Notice of Construction (NOC) Worksheet

PUGET SOUND
Clean Air Agency

Source: Schnitzer Steel Industries	**NOC Number:** 11986
Installation Address: 1902 Marine View Dr | Tacoma, WA 98422	**Registration Number:** 21432
Contact Name: Scott Sloan	**Contact Email: ssloan@schn.com**
Applied Date: 05/01/2020	**Contact Phone:** (253) 279-44752
Engineer: Carl Slimp	**Inspector:** Rick Woodfork

A. DESCRIPTION

For the Order of Approval:
The installation of a Shredder Emission Control System (ECS) that consists of an enclosure to route emissions to a drop out box, two wet venturi scrubbers, two regenerative thermal oxidizers (RTOs) with low NOx burners and two acid gas scrubbers designed to handle 3,000 tons per day of material fed to the shredder.

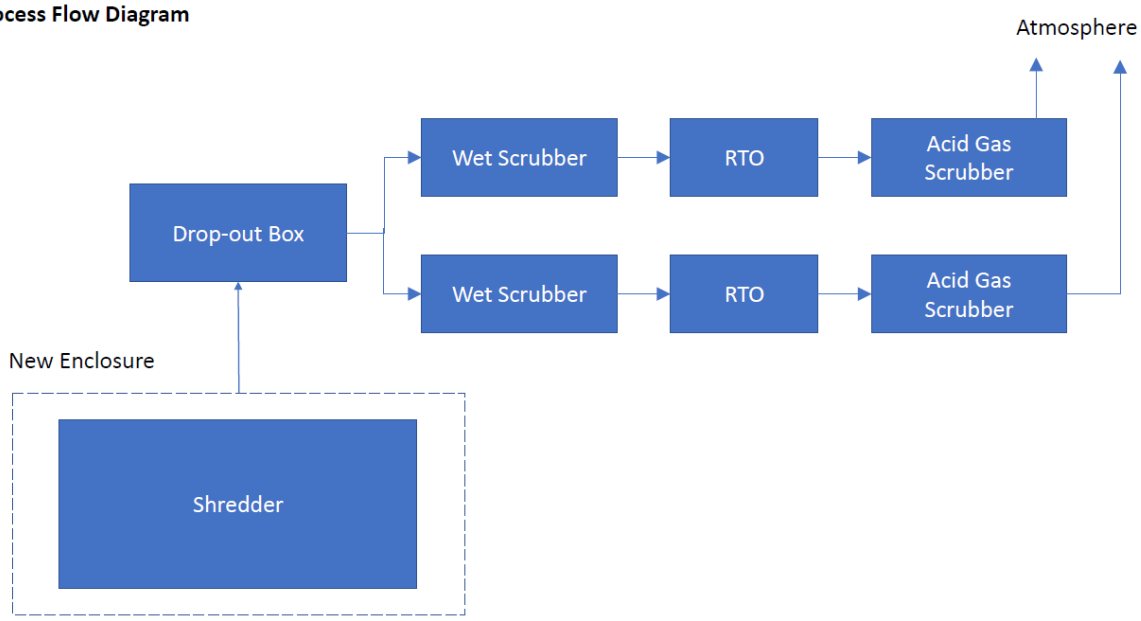
Facility-wide synthetic minor emission limit of VOC emissions.

Facility

General Metals of Tacoma (GMT) owns and operates a metal recycling facility in Tacoma, Washington (the Tacoma facility), under the jurisdiction of the Puget Sound Clean Air Agency (PSCAA). The Tacoma facility operates a metal shredder and hammermill, (referred to in this application as "the shredder"), originally permitted in 1998 under Order of Approval (OOA) No. 7609 (this Order has since been superseded by NOC 11539 issued in February 2019). The shredder is currently unenclosed. Emissions from an existing Z-Box and cyclone used downstream of the shredder to aid in separation of metal from non-metallic byproducts are controlled by a baghouse.

Bulk recyclable material, comprised of heavy iron, auto bodies, appliances, and other light iron, is delivered to the Tacoma facility by barge, rail, and truck. Incoming material is inspected and sorted based on the type of material. Shredder feedstock including auto bodies, appliances, and light iron, are stockpiled near the shredder and placed by grapple onto an infeed conveyor that carries the material into the shredder. The shredder is currently unenclosed. As noted in the Executive Summary, GMT is concurrently submitting a NOC application for the construction of a new enclosure and emission control system on the shredder. Magnetized drums, located downstream from the shredder, attract ferrous materials and separate them from the non-metallic materials and non-ferrous materials (Non-Ferrous Raw or NFR). The two outputs of the shredder are the ferrous shred material and the NFR. The NFR consists of both non-ferrous metal and nonmetallic materials. The NFR is loaded into a hopper at the Joint Products plant where metal is removed for various products that are sold to customers.

GMT Metals of Tacoma
Proposed Shredder Enclosure and Emission Control System
Process Flow Diagram



