmv corrected to 7% O_2 dry basis **Metals** ▪ Limit annual throughput	**$PM_{2.5}$, PM_{10}, TSP, Visible Emissions, NO_x, CO, VOC:** ▪ Dual-chambered cremator design ▪ A minimum secondary chamber temperature of 1,600 degrees Fahrenheit during cremation cycle ▪ Secondary chamber temperature interlock set point at 1,650 degrees Fahrenheit ▪ A minimum secondary chamber residence time of 1.2 seconds or more **Visible Emissions:** ▪ Implementation of an opacity monitoring system and temperature control system interlocked to a combustion control system **SO_2:** ▪ Combustion of natural gas **Metals:** ▪ Limit of 530,000 lbs/year

Origin	Emissions Limitation	Operational and Design Limitation
PSCAA (No. 11722	**$PM_{2.5}$, PM_{10}, TSP:** ▪ PM emissions shall not exceed 0.06 grains per dry standard cubic foot corrected to 7% O_2 **Visible Emissions:** ▪ Visible emissions shall not exceed 5% for more than 3 minutes in any 1 hour **NO_x:** ▪ NOx concentration shall not exceed 140 ppmv corrected to 7% O_2 dry basis **CO:** CO concentration shall not exceed 50 ppmv corrected to 7% O_2 dry basis **Hexavalent Chromium:** Limit of throughput to 445,000 lbs/year	**$PM_{2.5}$, PM_{10}, TSP, Visible Emissions, NO_x, CO, VOC:** ▪ Dual-chambered cremator design ▪ A minimum secondary chamber temperature of 1,600 degrees Fahrenheit during cremation cycle ▪ Secondary chamber temperature interlock set point at 1,600 degrees Fahrenheit ▪ A minimum secondary chamber residence time of 1.2 seconds or more **Visible Emissions:** ▪ Implementation of an opacity monitoring system and temperature control system interlocked to a combustion control system **SO_2:** ▪ Combustion of natural gas **Hexavalent Chromium** ▪ SDS of refractory contain no hexavalent chromium
PSCAA (No. 11670)	**$PM_{2.5}$, PM_{10}, TSP:** ▪ PM emissions shall not exceed 0.06 grains per dry standard cubic foot corrected to 7% O_2 **Visible Emissions:** ▪ Visible emissions shall not exceed 5% for more than 3 minutes in any 1 hour **NO_x:** ▪ NOx concentration shall not exceed 140 ppmv corrected to 7% O_2 dry basis **CO:** ▪ CO concentration shall not exceed 50 ppmv corrected to 7% O_2 dry basis	**$PM_{2.5}$, PM_{10}, TSP, Visible Emissions, NO_x, CO, VOC:** ▪ Dual-chambered cremator design ▪ A minimum secondary chamber temperature of 1,600 degrees Fahrenheit during cremation cycle ▪ Secondary chamber temperature interlock set point at 1,650 degrees Fahrenheit ▪ A minimum secondary chamber residence time of 1.2 seconds or more **Visible Emissions:** ▪ Implementation of an opacity monitoring system and temperature control system interlocked to a combustion control system **SO_2:** ▪ Combustion of natural gas

Origin	Emissions Limitation	Operational and Design Limitation
PSCAA (No. 11540)	**$PM_{2.5}$, PM_{10}, TSP:** ▪ PM emissions shall not exceed 0.06 grains per dry standard cubic foot corrected to 7% O_2 **Visible Emissions:** ▪ No visible emissions during daylight operation **NO_x:** ▪ NOx concentration shall not exceed 60 ppmv corrected to 7% O_2 dry basis **CO:** ▪ CO concentration shall not exceed 50 ppmv corrected to 7% O_2 dry basis	**$PM_{2.5}$, PM_{10}, TSP, Visible Emissions, NO_x, CO, VOC:** ▪ Dual-chambered cremator design ▪ A minimum secondary chamber temperature of 1,600 degrees Fahrenheit during cremation cycle ▪ Secondary chamber temperature interlock set point at 1,650 degrees Fahrenheit ▪ A minimum secondary chamber residence time of 1.2 seconds or more **Visible Emissions:** ▪ Implementation of an opacity monitoring system and temperature control system interlocked to a combustion control system **SO_2:** ▪ Combustion of natural gas
PSCAA (No. 11376)	**$PM_{2.5}$, PM_{10}, TSP:** ▪ PM emissions shall not exceed 0.06 grains per dry standard cubic foot corrected to 12% CO_2 **Visible Emissions:** ▪ No visible emissions during daylight operation **NO_x:** ▪ NO_x concentration shall not exceed 60 ppmv corrected to 7% O_2 dry basis **CO:** ▪ CO concentration shall not exceed 50 ppmv corrected to 7% O_2 dry basis	**$PM_{2.5}$, PM_{10}, TSP, Visible Emissions, NO_x, CO, VOC:** ▪ Dual-chambered cremator design ▪ A minimum secondary chamber temperature of 1,600 degrees Fahrenheit during cremation cycle ▪ Secondary chamber temperature interlock set point at 1,650 degrees Fahrenheit ▪ A minimum secondary chamber residence time of 1.2 seconds or more **Visible Emissions:** ▪ Implementation of an opacity monitoring system and temperature control system interlocked to a combustion control system **SO_2:** ▪ Combustion of natural gas

Origin	Emissions Limitation	Operational and Design Limitation
TCEQ	**$PM_{2.5}$, PM_{10}, TSP:** ▪ PM: Visible emissions shall not exceed 5.0% opacity averaged over a six minute period	**$PM_{2.5}$, PM_{10}, TSP, Visible Emissions, NO_x, CO, VOC:** ▪ Dual-chambered cremator design ▪ Secondary chamber is heated by a natural gas/propane fired burner and fires at twice the heat rate of the primary chamber burner ▪ A minimum secondary chamber temperature of 1,600 degrees Fahrenheit during cremation cycle ▪ A minimum secondary chamber flue gas residence time of 0.5 seconds or more **Visible Emissions, CO:** ▪ Cremators without continuous opacity or carbon monoxide monitors are limited to operating from one-hour after sunrise to one-hour before sunset **SO_2:** ▪ Combustion of natural gas
MassDep (No. SE-14-003)	**Visible Emissions:** ▪ Visible emissions shall not exceed 5% opacity except when 5% to 20% for < 2 consecutive minutes during any one hour **$PM_{2.5}$, PM_{10}, TSP:** ▪ PM emissions shall not exceed 0.060 grains per dry standard cubic foot corrected to 7% O_2 **NO_x:** ▪ NO_x concentration shall not exceed 200 ppmv corrected to 7% O_2 dry basis **CO:** ▪ CO concentration shall not exceed 50 ppmv corrected to 7% O_2 dry basis	**$PM_{2.5}$, PM_{10}, TSP, Visible Emissions, NO_x, CO, VOC:** ▪ Dual-chambered cremator design ▪ A minimum secondary chamber temperature of 1,600 ºF during cremation cycle **SO_2:** ▪ Combustion of natural gas