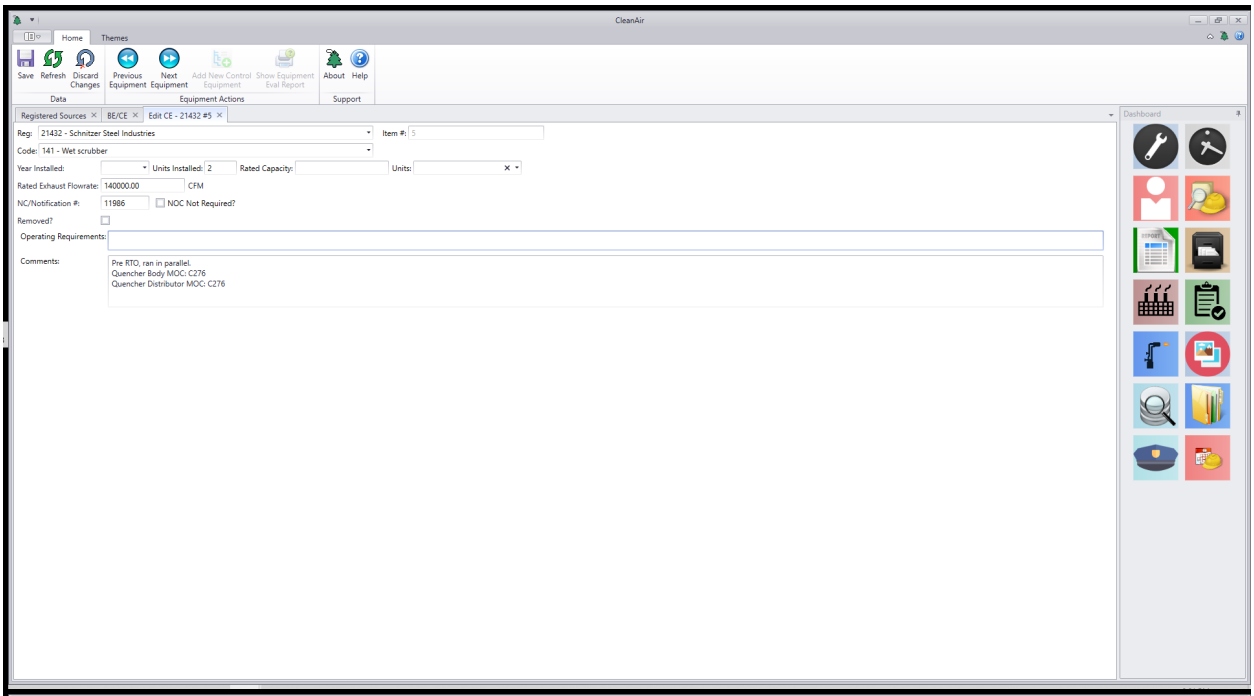
Permit History

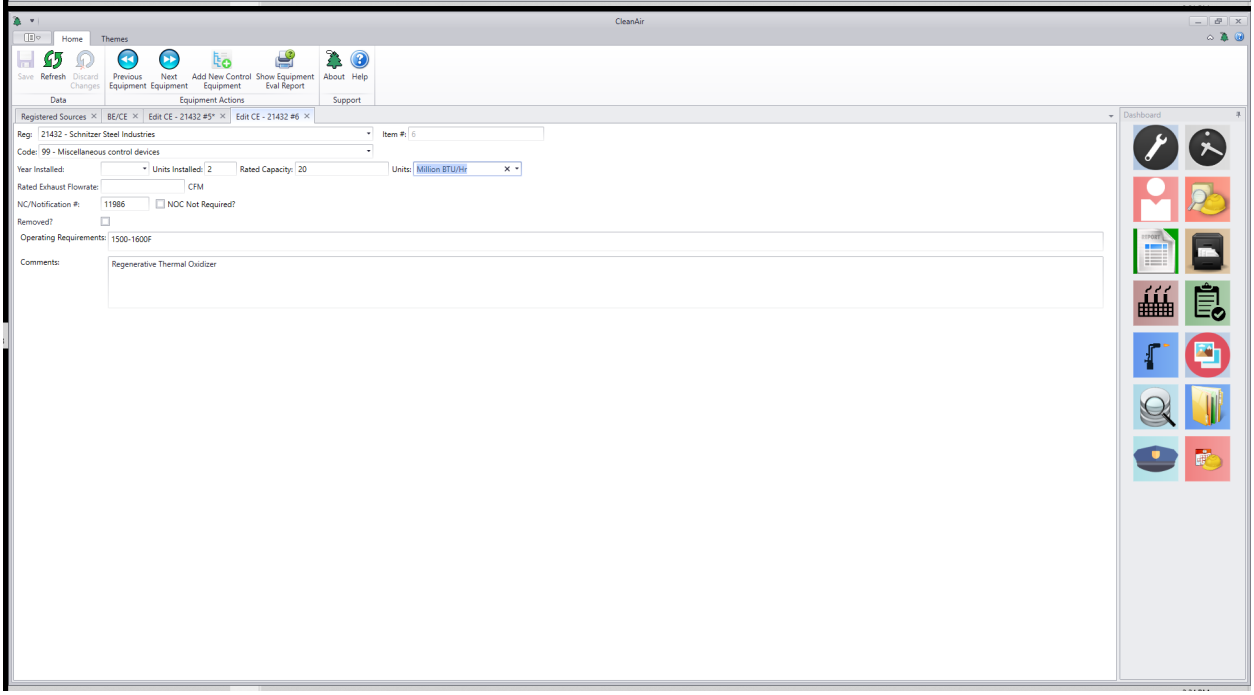
Current active permits include:

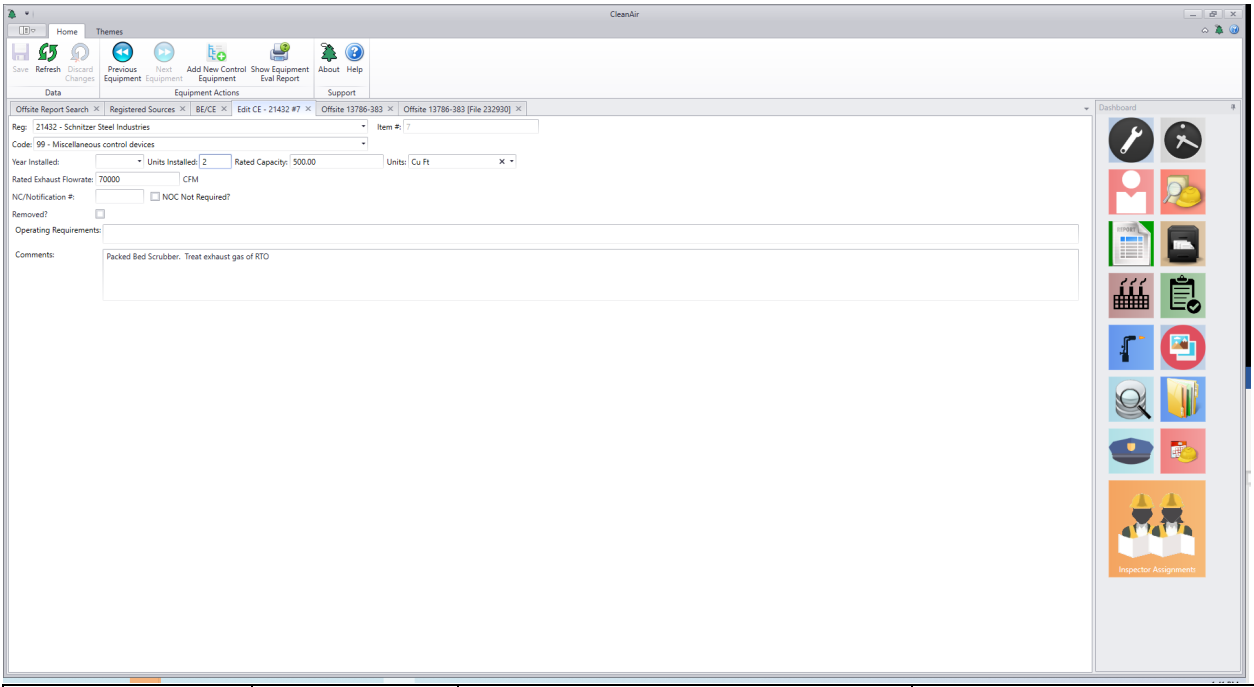
- NOC 11539 – Replacement of a Z-box separator (65,700 cfm controlled by an existing 70,000 cfm cyclone and IVEC Intellivent BF-678-68-TR baghouse rated at 4,300 cfm) which separates material from an existing 2,000 ton/day Texas Shredder and Hammermill. Replacement of two eddy current separators with two new eddy current separators (Steinert MRB 200 MT 40 BR 30, 40 TPH) which sort Auto Shredder Residue (ASR) which has been separated by the Z-box.
- NOC 11664 – For installation of a containerized material separation line for wire ("wire chopper") with a capacity of up to 2.0 metric tons/hr with particulate emissions controlled by a baghouse with a capacity of 18,000 cubic meters per hour.
- NOC 10729 – This permit is for two new air aspiration systems to be located on the end of the in-feed conveyors to the Joint Products Building and for changes to the permit conditions for the plasma cutter permitted under Order of Approval No. 10375. It will cancel and supersede Order of Approval No. 10375, which permitted numerous equipment items. The permitted equipment located within the Joint Products Building includes two parallel conveyorized sorting lines. Each line consists of a new CSL AAS-48x14 air aspiration system (ducted to the baghouse), a Steinert MRB dual magnetic separator, a Steinert 5009 eddy current separator, a pair of Wendt Finder III-2400 induction sensor sorters (the first one ducted to the baghouse); and a Wendt PolyFinder 1800 induction sensor sorter. The CSL 255TR12HEI-FS baghouse is rated at 35,000 cfm. The permitted equipment located outdoors includes a Steinert ISS-300 induction sensor sorter, Action Engineering Vibra-Snap 2080-02 single screen deck, two Steinert 6119 high-frequency eddy current separators, a Stearns 4960 magnetic drum separator, and a Hypertherm Powermax 1650 plasma cutter (in the maintenance shop).

- NOC 11193 – Replace an existing AEI Bivi-Tec double deck vibratory screening equipment with an AEI EcoStar VE6000s50 dynamic disc screener followed by a Bivi-Tec KRL/ED B vibratory screener for nonferrous metal scrap.

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?	**Yes**		

40 CFR 60, Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

NSPS Subpart Dc applies to facilities that operate a steam generating unit that has a maximum design heat input capacity less than 100 MMBtu/hr but greater than 10 MMBtu/hr. The Tacoma facility does not operate an enclosed heat transfer device that would meet the definition of a steam generating unit under Subpart Dc. Therefore, Subpart Dc does not apply**.**

40 CFR 60, Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984

NSPS Kb applies to storage tanks with a capacity greater than or equal to 75 cubic meters (m3) that are used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984. The Tacoma facility does not own any storage tanks of this capacity; therefore, Subpart Kb does not apply.

40 CFR 60, Subparts IIII and JJJJ - Standards of Performance for Stationary Compression Ignition

Internal Combustion Engines and Stationary Spark Ignition Internal Combustion Engines

NSPS IIII and JJJJ apply to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines and stationary spark ignition (SI) internal combustion engines, respectively. The Tacoma facility does not own or operate any CI or SI engines, so Subparts IIII and JJJJ do not apply.

40 CFR 61 Subpart M - National Emission Standard for Asbestos
NESHAP Subpart M applies to facilities that manufacture, remove, destroy, renovate or contain any equipment or operation that may contain asbestos. These standards will apply if any asbestos removal or renovation occurs at the Tacoma facility.

40 CFR 63 Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
NESHAP ZZZZ applies to facilities that operate stationary reciprocating internal combustion engines (RICE) at a major or area source of HAP. The Tacoma facility does not own or operate any stationary RICE, so Subpart ZZZZ does not apply.

40 CFR 63 Subpart DDDDD - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters at Major Sources
NESHAP DDDDD applies to sources that own or operate industrial, commercial, or institutional boilers or process heaters at major sources of HAP. The Tacoma facility does not operate any equipment that meets the definition of a boiler under Subpart DDDDD; therefore, Subpart DDDDD does not apply.

40 CFR 63 Subpart JJJJJJ - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources
NESHAP JJJJJJ applies to sources that own or operate an industrial, commercial, or institutional boiler at an area source of HAP. The Tacoma facility does not operate any equipment that meets the definition of a boiler under Subpart JJJJJJ; therefore, Subpart JJJJJJ does not apply.

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	$ 1,150	
Equipment (2 Regenerative Thermal Oxidizers)	$1,200	
Equipment (2 wet venturi scrubbers)	$1,200	
Equipment (2 packed bed acid gas scrubbers)	$1,200	
SEPA (DNS)	$800	
Public Notice	$700	
Agency Review of Screening Dispersion Modeling Analysis (provided by applicant)	$800	
Equipment (2 wet venturi scrubbers)	$1,200	
Filing received		$ 1,150 (5/1/2020)
Additional fee received		$5,100 (2/16/23)
Equipment change		$2,000
Total	**$8,250**	

Registration Fees:
Registration fees are assessed to the facility on an annual basis. Fees are assessed in accordance with Regulation I, Section 7.07.