Origin	Emissions Limitation	Operational and Design Limitation
MaineDep (No. A-818-71-C-R)	**VOC:** ▪ VOC emissions shall not exceed 0.130 lbs per hour **Visible Emissions:** ▪ Visible emissions shall not exceed 10.0% opacity based on a six minute block average basis **$PM_{2.5}$, PM_{10}, TSP:** ▪ PM emissions shall not exceed 0.920 lbs per hour **NO_x:** ▪ NO_x emissions shall not exceed 0.350 lbs per hour **CO:** ▪ CO emissions shall not exceed 0.230 lbs per hour **SO_2:** ▪ SO_2 emissions shall not exceed 0.370 lbs per hour	**$PM_{2.5}$, PM_{10}, TSP, Visible Emissions, NO_x, CO, VOC:** ▪ Dual-chambered cremator design ▪ A minimum secondary chamber temperature of 1,600 degrees Fahrenheit during cremation cycle ▪ A minimum secondary chamber flue gas residence time of 0.5 seconds or more **SO_2:** ▪ Combustion of natural gas
SMAQMD (No. 145)	**NO_x:** ▪ NO_x concentration shall not exceed 60 ppmv corrected to 3% O_2 dry basis (natural gas combustion only with no charge)	**$PM_{2.5}$, PM_{10}, TSP, Visible Emissions, NO_x, CO, VOC:** ▪ Dual-chambered cremator design ▪ A minimum secondary chamber temperature of 1,600 degrees Fahrenheit during cremation cycle **SO_2:** ▪ Combustion of natural gas
SCAQMD (BACT Guidelines for Non Major Polluting Facilities, Page 36)	None	**$PM_{2.5}$, PM_{10}, TSP, Visible Emissions, NO_x, CO, VOC:** ▪ Dual-chambered cremator design ▪ A minimum secondary chamber temperature of 1,500 degrees Fahrenheit ▪ Operation imitations only apply to PM_{10} – none for $PM_{2.5}$ **SO_2:** ▪ Combustion of natural gas
BAAQMD (BACT Guideline – Crematory)	None	**$PM_{2.5}$, PM_{10}, TSP, Visible Emissions, NO_x, CO, VOC:** ▪ Dual-chambered cremator design ▪ A minimum secondary chamber temperature of 1,600 ºF (set point at 1,650) ▪ Limitations only apply to PM_{10} – none for $PM_{2.5}$ **SO_2:** ▪ Combustion of natural gas

SWCAA (ADP 17-3240R1)	**NO_x:** ▪ NO_x concentration shall not exceed 140 ppmv corrected to 7% O_2 **CO:** ▪ CO concentration shall not exceed 40 ppmv corrected to 7% O_2 **Visible Emissions:** ▪ Visible emissions shall not exceed 5% opacity for more than three minutes during the initial 15 minutes of the cremation cycle and 0% opacity for more than three minutes during any-1hour period after the initial 15-minute period.	**$PM_{2.5}$, PM_{10}, TSP, Visible Emissions, NO_x, CO, VOC:** ▪ Dual-chambered cremator design ▪ Minimum afterburner temperature of 1,500ºF during the entire cremation process ▪ Prior to charging the primary chamber, afterburner must reach a minimum of 1,600ºF for a period of at least 30 minutes ▪ A minimum afterburner residence time of 0.5 seconds or more **SO_2:** ▪ Combustion of natural gas
SWCAA (ADP 18-3308)	**NO_x:** ▪ NO_x concentration shall not exceed 140 ppmv corrected to 7% O_2 **CO:** ▪ CO concentration shall not exceed 40 ppmv corrected to 7% O_2 **Visible Emissions:** ▪ Visible emissions shall not exceed 5% opacity for more than three minutes during the initial 15 minutes of the cremation cycle and 0% opacity for more than three minutes during any-1hour period after the initial 15-minute period.	**$PM_{2.5}$, PM_{10}, TSP, Visible Emissions, NO_x, CO, VOC:** ▪ Dual-chambered cremator design ▪ Minimum afterburner temperature of 1,500ºF during the entire cremation process ▪ Prior to charging the secondary chamber, afterburner must reach a minimum of 1,500ºF ▪ A minimum afterburner residence time of 0.5 seconds or more **SO_2:** ▪ Combustion of natural gas

MDEQ (No. 3236-04)	**Visible Emissions:** ▪ Visible emissions shall not exhibit an opacity of 10% or greater averaged over 6 consecutive minutes **$PM_{2.5}$, PM_{10}, TSP:** ▪ PM emissions shall not cause an excess of 0.10 grains per dry standard cubic feet (gr/dscf) corrected to 12% carbon dioxide (CO2)	**$PM_{2.5}$, PM_{10}, TSP, Visible Emissions, NO_x, CO, VOC:** ▪ Proper crematorium design and operation relying on good turbulence, high temperature and gas residence time within the secondary combustion chamber: 1. Turbulence is achieved with proper introduction of air into the combustion chambers 2. Temperature in the secondary chamber must be maintained at an operating temperature of 1,500 degrees Fahrenheit with no single reading less than 1,400 degrees Fahrenheit 3. The gas residence time in the secondary chamber and flue stack must be over 1.2 seconds ▪ Operating procedures, design including temperature and timer interlocks to ensure proper combustion ▪ Flame monitoring for both the primary and secondary chamber burners ▪ Smoke control managed by automatically detecting rate of temperature rise within the primary chamber and adding additional secondary chamber combustion air **SO_2:** ▪ Combustion of natural gas

Analysis & Recommendations

Pollutant	Available Method That Meets BACT	Implementation of Method
VOCs including volatile TAPs	Limit throughput	▪ Dual-chambered cremator design ▪ Combustion of natural gas ▪ A minimum secondary chamber temperature of 1,600 degrees Fahrenheit during cremation cycle ▪ Implementation of an opacity monitoring system and temperature control system interlocked to a combustion control system with an audible alarm ▪ Secondary chamber residence time sufficient to meet emission limitations
PM including non-volatile TAPs	PM emissions shall not exceed 0.05 grains per dry standard cubic foot corrected to 7% O_2	
NO_x	NOx concentration shall not exceed 140 ppmv corrected to 7% O_2 dry basis	
CO	CO concentration shall not exceed 50 ppmv corrected to 7% O_2 dry basis	
SO_2	None	

I have reviewed the most recent permits, as well as past permits for this crematory. The BACT for the criteria pollutants has been consistent, and the controls are an industry standard of using a secondary chamber set at a minimum of 1,600 degrees Fahrenheit with a sufficient residence time and an opacity

monitor. Past BACT has been 0.06 gr/dscf, however, this exceeds our emission limits of 0.05 gr/dscf of regulation 1. Therefore, that will need to be decreased to meet our regulation standards.

There have been no specific control technologies for TAPs. Hexavalent Chromium (Hex Cr) consistently exceeds the SQER, and production needs to be limited to pass the ASIL limit. This has been the limiting factor for recent crematories. Hex Cr can come from 2 sources. The first is from the bio accumulation in the person being burned. The second is from the refractory. Some refractory production has been changed to eliminate the chromium content, which also helps eliminate the hazardous disposal later when maintenance and rebricking is required. This is the case for this model, and SDS's for the unit has been provided and reviewed.

In recent applications, a condition was added that the crematory must operate for 30 minutes after a cycle has ended. However, this has an effect of increasing emissions, as it has led to operating an empty unit. Cremations generally do not go to completion, but are manually cut short and emptied, where the ashes are manually emptied. Also, I could not find the logic for this in any of the BACT analysis. I did find conditions where the unit must be at temperature for half an hour before loading. This would limit possible cold spots and prematurely loading the unit. There is also a requirement that the temperature monitoring system must operate for half an hour after cremation cycle. This should not be confused with the unit having to be above 1600 degrees F after the cremation cycle, but would help to show when the unit was brought down when records are reviewed. I propose to change the requirement from keeping the unit at temp for half an hour after the cremation cycle ends to ensuring that the unit is at the required temperature for half an hour before the cremation cycle starts.

G. EMISSION ESTIMATES

Proposed Project Emissions

Actual Emissions

The applicant provided the following emission estimate.

These emissions were provided by the applicant assuming the incineration of 223,400 pounds per year.

Potential Emissions

The emission above are limited by WAC 173-460-153, and represent potential emissions.

Facility-wide Emissions

Actual Emissions

NOC 11722 is the only other source of air emissions for this source. Where 443,000 lbs can be cremated per year. The following emissions estimated:

	NOC 11722	NOC 12349	Total
Unit	Tpy	Tpy	TPY
PM	2.94	1.1466	4.0866

CO	1.25	0.08555	2.89
SO2	0.244	0.137575	0.65
NO2	5.74	0.39338	6.23
VOC	0.0349	0.491	0.52
HAPS	0.119	0.000161	0.119

Reporting Source? No

Potential Emissions

Actual emissions are based on limiting production and reflect potential emissions.

H. OPERATING PERMIT OR PSD

The Title V Air Operating Permit (AOP) program applicability for the entire source has been reviewed.

The facility is not a Title V air operating permit source because post project PTE remains below Title V applicability thresholds and criteria. The source is considered a "**natural minor**".

I. AMBIENT TOXICS IMPACT ANALYSIS

The estimated potential toxic air pollutant (TAP) emissions at operating at 5 cases a day and no more than 1248 cases per year for each new or modified emission unit. The table below was provided by Yorke Engineering includes estimated potential emissions of all TAP and compares those to the Small Quantity Emission Rates (SQER) in WAC 173-460-150.