Upon construction of the ECS, the fees will then be assessed in accordance with Regulation I, Section 5.07, shown in the table below.

PUGET SOUND
Clean Air Agency

PUGET SOUND
Clean Air Agency

Puget Sound Clean Air Agency
1904 Third Avenue, Suite 105
Seattle, WA 98101-3317
Tax ID: 91-0823558
206.689.4072

Invoice for Year 2022 Operating Permit Fees

Bill To:
Schnitzer Steel Industries **1902 Marine View Dr** **Tacoma, WA 98422** **Attention: Accounts Payable**

Invoice Date:	Invoice #:
November 19, 2021	20220030
Due Date:	**Terms:**
January 03, 2022	Net 45 Days
Facility ID (Permit #):	
21432	

Site Address: ***Schnitzer Steel Industries***
1902 Marine View Dr, Tacoma, WA 98422

The annual operating permit fee is required by Washington State law and Puget Sound Clean Air Agency's Regulation I. Your fees are based on your NAICS code and your actual emissions during 2020.

Facility Fees and Applicable Regulations			Charges
Facility Fee for Operating Permit Sources. Reg I, 7.07(b)(1)(iii)			**$ 28,600.00**
NAICS 423930 -- Recyclable Material Merchant Wholesalers			
Emission Surcharges - Reg I, 7.07(b)(2)	**Tons in 2020**	**Per Ton**	
HAP (Hazardous Air Pollutants)	38	$ 60	$ 2,280.00
PM10 (Particulate Matter < 10 microns)	29	$ 60	$ 1,740.00
VOC (Volatile Organic Compounds)	158	$ 60	$ 9,480.00
			$ 13,500.00
Fee Totals			
Operating Permit Fee (After February 17, 2022, the fee is $48,600.00).			**$ 42,100.00**
The Total Fee is due by January 03, 2022. If unpaid after February 17, 2022, an additional delinquent fee of $6,500.00 will be applied. The delinquent fee is equal to 25% of the Operating Permit Fee, not to exceed $6,500 (Reg I, 7.07(b)).			
WA State Department of Ecology surcharge, Reg I, 7.07(d)			**$ 1,039.97**
For further information regarding the WDOE surcharge, please call 1-360-407-7530.			
TOTAL FEE			**$ 43,139.97**

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.

11/08/2021

Applicability		
Regulation I	Description	Note
5.03(a)(5)(N)	Wet scrubber	
5.03(a)(6)(A)	Baghouse	
5.03(a)(2)	Sources with a federally enforceable emission limitation established in order to avoid operating permit program applicability under Article 7 of this regulation	
Annual Registration Fee		
Regulation I	Description	Fee
5.07(c)	Registered sources shall be assessed a fee of $1,150	$1,150
5.07(c)(2)	Sources subject to a federally enforceable emission limitation as specified in Section 5.03(a)(2)	$2,300
5.03(c)(3)	Sources subject to the emission reporting requirements under Section 5.05(b) of this regulation shall be assessed $30 for each ton of CO and $60 for each ton of NOx, PM10, SOx, HAP, and VOC, based on the emissions reported during the previous calendar year;	$30 for each ton of CO and $60 for each ton of NOx, PM10, SOx, HAP, and VOC
	Total =	$3,450 + reported emissions

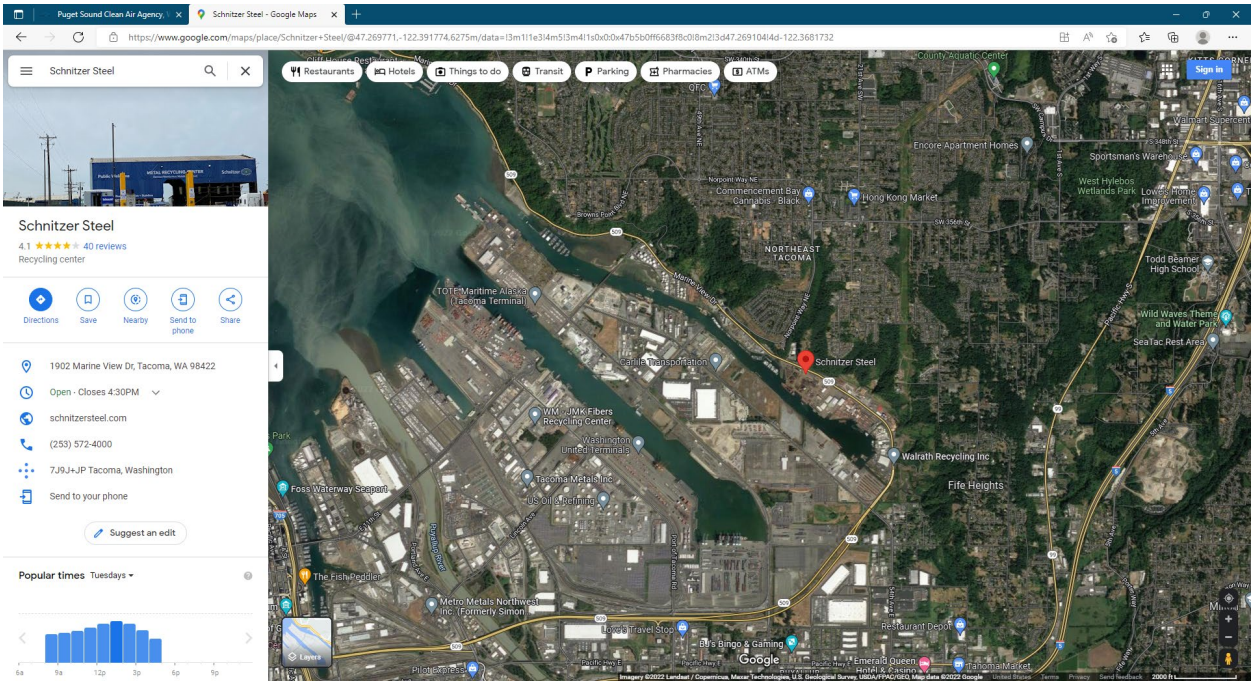
D. STATE ENVIRONMENTAL POLICY ACT (SEPA) REVIEW

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.

PSCAA is the SEPA lead agency for this project. The applicant submitted a completed Environmental checklist that is included below. The shredder was covered in a past DNS, also included below. The emissions generated by the ECS require a new SEPA review.

SEPA Pages from 2020 08-11 GMT RTC

10375-dns.pdf



The City of Tacoma was consulted for comments on July 19, 2022, and again on December 17, 2022. This has been a long standing facility, with the goals of this project to lower emissions rather than to raise production. This project should be below the 12,000 sf industrial threshold that would require them to be the SEPA lead.

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.

E. 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."

Venturi scrubber

Similar Permits

Order of Approval	Emission Limits
NOC 12135 (2/15/23) – Venturi Scrubber on Sewage Sludge incinerator	• PM ≤ 0.05 gr/dscf

Analysis

Few venturi scrubbers have been installed in our area, and none for shredding operations. They are used to control PM from sewage sludge incinerators and have a 0.05 gr/dscf limit. Schnitzer has recommended a 0.0048 gr/dscf, which is similar to the Schnitzer steel plant located in Oakland, CA. Since this is more stringent than what is found locally, and possible for the industry, this should be an acceptable limit.

Recommendations

PM ≤ 0.0048 gr/dscf has been used for BACT at other locations. The application has also used 0.005 gr/dscf to determine potential emission rates.

RTO

Order of Approval	Emission Limits
NOC 10715 (3/28/2014) – 1.9 MMBtu/hr natural gas fired RTO to control emissions from adhesive application line	RTO shall achieve a 98.5% or higher destruction efficiency, or 10 ppmdv or less at the RTO outlet, as determined by EPA Method 25A Perform EPA Method 204 - Permanent or Temporary Total Enclosure (TTE) to evaluate if the C4 (1) production line meets the criteria of a total enclosure, or other method to determine the capture efficiency pending approval of the Agency RTO at or above the average temperature maintained during the last stack test, however shall not be lower than 1400 ºF. The average temperature during the last stack test for each RTO shall be identified at or near the temperature monitor.
12218 (2/11/2022) -- Birk TNV Model 218 low NOx natural gas fired thermal oxidizer rated at 0.5 MMBTU/hr	Combustion in natural gas fired thermal oxidizer with low NOx burners Residence time in thermal oxidizer – minimum of 1 second Minimum temperature at inlet to thermal oxidizer of 1,500 degrees F or temperature set in most recent compliance test.
11800 (9/17/2019) Anguil Model 50” 1.5 mmbtu/hr regenerative thermal oxidizer with SPT-48-96 5,500 scfm packed tower aqueous wet scrubber for groundwater remediation.	The control efficiency of the air stripper and regenerative thermal oxidizer shall meet the following requirements, as applicable: • ≥97% if inlet VOC ≥200 ppmv, measured as hexane or its equivalent; or • ≥90% if inlet VOC <200 ppmv, measured as hexane or its equivalent; or • ≤10 ppmv at the outlet of the control device, measured as hexane or its equivalent. The scrubber stack shall not emit hydrogen chloride gas at concentrations above 9.3 ppm corrected to 7% O2, 1 hour average (EPA Method 26A) The scrubber stack NOx emissions shall not exceed 0.098 lb/mmbtu, 1 hour average (EPA Method 7E) The scrubber stack CO emissions shall not to exceed 0.0824 lb/mmbtu, 1 hour average (EPA Method 10)

Acid Gas Scrubbers: No acid gas scrubbers have been permitted by the PSCAA recently

Order of Approval	Emission Limits
NOC 8423 (2/21/2002) – four Air Chem Horizontal Packed Bed Acid Gas Scrubbers rated at 50,000 scfm each	• The acid gas scrubbers shall not emit more than 0.67 HF, 0.53 HCl, 2.0 lb/hr NH3, or 0.22 lb/hr phosphoric acid (H3O4P). Microchip shall use CARB Method 421 to measure HF, HCl, and H3O4P, and EPA Method 4 modified for ammonia as described by Bay Area AQMD Source Test Procedure ST-1B for ammonia • install and maintain gauges to measure the pH, pressure differential across the packed beds, and liquid flow meters

Other Regulatory Agencies BACT

Schnitzer Steel has permitted this same modification to their operations in Massachusetts, and are currently permitting similar control equipment in California and Oregon, although do not have final permits at the time of this analysis. In the process of writing this permit, the Massachusetts plant is now also going through new permitting as reconstruction is required. I have talked to Edward Braczyk with MassDEP and Carol Allen with BAAQMD, and have received documents outlining their approach.

Prolerized nmCPA
NE-15-014(X267680)

The Massachusetts plant has a design capacity of 300 tons per hour with an actual average of 265 tph. This is about the same compared to Tacoma WA plant. MassDEP is requiring a starting minimum temperature of 1600 degrees Fahrenheit for the RTO, with the possibility of lowering the operational temperature with testing to show 98% removal of VOCs. The bed will also have gas flow direction changes approximately every 4-5 minutes by automatic poppet valves to maintain proper temperature in the ceramic beds. This should be case specific and described in the RTO manual purchased for the Tacoma plant.