TACs	CAS	Original Emission Factor	Emission Factor Units	Emission Factor Source	lb/yr	lb/day	lb/hr	lb/yr	lb/day	lb/hr	lb/yr	lb/day	lb/hr	SQER (lb/averaging period)	Averaging period	Exceed SQER?	Exceed SQER Project alone?	AERMOD Input (lb/hr)
1,2,3,4,6,7,8-HpCDD	35822469	3.83E-08	lb/ Tons Charged	NCEA	4.78E-06	1.91E-08	2.39E-09	5.01E-07	7.75E-09	1.91E-09	4.27E-06	1.14E-08	4.78E-10	4.3E-04	year	No	No	
1,2,3,4,6,7,8-HpCDF	67562394	4.60E-08	lb/ Tons Charged	NCEA	5.74E-06	2.30E-08	2.87E-09	6.02E-07	9.31E-09	2.30E-09	5.14E-06	1.37E-08	5.75E-10	4.3E-04	year	No	No	
1,2,3,4,7,8,9-HpCDF	55673897	4.68E-09	lb/ Tons Charged	NCEA	5.84E-07	2.34E-09	2.92E-10	6.12E-08	9.47E-10	2.34E-10	5.22E-07	1.39E-09	5.85E-11	4.3E-04	year	No	No	
1,2,3,4,7,8-HxCDD	39227286	3.17E-09	lb/ Tons Charged	NCEA	3.95E-07	1.58E-09	1.98E-10	4.15E-08	6.41E-10	1.58E-10	3.54E-07	9.42E-10	3.96E-11	4.3E-05	year	No	No	
1,2,3,4,7,8-HxCDF	70648269	1.11E-08	lb/ Tons Charged	NCEA	1.38E-06	5.53E-09	6.91E-10	1.45E-07	2.24E-09	5.53E-10	1.23E-06	3.29E-09	1.38E-10	4.3E-05	year	No	No	
1,2,3,6,7,8-HxCDD	57653857	4.72E-09	lb/ Tons Charged	NCEA	5.90E-07	2.36E-09	2.95E-10	6.19E-08	9.57E-10	2.36E-10	5.28E-07	1.41E-09	5.91E-11	4.3E-05	year	No	No	
1,2,3,6,7,8-HxCDF	57117449	1.07E-08	lb/ Tons Charged	NCEA	1.33E-06	5.35E-09	6.68E-10	1.40E-07	2.17E-09	5.35E-10	1.19E-06	3.18E-09	1.34E-10	4.3E-05	year	No	No	
1,2,3,7,8,9-HxCDD	19408743	4.87E-09	lb/ Tons Charged	NCEA	6.07E-07	2.43E-09	3.04E-10	6.37E-08	9.85E-10	2.43E-10	5.44E-07	1.45E-09	6.08E-11	4.3E-05	year	No	No	
1,2,3,7,8,9-HxCDF	72918219	1.39E-08	lb/ Tons Charged	NCEA	1.74E-06	6.97E-09	8.71E-10	1.83E-07	2.82E-09	6.97E-10	1.56E-06	4.15E-09	1.74E-10	4.3E-05	year	No	No	
1,2,3,7,8-PeCDD	40321764	2.09E-09	lb/ Tons Charged	NCEA	2.61E-07	1.05E-09	1.31E-10	2.74E-08	4.24E-10	1.05E-10	2.34E-07	6.23E-10	2.62E-11	4.3E-06	year	No	No	
1,2,3,7,8-PeCDF	57117416	3.89E-09	lb/ Tons Charged	NCEA	4.85E-07	1.94E-09	2.43E-10	5.09E-08	7.88E-10	1.94E-10	4.35E-07	1.16E-09	4.86E-11	1.5E-04	year	No	No	
2,3,4,6,7,8-HxCDF	60851345	1.04E-08	lb/ Tons Charged	NCEA	1.30E-06	5.21E-09	6.52E-10	1.37E-07	2.11E-09	5.21E-10	1.16E-06	3.10E-09	1.30E-10	4.3E-05	year	No	No	
2,3,4,7,8-PeCDF	57117314	1.08E-08	lb/ Tons Charged	NCEA	1.35E-06	5.42E-09	6.77E-10	1.42E-07	2.19E-09	5.42E-10	1.21E-06	3.22E-09	1.35E-10	1.5E-05	year	No	No	
2,3,7,8-TCDD	1746016	6.94E-10	lb/ Tons Charged	NCEA	8.67E-08	3.47E-10	4.34E-11	9.09E-09	1.41E-10	3.47E-11	7.76E-08	2.07E-10	8.68E-12	4.3E-06	year	No	No	
2,3,7,8-TCDF	51207319	5.42E-09	lb/ Tons Charged	NCEA	6.76E-07	2.71E-09	3.39E-10	7.09E-08	1.10E-09	2.71E-10	6.05E-07	1.61E-09	6.77E-11	4.3E-05	year	No	No	
Acenaphthene		1.78E-06	lb/ Tons Charged	Avg WebFire and CATEF	2.22E-04	8.90E-07	1.11E-07	2.33E-05	3.60E-07	8.90E-08	1.99E-04	5.29E-07	2.22E-08	-	-	-	-	
Acenaphthylene		1.57E-06	lb/ Tons Charged	Avg WebFire and CATEF	1.97E-04	7.87E-07	9.84E-08	2.06E-05	3.19E-07	7.87E-08	1.76E-04	4.69E-07	1.97E-08	-	-	-	-	
Acetaldehyde	75070	1.84E-03	lb/ Tons Charged	Avg WebFire and CATEF	2.30E-01	9.21E-04	1.15E-04	2.41E-02	3.73E-04	9.21E-05	2.06E-01	5.48E-04	2.30E-05	6.0E+01	year	No	No	
Anthracene		4.20E-06	lb/ Tons Charged	Avg WebFire and CATEF	5.25E-04	2.10E-06	2.63E-07	5.51E-05	8.51E-07	2.10E-07	4.70E-04	1.25E-06	5.26E-08	-	-	-	-	
Benzene	71432	7.20E-04	lb/ Tons Charged	SDAPCD	8.98E-02	3.60E-04	4.50E-05	9.42E-03	1.46E-04	3.60E-05	8.04E-02	2.14E-04	9.00E-06	2.1E+01	year	No	No	
Benzo(a)anthracene	56553	1.57E-07	lb/ Tons Charged	Avg WebFire and CATEF	1.96E-05	7.86E-08	9.82E-09	2.06E-06	3.19E-08	7.86E-09	1.76E-05	4.68E-08	1.96E-09	8.9E-01	year	No	No	
Benzo(a)pyrene	50328	5.54E-07	lb/ Tons Charged	Avg WebFire and CATEF	6.92E-05	2.77E-07	3.46E-08	7.26E-06	1.12E-07	2.77E-08	6.19E-05	1.65E-07	6.93E-09	1.6E-01	year	No	No	
Benzo(b)fluoranthene	205992	2.46E-07	lb/ Tons Charged	Avg WebFire and CATEF	3.07E-05	1.23E-07	1.54E-08	3.22E-06	4.97E-08	1.23E-08	2.74E-05	7.31E-08	3.07E-09	8.9E-01	year	No	No	
Benzo(k)fluoranthene	207089	2.14E-07	lb/ Tons Charged	Avg WebFire and CATEF	2.67E-05	1.07E-07	1.34E-08	2.80E-06	4.34E-08	1.07E-08	2.39E-05	6.37E-08	2.68E-09	8.9E-01	year	No	No	
Cadmium	7440439	1.61E-04	lb/ Tons Charged	SDAPCD	2.00E-02	8.03E-05	1.00E-05	2.10E-03	3.25E-05	8.03E-06	1.79E-02	4.78E-05	2.01E-06	3.9E-02	year	No	No	
Chromium, nonhexavalent	7440473	2.00E-05	lb/ Tons Charged	*Reevaluation of the Trace	2.50E-03	1.00E-05	1.25E-06	2.62E-04	4.05E-06	1.00E-06	2.23E-03	5.95E-06	2.50E-07	-	-	-	-	
Hexavalent chromium	18540299	9.20E-06	lb/ Tons Charged	A factor of 0.46 is applied to	1.15E-03	4.60E-06	5.75E-07	1.20E-04	1.86E-06	4.60E-07	1.03E-03	2.74E-06	1.15E-07	6.5E-04	year	Yes	Yes	1.17E-07
Chrysene		6.24E-07	lb/ Tons Charged	Avg WebFire and CATEF	7.78E-05	3.12E-07	3.90E-08	8.17E-06	1.26E-07	3.12E-08	6.97E-05	1.86E-07	7.80E-09	8.9E+00	year	No	No	
Copper	7440508	4.00E-04	lb/ Tons Charged	SDAPCD	4.99E-02	2.00E-04	2.50E-05	5.24E-03	8.10E-05	2.00E-05	4.47E-02	1.19E-04	5.00E-06	1.9E-01	1-hr	No	No	
Dibenz(a,h)anthracene	53703	1.94E-07	lb/ Tons Charged	Avg WebFire and CATEF	2.42E-05	9.69E-08	1.21E-08	2.54E-06	3.92E-08	9.69E-09	2.16E-05	5.76E-08	2.42E-09	8.2E-02	year	No	No	
Fluoranthene		2.54E-06	lb/ Tons Charged	Avg WebFire and CATEF	3.16E-04	1.27E-06	1.58E-07	3.32E-05	5.13E-07	1.27E-07	2.83E-04	7.54E-07	3.17E-08	-	-	-	-	
Fluorene		5.87E-06	lb/ Tons Charged	Avg WebFire and CATEF	7.33E-04	2.94E-06	3.67E-07	7.69E-05	1.19E-06	2.94E-07	6.56E-04	1.75E-06	7.34E-08	-	-	-	-	
Formaldehyde	50000	3.72E-03	lb/ Tons Charged	Avg WebFire, CATEF and	4.64E-01	1.86E-03	2.32E-04	4.87E-02	7.53E-04	1.86E-04	4.15E-01	1.11E-03	4.65E-05	2.7E+01	year	No	No	
Hydrogen chloride	7647010	1.02E+00	lb/ Tons Charged	Avg WebFire, CATEF and	1.28E+02	5.12E-01	6.40E-02	1.34E+01	2.07E-01	5.12E-02	1.14E+02	3.05E-01	1.28E-02	6.7E-01	24-hr	No	No	
Hydrogen fluoride	7664393	1.00E-02	lb/ Tons Charged	Avg WebFire, CATEF and	1.25E+00	5.01E-03	6.26E-04	1.31E-01	2.03E-03	5.01E-04	1.12E+00	2.98E-03	1.25E-04	1.0E+00	24-hr	No	No	
Indeno(1,2,3-cd)pyrene		2.20E-07	lb/ Tons Charged	Avg WebFire and CATEF	2.75E-05	1.10E-07	1.38E-08	2.89E-06	4.46E-08	1.10E-08	2.46E-05	6.56E-08	2.76E-09	8.9E-01	year	No	No	
Lead	7439921	9.80E-04	lb/ Tons Charged	SDAPCD	1.22E-01	4.90E-04	6.12E-05	1.28E-02	1.98E-04	4.90E-05	1.09E-01	2.91E-04	1.22E-05	1.4E+01	year	No	No	
Naphthalene	91203	3.21E-03	lb/ Tons Charged	Avg WebFire and CATEF	4.01E-01	1.61E-03	2.01E-04	4.21E-02	6.51E-04	1.61E-04	3.59E-01	9.56E-04	4.02E-05	4.8E+00	year	No	No	
OCDD	3268879	5.98E-08	lb/ Tons Charged	NCEA	7.47E-06	2.99E-08	3.74E-09	7.84E-07	1.21E-08	2.99E-09	6.68E-06	1.78E-08	7.48E-10	1.5E-02	year	No	No	
OCDF	39001020	1.84E-08	lb/ Tons Charged	NCEA	2.30E-06	9.21E-09	1.15E-09	2.41E-07	3.73E-09	9.21E-10	2.06E-06	5.48E-09	2.30E-10	1.5E-02	year	No	No	
Phenanthrene		2.87E-05	lb/ Tons Charged	Avg WebFire and CATEF	3.58E-03	1.43E-05	1.79E-06	3.75E-04	5.80E-06	1.43E-06	3.20E-03	8.53E-06	3.58E-07	-	-	-	-	
Pyrene		2.30E-06	lb/ Tons Charged	Avg WebFire and CATEF	2.87E-04	1.15E-06	1.44E-07	3.01E-05	4.66E-07	1.15E-07	2.57E-04	6.84E-07	2.87E-08	-	-	-	-	
Selenium	7782492	6.50E-04	lb/ Tons Charged	SDAPCD	8.12E-02	3.25E-04	4.06E-05	8.52E-03	1.32E-04	3.25E-05	7.27E-02	1.93E-04	8.13E-06	1.5E+00	24-hr	No	No	
Toluene	108883	9.92E-03	lb/ Tons Charged	SDAPCD	1.24E+00	4.96E-03	6.20E-04	1.30E-01	2.01E-03	4.96E-04	1.11E+00	2.95E-03	1.24E-04	3.7E+02	24-hr	No	No	
Xylenes	1330207	2.80E-03	lb/ Tons Charged	SDAPCD	3.50E-01	1.40E-03	1.75E-04	3.67E-02	5.68E-04	1.40E-04	3.13E-01	8.34E-04	3.50E-05	1.6E+01	24-hr	No	No	
Mercury (long-term >1 hr)	7439976	3.40E-03	lb/ Body Charged	PSCAA (CT DEEP)	4.24E+00	1.70E-02	-	6.60E-01	1.02E-02	-	3.58E+00	6.80E-03	-	2.2E-03	24-hr	Yes	Yes	2.83E-04

All TAPS analyzed were below the SQER except for mercury and hexavalent chromium. These exceed the SQER and emissions were modeled by York Engineering using Aermod. The emission inventory as well as the modeled results are shown below. The output files are saved in section M. The emission factors used are in agreement with what was used for NOC 11722. Hexavalent Chromium is estimated based on the chromium content of the human body rather than available stack test data. Available stack test data are from 1990 and it is expected that the chromium emission factor from this data is likely high

since older units used chromium refractory bricks and cast refractory. The industry has moved away from that and has substituted with non-chromium/magnesium refractories to avoid having to treat used refractory as hazardous waste. I reviewed the SDS sheets for the refractory and confirmed that it does not contain chromium. A newer stack test report was included, and the results were in the same order of magnitude as these assumptions.

In the emission inventory provided, mercury was also shown to exceed the SQER but not the ASIL. The modeled results are also shown below. This value is based on the net daily change of 0.0068 lb Hg/day, which is the assumed average of two cases per day. The mercury is based per case rather than per pound due to it being mostly from dental work. This approach was established in Massachusetts and uses the AP-42 emission factor. From this source, "The release of mercury through the incineration of amalgam tooth fillings accounts for the majority of mercury emitted by crematoria." (Massachusetts State Anthropogenic Mercury Emissions Inventory Update (nescaum.org), 2011). Based on this modeling, this tier 1 review would limit this crematory to 5 cases per day. The unit being decommissioned operated at 3 cases per day.