The Massachusetts permit also lists out emission limits, summarized in the table below:

Table 2

EU	Operational / Production Limit	Air Contaminant	Emission Limit
1	**Interim Operational Limits (prior to installation of PCDs):** Infeed shredder rate shall be: < 990,000 tons per rolling	PM[1]	≤ 0.40 lb/hr ≤ 0.14 TPM ≤ 1.7 TPY
		VOC[1]	≤ 0.6 lb/hr ≤ 0.22 TPM ≤ 2.6 TPY <25 ppm as methane

Table 2			
EU	**Operational / Production Limit**	**Air Contaminant**	**Emission Limit**
	twelve month period and < 223,200 tons per month. **Final Operational Limits (with PCDs):** Infeed shredder rate shall be: < 2,628,000 tons per rolling twelve month period and < 223,200 tons per month. **Minimum operating temperature** of Regenerative Thermal Oxidizers (RTOs) ≥ 1600 °F [2] **Packed bed scrubbing solution** pH ≥ 7 and ≤ 10	HAPS[1]	< 5 TPY for a single HAP < 10 TPY for total HAPS
		Acid Gases[1]	< 2ppm total HCl and HF
		Opacity	≤5%
Facility-Wide	N/A	Opacity	≤ 5%
		Smoke	< No. 1 of Chart[3]

Also, to ensure 95% capture from the total enclosure, the following condition is used in the permit:

The Permittee shall demonstrate that the pollutant capture system (PCS) has been constructed to minimize the enclosure's draft openings, and the extraction vent system operates at a sufficient flow rate to promote air flow into the enclosure to sufficiently capture pollutants emanating from the shredder, consistent with USEPA Method 204 Permanent Total Enclosure Criteria (as set forth at 40 CFR Part 51, Appendix M, Test Method 204). The Permittee shall also monitor to verify that the PCS is continuously maintained under negative pressure. The Permittee shall measure the total system air flow rate, or equivalent, to aid in the establishment of a parametric monitoring program COP for the PCS.

The Agency will require that a negative pressure is attained and monitored. The Agency will also require that the owner or operator conduct capture efficiency evaluation on the enclosure during source testing, with the parametrics of the fans documented and noted.

On 11/18/2022, I discussed with Carol Allen from BAAQMD about that ongoing permit. Because it is still being written, there were not yet conditions to reference. She did confirm that the process will look the same, as in emissions will be controlled by a filter, RTO and acid gas scrubber. They also sent the redacted source test reports performed at the Oakland Plant. They had no comment on the permanent enclosure requirements.

Summary tBACT determination

Pollutant	Available Method That Meets BACT	Implementation of Method
Acid Gases	▪ Acid Gas Scrubber	▪ Control and monitor PH ▪ <2ppm total HCl and HF
Metals	▪ Venturi Scrubber	▪ 0.0048 gr/dscf limit

Summary BACT determination

Pollutant	Available Method That Meets BACT
NO_x	Low NOx burners on RTO
SO_2	Low SO2 fuel used
Total VOCs	RTO controlling VOC from process
PM	Wet venturi scrubbers

F. EMISSION ESTIMATES

Proposed Project Emissions

Actual Emissions

Trinity has prepared the following table, which shows expected the change of each criteria pollutant. These emissions estimates were updated April 17, 2023 and again June 28, 2023. The most up to date information is below.

Table 1. Updated Shredder Potential-to-Emit (PTE) Summary [a]

Pollutant	Pre-Project Emissions (tpy)	Post-Project Emissions (tpy)	Project Emissions Increase (tpy)
PM	96.00	11.81	-84.19
PM_{10}	42.24	9.12	-33.12
$PM_{2.5}$	42.24	9.12	-33.12
SO_2	--	0.10	**0.10**
NO_X	--	12.24	**12.24**
VOC	231.87	16.94	-214.92
CO	--	14.43	**14.43**
Total HAP	20.03	2.77	-17.26
Max Individual HAP	7.42	0.57	-6.86

a. All calculations represented are the sum of controlled shredder emissions from the RTOs, fugitive shredder emissions, and emissions from natural gas combustion and additional NO_X emissions due to the RTOs. These are the only emission sources that would be affected by the proposed project. Emissions for pollutants that will increase total emission rate due to this project are presented in bold.

Potential Emissions

Actual emissions were are based on operating at 100% rated capacity and 8,760 hour per year.

Facility-wide Emissions

Actual Emissions

Trinity has prepared the following estimate for natural gas combustion emission increases from the two RTOs and NO_X emission increases due to the installation of the RTOs. Note that the table below only represents the natural gas combustion emissions from the RTOs.

Table 11. Criteria Pollutant PTE Summary for Two RTOs

Pollutant	Emission Factor[1] (lb/MMscf)	Maximum Hourly Emissions[2] (lb/hr)	Annual Emissions[3] (tpy)
SO_2	0.6	0.02	0.10
NO_x	50	1.96	8.59
VOC	5.5	0.22	0.94
CO	84	3.29	14.43

1. Minimal combustion emissions are expected for most pollutants from the flameless RTOs; however, emissions are conservatively estimated based on AP-42 in place of manufacturer specifications. Emission factors obtained from AP-42 Section 1.4 Natural Gas Combustion, Tables 1.4-1 and Table 1.4-2. PM_{10} and $PM_{2.5}$ emissions are conservatively assumed to be equivalent to PM emissions.

2. Maximum Hourly Emissions (lb/hr) = Emission Factor (lb/MMscf) * Maximum Gas Firing Rate (MMscf/hr) * 2 RTOs.

3. Annual Emissions (tpy) = Emission Factor (lb/MMscf) / 2000 (lb/ton) * [Gas Firing Rate at Operating Capacity (MMscf/hr) * Annual Hours of Operation at Operating Capacity (hr/yr)] * 2 RTOs.

Reporting Source? No

Without the ECS, this is a reporting source. The ECS should reduce emissions to below reporting. Emissions will still need to be tracked and calculated to ensure compliance with the synthetic minor.

Potential Emissions

The Shredder is the prime emission unit for this source. The emission change from this project is shown in the table provided by Trinity above.

G. 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 due to federally enforceable limits of this following order. The source is considered a "**synthetic minor**".

H. AMBIENT TOXICS IMPACT ANALYSIS

The estimated potential toxic air pollutant (TAP) emissions at operating at 100% rated capacity and 8760 hour per year for each new or modified emission unit (*or based on limit in permit*). The table below includes estimated potential emissions of all TAP and compares those to the Small Quantity Emission Rates (SQER) in WAC 173-460-150.