The modelling results are shown below.

Table 1: TAP Emissions – Crematory

TAP	Emission Factor	Averaging Period	Net Daily PTE (lb/day)	Net Annual PTE (lb/year)	Modeling Input PTE (lb/hr)
Hg	PSCAA (long-term >1 hour)	24-hour	6.80E-3	–	2.83E-4
Cr(VI)	PSCAA	Annual	–	1.03E-3	1.17E-7

Table 4: Cr(VI) Modeling Results

Pollutant	Emission Rate (lb/hr)	Averaging Period	Modeled Concentration ($\mu g/m^3$)		ASIL Level ($\mu g/m^3$)	Exceed ASIL?
			PMI	Resident		
Cr(VI)	1.17E-7	Annual	6.90E-7	5.00E-8	4.00E-6	No

Table 3: Hg Modeling Results

Pollutant	Emission Rate (lb/hr)	Averaging Period	Modeled Concentration ($\mu g/m^3$)		ASIL Threshold	Exceed ASIL?
			PMI	Resident		
Hg	2.83E-4	24-Hour	2.40E-2	1.27E-3	3.00E-2	No

Parameter	Projected	Actual	Comment
Permitted Burner rating (MMBtu/hr)	1.8	1.7	
Natural gas usage (mmscf/hr)	0.00176	0.00167	calculated from rating
Daily Natural gas usage (mmscf/day)	0.0141	0.0068	calculated
Annual Natural gas usage (mmscf/yr)	3.52	0.44	calculated
	Projected	**Actual**	**Units**
Avg Charge Wt	200	135	lb
Annual Charges	1248	194	cases/yr
Annual Tons Charged	124.8	13.095	ton/year
Average time per charge	1.6	1.35	hours/case
Annual Hours of Operation	1996.8	261.9	hours/year
Max Daily Charges	5	3	cases/day
Daily Hours of Operation	8	4.05	hours/day
Max Dailly Cremation Rate	0.5	0.2025	ton/day
Max Hourly Crem. Rating	125	100	lb/hr
Max Hourly Crem. Rating	0.0625	0.05	tons/hr
Charges/Hour	1	1	for Mercury

Parameter	Value	Comment
$\%O_2$ Emission Basis	7	PSCAA
Fd - F-factor Natural Gas (dscf/mmBtu)	8710	Default
MW CO	28.01	Default
MW NO_x	46	Default
Molar Gas Volume at 68F (scf/lb-mole)	385.3	Default
Natural Gas Fuel HHV (Btu/scf)	1020	Default
Stack Temperature (F)	800	permit app
Stack Exhaust Flow (wacfm)	1952	permit app
Stack Exhaust Flow (wscfm)	818.0	calculated
Stack Exhaust Flow (dscfm)	757.4	calculated
Stack Moisture (fraction)	0.08	Assumed
MW Cr	51.9961	Default

The modelling was done assuming 5 cases per day that averaged 200 lbs per case, or 1,000 lbs per day, as well as 124.8 tons per year.

I also evaluated metals where a source test was provided, but was not included in the emission inventory. The source test report is included in section M. That source test indicates all metals should be below SQER, except for Hexavalent chromium previously discussed.

TACs	CAS	EF From Source Test	units	lb/year	lb/day	lb/hr	SQER Ave Period	SQER
Cadmium	7440439	0.000002	lb/hr	0.0039936	0.000016		year	0.039
Chromium, nonhexavalent	7440473	9.66667E-06	lb/hr	0.0193024	7.733E-05		24-hr	3.70E-01
Hexavalent chromium	18540299	4.44667E-06	lb/hr	0.008879104	3.557E-05		year	0.00065
Antimony as Antimony trioxide	1309-64-4	1.66667E-06	lb/hr	0.003328	1.333E-05		24-hr	0.015
Arsenic	N/A	1.83333E-06	lb/hr	0.0036608	1.467E-05		year	0.049
Beryllium	N/A	2.16667E-07	lb/hr	0.00043264	1.733E-06		year	0.068
Cobalt	N/A	0.0000007	lb/hr	0.00139776	0.0000056		24-hr	0.0074
Manganese	N/A	6.33333E-05	lb/hr	0.126464	0.0005067		24-hr	0.022
Nickel	N/A	5.83333E-06	lb/hr	0.011648	4.667E-05		year	0.62
Selenium	N/A	6.16667E-06	lb/hr	0.0123136	4.933E-05		24-hr	1.5

J. APPLICABLE RULES & REGULATIONS

Puget Sound Clean Air Agency Regulations

SECTION 5.05 (c): The owner or operator of a registered source shall develop and implement an operation and maintenance plan to ensure continuous compliance with Regulations I, II, and III. A copy of the plan shall be filed with the Control Officer upon request. The plan shall reflect good industrial practice and shall include, but not be limited to, the following:
(1) Periodic inspection of all equipment and control equipment;
(2) Monitoring and recording of equipment and control equipment performance;
(3) Prompt repair of any defective equipment or control equipment;
(4) Procedures for startup, shut down, and normal operation;
(5) The control measures to be employed to ensure compliance with Section 9.15 of this regulation; and
(6) A record of all actions required by the plan.
The plan shall be reviewed by the source owner or operator at least annually and updated to reflect any changes in good industrial practice.

SECTION 6.09: Within 30 days of completion of the installation or modification of a stationary source subject to the provisions of Article 6 of this regulation, the owner or operator or applicant shall file a Notice of Completion with the Agency. Each Notice of Completion shall be submitted on a form provided by the Agency, and shall specify the date upon which operation of the stationary source has commenced or will commence.

SECTION 9.03: (a) It shall be unlawful for any person to cause or allow the emission of any air contaminant for a period or periods aggregating more than 3 minutes in any 1 hour, which is:
(1) Darker in shade than that designated as No. 1 (20% density) on the Ringelmann Chart, as published by the United States Bureau of Mines; or
(2) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in Section 9.03(a)(1).
(b) The density or opacity of an air contaminant shall be measured at the point of its emission, except when the point of emission cannot be readily observed, it may be measured at an observable point of the plume nearest the point of emission.
(c) This section shall not apply when the presence of uncombined water is the only reason for the failure of the emission to meet the requirements of this section.