Trinity has compiled the following tables with expected HAPS/TAPS. Table 2 below shows the increase expected from this project, while tables 2, 5 6, 8 and 11 show the individual units.

Table 2. Updated TAP Emission Increases

TAP	Project Emission Increase	SQER	Averaging period	Below SQER?
	lb/averaging period			
Acetaldehyde	1.48	6.0E+01	Annual	Yes
Acrolein	1.27E-06	2.6E-02	24-hr	Yes
Copper Compounds	3.33E-05	1.9E-01	1-hr	Yes
Formaldehyde	25.76	2.7E+01	Annual	Yes
Hydrogen Chloride	4.68	6.7E-01	24-hr	No
Hydrogen Fluoride	4.01	1.0E+00	24-hr	No
Naphthalene	0.10	4.8E+00	Annual	Yes
CO	3.29	4.3E+01	1-hr	Yes
NO_X	4.96	8.7E-01	1-hr	No
Sodium Hydroxide [a]	0.011	1.5E-02	1-hr	Yes

a. Basis for determining the sodium hydroxide emissions is provided in the November 11, 2020 submittal to respond the agency's request for NOC 11986.

This table was also updated on 6/28/2023. The analytes changed with the change in technology. CO, NOx and Sodium Hydroxide were also analyzed. NOx exceeds the SQER, but the air modeling with Aerscreen shows that it is below ASIL. An AERSCREEN model, performed by Trinity on April 17, 2023, showed that a rate of 5.48 lb/hr would have an ambient impact of 168 ug/m^3 of NOx, below the ASIL of 470 µg/m3. This was updated again to show the current expected rates of 4.96 lb/hr of NOx, as well as applied to HCl and HF. The Air modelling input and output files are below. Table 3 below shows the pollutants that were above SQER compared to the ASIL limits.

Air modeling results.pdf

Table 3. Updated TAP Modeling Results

Toxic Air Pollutant	Averaging Period	Hourly Emission Increase [b] (lb/hr)	Modeled Concentration (µg/m^3)	ASIL (µg/m^3)	Above ASIL?	% of ASIL
NO_2 [a]	1-hr	4.96	151.70	470	No	32%
HCl	24-hr	0.20	3.58	9	No	40%
HF	24-hr	0.17	3.06	14	No	22%

a. It is conservatively assumed all NO_X emissions are emitted in the form of NO_2.
b. Hourly emission increases represent the emissions corresponding to the averaging period (e.g., HCl lb/hr emissions = HCl lb/day emissions ÷ 24 hr/day).

HCl and HF were also looked at the potential to emit at the hourly rate possible for 24 hours. Those emissions were still below ASIL and are shown below.

Toxic Air Pollutant	Averaging Period	Hourly Emission Increase (lb/hr)	Modeled Concentration (µg/m^3)	ASIL (µg/m^3)	% of ASIL
HCl	24-hr	0.40	7.35	9	82%
HF	24-hr	0.47	8.59	14	61%

Below is the emission summaries created by Trinity for the equipment, which include an analysis of how criteria pollutants and taps will be affected by this project.

Table 2. Shredder Toxic Air Pollutant (TAP) and Hazardous Air Pollutant (HAP) Emission Summary[1, 7]

Pollutant	Hazardous Air Pollutant (HAP)?[2] (Yes/No)	Pre-Project Hourly Emissions (lb/hr)	Pre-Project Daily Emissions (lb/day)	Pre-Project Annual Emissions (tpy)	Post-Project Hourly Emissions (lb/hr)	Post-Project Daily Emissions (lb/day)	Post-Project Annual Emissions (tpy)
1,3-Butadiene	Yes	0.02	0.22	0.03	1.50E-03	0.02	1.83E-03
Acetaldehyde	Yes	-	-	-	1.69E-04	2.02E-06	7.39E-04
Acrolein	Yes	-	-	-	1.06E-04	1.27E-06	4.64E-04
Benzene	Yes	0.52	5.17	0.63	0.04	0.36	0.04
Cadmium Compounds	Yes	3.42E-04	3.42E-03	4.16E-04	4.08E-05	4.08E-04	4.97E-05
Chlorodifluoromethane	No	1.97	19.67	2.39	0.14	1.36	0.17
Chromium (non-VI) Compounds	No	1.05E-05	1.05E-04	1.28E-05	1.25E-06	1.25E-05	1.52E-06
Chromium (VI) Compounds	No	4.65E-06	4.65E-05	5.66E-06	5.55E-07	5.55E-06	6.75E-07
Chromium Compounds (total)	Yes	1.52E-05	1.52E-04	1.84E-05	1.81E-06	1.81E-05	2.20E-06
Copper Compounds	Yes	-	-	-	3.33E-05	4.00E-07	1.46E-04
Cumene	Yes	0.06	0.60	0.07	4.15E-03	0.04	5.05E-03
Ethylbenzene	Yes	1.19	11.88	1.45	0.08	0.82	0.10
Formaldehyde	Yes	-	-	-	2.94E-03	3.53E-05	1.29E-02
Hexane (n-Hexane)	Yes	1.93	19.34	2.35	0.20	1.34	0.47
Hydrogen Chloride	Yes	-	-	-	0.40	4.01	0.49
Hydrogen Fluoride	Yes	-	-	-	0.47	4.68	0.57
Lead Compounds	Yes	2.42E-03	0.02	2.94E-03	2.88E-04	2.88E-03	3.51E-04
Methanol	Yes	0.66	6.57	0.80	0.05	0.45	0.06
Methyl Chloroform (1,1,1-Trichloroethane)	Yes	0.29	2.86	0.35	0.02	0.20	0.02
Methyl Isobutyl Ketone (MIBK)	Yes	0.07	0.65	0.08	4.51E-03	0.05	5.49E-03
Methylene Chloride	Yes	0.18	1.85	0.22	1.27E-02	0.13	0.02
Naphthalene	Yes	-	-	-	1.18E-05	1.41E-07	5.15E-05
Tetrachloroethylene (PCE)	Yes	0.31	3.12	0.38	0.02	0.22	0.03
Polychlorinated Biphenyls (PCBs)[4]	Yes	0.02	0.17	0.02	1.14E-03	1.14E-02	1.39E-03
Propylene	No	0.61	6.08	0.74	0.07	0.42	0.18
Styrene	Yes	0.29	2.91	0.35	0.02	0.20	0.02
Toluene	Yes	4.82	48.23	5.87	0.33	3.33	0.41
Xylenes (m-, o-, and p-)[5]	Yes	6.10	61.03	7.42	0.42	4.21	0.51
Highest Individual HAP[6]:	--	--	--	7.42	--	--	0.57
Total HAPs[6] (tpy)	--	--	--	20.03	--	--	2.77