Section 9.05: (a) It shall be unlawful for any person to cause or allow the burning of combustible refuse except in a multiple chamber incinerator provided with control equipment.
(b) It shall be unlawful for any person to cause or allow the operation of refuse burning equipment any time other than daylight hours.

SECTION 9.09: General Particulate Matter (PM) Standard. It shall be unlawful for any person to cause or allow the emission of particulate matter in excess of the following concentrations:
Burning fuel other than wood: 0.05 gr/dscf

SECTION 9.11: It shall be unlawful for any person to cause or allow the emission of any air contaminant in sufficient quantities and of such characteristics and duration as is, or is likely to be,

injurious to human health, plant or animal life, or property, or which unreasonably interferes with enjoyment of life and property.

SECTION 9.13: It shall be unlawful for any person to cause or allow the installation or use of any device or use of any means designed to mask the emission of an air contaminant which causes detriment to health, safety or welfare of any person.

SECTION 9.15: It shall be unlawful for any person to cause or allow visible emissions of fugitive dust unless reasonable precautions are employed to minimize the emissions. Reasonable precautions include, but are not limited to, the following:
(1) The use of control equipment, enclosures, and wet (or chemical) suppression techniques, as practical, and curtailment during high winds;
(2) Surfacing roadways and parking areas with asphalt, concrete, or gravel;
(3) Treating temporary, low-traffic areas (e.g., construction sites) with water or chemical stabilizers, reducing vehicle speeds, constructing pavement or rip rap exit aprons, and cleaning vehicle undercarriages before they exit to prevent the track-out of mud or dirt onto paved public roadways; or
(4) Covering or wetting truck loads or allowing adequate freeboard to prevent the escape of dust-bearing materials.

REGULATION I, SECTION 9.20(a): It shall be unlawful for any person to cause or allow the operation of any features, machines or devices constituting parts of or called for by plans, specifications, or other information submitted pursuant to Article 6 of Regulation I unless such features, machines or devices are maintained in good working order.

Washington State Administrative Code

WAC 173-400-040(3): Fallout. No person shall cause or allow the emission of particulate matter from any source to be deposited beyond the property under direct control of the owner or operator of the source in sufficient quantity to interfere unreasonably with the use and enjoyment of the property upon which the material is deposited.

WAC 173-400-040(4): Fugitive emissions. The owner or operator of any emissions unit engaging in materials handling, construction, demolition or other operation which is a source of fugitive emission:

(a) If located in an attainment area and not impacting any nonattainment area, shall take reasonable precautions to prevent the release of air contaminants from the operation.

WAC173-400-111(7): Construction limitations.

(a) Approval to construct or modify a stationary source becomes invalid if construction is not commenced within eighteen months after receipt of the approval, if construction is discontinued for a period of eighteen months or more, or if construction is not completed within a reasonable time. The permitting authority may extend the eighteen-month period upon a satisfactory showing by the permittee that an extension is justified.

Federal N/A

K. PUBLIC NOTICE

This project does meet the criteria for mandatory public notice under WAC 173-400-171(3). Criteria requiring public notice includes, but is not limited to, a project that exceeds emission threshold rates as defined in WAC 173-400-030 (e.g. 40 tpy NOx, VOC, or SO_2, 100 tpy CO, 15 tpy PM_{10}, 10 tpy $PM_{2.5}$, 0.6 tpy lead), includes a WAC 173-400-091 synthetic minor limit, has a toxic air pollutant emission increase above the acceptable source impact level in WAC 173-460-150, or has significant public interest. This project is meeting the requirements of a first tier review according to WAC 173-460-080(3), which also requires a mandatory public notice.

A notice of application was posted on the Agency's website for 15 days. No requests or responses were received. A copy of the website posting is below:

New Construction Projects

Company	Address	Project Description	Date Posted	Contact Engineer
Bonney-Watson Washington Memorial Park	16445 International Blvd, SeaTac, WA 98188	Replacement of a Crematory unit with an American Crematory Equipment Co, Model A-250-Instant Access.	5/10/23	Carl Slimp

L. RECOMMENDED APPROVAL CONDITIONS

Standard Conditions:

1. Approval is hereby granted as provided in Article 6 of Regulation I of the Puget Sound Clean Air Agency to the applicant to install or establish the equipment, device or process described hereon at the installation address in accordance with the plans and specifications on file in the Engineering Division of the Puget Sound Clean Air Agency.

2. This approval does not relieve the applicant or owner of any requirement of any other governmental agency.

Specific Conditions:

Throughput Limit:

3. The total mass cremated in the American Crematory Equipment Co, Model A-250 Human Crematory unit over any 12-month rolling period must not exceed 124.8 tons per year.

4. The owner or operator shall be limited to 1,000 pounds and 5 cases per calendar day (midnight to midnight).

Emissions Limitations and Standards:

5. The exhaust concentration of total particulate matter (filterable and condensable particulate matter) from American Crematory Equipment Co, Model A-250 Human Crematory unit shall not exceed 0.05 grains per dry standard cubic feet (gr/dscf) corrected to 7% oxygen (O_2) as measured by EPA Method 5 as modified by Puget Sound Clean Air Agency Board Resolution 540 dated August 11, 1983.
6. The exhaust concentration of carbon monoxide (CO) from the American Crematory Equipment Co, Model A-250 Human Crematory unit shall not exceed 50.0 ppm, on a dry, volumetric basis corrected to 7% O_2 as measured by EPA Methods 1, 3A and 10 from Appendix A of 40 CFR Part 60.
7. The exhaust concentration of nitrogen oxides (NO_x) from the American Crematory Equipment Co, Model A-250 Human Crematory unit shall not exceed 140 ppm, on a dry, volumetric basis corrected to 7% O_2 as measured by EPA reference methods 1, 3A and 7E from Appendix A of 40 CFR Part 60.
8. Visible emissions from the American Crematory Equipment Co, Model A-250 Human Crematory unit may exceed 5 percent opacity for up to 3 minutes in any one hour. At all other times, visible emissions may not exceed 5 percent opacity. Compliance with this condition is determined using Ecology Method 9A.

Operational Limits:

9. The exhaust stack of the American Crematory Equipment Co, Model A-250 Human Crematory unit shall be vertical and unobstructed.
10. This cremation unit must only be utilized for human remains and their corresponding containers. No other material shall be incinerated in the primary chamber. Incinerated containers must not contain chlorinated plastics.
11. The secondary chamber of the American Crematory Equipment Co, Model A-250 Human Crematory unit must be heated to a minimum temperature of 1,600 degrees Fahrenheit (°F) prior to igniting the primary chamber, and the operating temperature in the secondary chamber (afterburner) must be maintained at or above 1600 °F for the entirety of each cremation cycle. The secondary chamber must be at 1600 °F well at least 30 minutes prior to charging the primary chamber.
12. The American Crematory Equipment Co, Model A-250 Human Crematory unit must operate with a monitoring system that measures the temperature in the primary and secondary chambers, in degrees Fahrenheit, for the entirety of each cremation cycle. Temperature data for the secondary chamber must be recorded continuously (or sampled at intervals no greater than 15 seconds and recorded as 1 minute averages) for the entirety of each cremation cycle. The temperature monitoring system must be interlocked with an audible alarm such that if the temperature in the secondary chamber falls below 1,600 degrees Fahrenheit, the alarm will sound at which time immediate corrective action must be taken to correct the problem.

13. The American Crematory Equipment Co, Model A-250 Human Crematory unit must operate with a monitoring system that measures opacity in the exhaust stack, as a percentage. The opacity monitoring system must be interlocked with an audible alarm such that if the opacity in the exhaust stack exceeds 5 percent, the alarm will sound at which time immediate corrective action must be taken to correct the problem or cease operation of the crematory until the problem is corrected.
14. All temperature and opacity monitoring system components must be maintained, repaired, and replaced in accordance with the manufacturer's recommendations, instructions, and operating manuals.
15. The owner or operator shall annually test or replace the temperature monitoring system thermocouples or pyrometers. If performed, the test shall consist of either a physical or electronically simulated comparison and shall follow manufacturer specifications. The results of the test readings must be within +/- 16 degrees F. If the results of the test readings exceed +/- 16 degrees of the reference value, the thermocouple must be replaced or adjusted to read within +/- 16 degrees of the reference value.

Compliance Demonstration:

16. Initial compliance with Condition 5 must be demonstrated by testing the American Crematory Equipment Co, Model A-250 Human Crematory unit's stack within 180 days of starting-up the cremation unit in accordance with Section 3.07 of Puget Sound Clean Air Agency's Regulation I. Compliance testing must be conducted using EPA Method 5 as modified by Puget Sound Clean Air Agency's Board Resolution 540 dated August 11, 1983. Compliance testing must be conducted during the entire duration of case and must consist of at least three separate test runs, each with a minimum duration of 1 hour. One Ecology Method 9A observation of at least one hour duration shall be conducted concurrently with each of the particulate sampling runs to demonstrate initial compliance with Condition 8.

17. Initial compliance with Condition 6 must be demonstrated by testing the American Crematory Equipment Co, Model A-250 Human Crematory unit's stack within 180 days of starting-up the cremation unit in accordance with Section 3.07 of Puget Sound Clean Air Agency's Regulation I. Compliance testing must be conducted using EPA Methods 1, 3A, and 10. Compliance testing must be conducted during the entire duration of case and must consist of at least three separate test runs, each with a minimum duration of 1 hour.

18. Initial compliance with Condition 7 must be demonstrated by testing the American Crematory Equipment Co, Model A-250 Human Crematory unit's stack within 180 days of starting-up the cremation unit in accordance with Section 3.07 of Puget Sound Clean Air Agency's Regulation I. Compliance testing must be conducted using EPA Methods 1, 3A, and 7E. Compliance testing must be conducted during the entire duration of case and must consist of at least three separate test runs, each with a minimum duration of 1 hour.

19. If requested by the Agency, ongoing compliance with Conditions 5, 6, and 7 must be demonstrated by testing the American Crematory Equipment Co, Model A-250 Human Crematory unit in the timeframe requested by the Agency and in accordance with Section 3.07 of Puget Sound Clean Air Agency's Regulation I.

Recordkeeping Requirements:

20. All records required by this Order of Approval must be maintained for at least two years.
21. The following records shall be kept onsite, updated within 30 days at the end of each month for at least two years from the date of generation, and be made readily available to Agency personnel upon request:
    a. Compliance test reports.
    b. Thermocouple or pyrometer calibration test reports, including the date and results of each test, the test method used, and a record of who performed the test. If any gauge is replaced, the owner or operator shall keep a record of the date it was replaced and who replaced it.
    c. All temperature monitoring data.
    d. Total cremated mass in pounds for each month and the resulting 12-month rolling total. The 12-month rolling total is defined as the sum of the current month and the previous eleven (11) months.
    e. Total number of cremations conducted each calendar day.
    f. Operating time and weight per case.
    g. A log showing corrective actions taken to maintain the secondary chamber temperature at or above 1,600°F.
    h. A log showing corrective actions taken to maintain the opacity in the exhaust stack at or below 5 percent.

Reporting Requirements:

22. For every compliance test required by this Order of Approval, a test notification must be submitted to the Puget Sound Clean Air Agency as required by Regulation I, Section 3.07. Each notification must clearly state whether modifications or alternatives to a required test method are planned.

23. A test plan must be submitted to the Puget Sound Clean Air Agency at least 30 days before conducting a test to demonstrate compliance with Conditions 5, 6, and 7. The test plan must include the following:
    a. Description of all test methods.
    b. Description of modifications or alternatives to a required test method.
    c. Quality assurance and control procedures.

d. Procedures and intent to monitor temperature and opacity during each test run.
e. Procedures and intent to calculate total mass cremated during the entire test.

24. This NOC will cancel and supersede NOC 10187 upon installation of the American Crematory Equipment Co, Model A-250 Human Crematory. The owner or operator may not operate the American Crematory Equipment Co, Model A-250 Human Crematory unit until the Matthews Power-Pak II, Power-Pak II Cremator, unit has been removed from service.

M. CORRESPONDENCE AND SUPPORTING DOCUMENTS


A-250 Emissions Data.pdf


A-250 Multi Metals Source Test.pdf


RE_ Bonney-Watson NO


Patriot MSDS.pdf


American Brick Lock 3000 MSDS- 4522.pc


Amerilite 30 - MSDS 4135.pdf


Americast 60 - MSDS 4136.pdf


Decision made.msg

N. REVIEWS

Reviews	Name	Date
Engineer:	Carl Slimp	8/4/2023, 8/14/2023
Inspector:	James Moore	8/4/2023
Second Review:	John Dawson	8/7/2023, 8/14/2023
Applicant Name:	Laura Frampton	8/15/2023