1. All calculations represented are the sum of controlled shredder emissions from the RTOs, fugitive shredder emissions, and emissions from natural gas combustion at the RTOs. These are the only emission sources that would be affected by the proposed project. Total emissions for pollutants that will have an increase in emissions are presented in bold text.
2. The summary table for all pollutants emitted from the shredder and RTOs includes several non-HAP. These pollutants are either halogenated compounds that can form acid gases in the RTOs or toxic air pollutants (TAP) emitted from natural gas combustion in the RTOs.

3. Chromium compounds are the HAP category. The report from Foulweather Consulting lists emission factors for "all chromium compounds" and chromium VI separately. In this table, emissions for "all chromium compounds" are conservatively compared to the most stringent TAP thresholds for chromium III. Emissions of chromium VI are compared to the TAP thresholds for chromium VI.
4. PCBs as a generic category are the emission factor listed in the report from Foulweather Consulting. This pollutant is a HAP and many specific PCBs are Washington TAP; emissions of this pollutant are compared the TAP category of "PCBs, NOS (not otherwise specified)"
5. Specific emission factors for isotopes of xylene are listed in the Foulweather report. All xylene emissions are conservatively grouped under the HAP of "mixed xylenes" for comparison to SQER levels in WAC 173-460-150. All xylene isotopes and mixed xylenes have the same SQER in the rule.
6. Total HAP and highest individual HAP calculations exclude any Washington TAP that is not also a HAP.
7. From Foulweather Consulting's "Recommended Test Methods and Emission Factors for Metal Shredding Operations Conducted at Schnitzer Steel Industries' Facilities" (October 2019), 1,1-difluroethane, acetaldehyde, hexachloroethane (PCA), and norflurane (HFC134a) were indicated as Tentatively Identified Compounds (TICs) and should not be included in the HAP/TAP analysis of shredder emissions.

Table 6. Shredder Stack TAP and HAP Emission Summary

Pollutant	HAP[1] (Yes/No)	TAP (Yes/No)	Uncontrolled Emission Factor[2] (lb/ton) Auto Bodies	Light Iron	Tacoma-Specific	Hourly Emissions[3,6] (lb/hr)	Daily Emissions[4,6] (lb/day)	Annual Emissions[5,6] (tpy)
1,3-Butadiene	Yes	Yes	6.20E-05	7.84E-05	7.27E-05	4.14E-04	4.14E-03	5.04E-04
Benzene	Yes	Yes	4.38E-03	2.95E-04	1.72E-03	9.83E-03	9.83E-02	1.20E-02
Cadmium Compounds	Yes	Yes	--	--	1.14E-06	2.37E-05	2.37E-04	2.89E-05
Chlorodifluoromethane	No	Yes	1.62E-04	1.00E-02	6.56E-03	3.74E-02	3.74E-01	4.55E-02
Chromium (non-VI) Compounds	No	Yes	--	--	3.50E-08	7.28E-07	7.28E-06	8.86E-07
Chromium (VI) Compounds	No	Yes	--	--	1.55E-08	3.22E-07	3.22E-06	3.92E-07
Chromium Compounds (total)	Yes	No	--	--	5.05E-08	1.05E-06	1.05E-05	1.28E-06
Cumene	Yes	Yes	2.14E-04	1.93E-04	2.00E-04	1.14E-03	1.14E-02	1.39E-03
Ethylbenzene	Yes	Yes	9.03E-03	1.23E-03	3.96E-03	2.26E-02	2.26E-01	2.75E-02
Hexane (n-Hexane)	Yes	Yes	1.35E-02	2.65E-03	6.45E-03	3.68E-02	3.68E-01	4.47E-02
Lead Compounds	Yes	Yes	--	--	8.05E-06	1.67E-04	1.67E-03	2.04E-04
Methanol	Yes	Yes	1.34E-03	2.65E-03	2.19E-03	1.25E-02	1.25E-01	1.52E-02
Methyl Chloroform (1,1,1-Trichloroethane)	Yes	Yes	1.22E-04	1.40E-03	9.53E-04	5.43E-03	5.43E-02	6.61E-03
Methyl Isobutyl Ketone (MIBK)	Yes	Yes	9.13E-05	2.86E-04	2.18E-04	1.24E-03	1.24E-02	1.51E-03
Methylene Chloride	Yes	No	1.55E-04	8.64E-04	6.16E-04	3.51E-03	3.51E-02	4.27E-03
Tetrachloroethylene (PCE)	Yes	Yes	1.51E-04	1.52E-03	1.04E-03	5.93E-03	5.93E-02	7.22E-03
Polychlorinated Biphenyls (PCBs)	Yes	Yes	2.69E-06	8.35E-05	5.52E-05	3.15E-04	3.15E-03	3.83E-04
Propylene	No	Yes	3.71E-04	2.92E-03	2.03E-03	1.16E-02	1.16E-01	1.41E-02
Styrene	Yes	Yes	1.67E-04	1.40E-03	9.68E-04	5.52E-03	5.52E-02	6.72E-03
Toluene	Yes	Yes	3.57E-02	5.51E-03	1.61E-02	9.16E-02	9.16E-01	1.11E-01
Xylenes (m-, o-, and p-)	Yes	Yes	4.59E-02	6.58E-03	2.03E-02	1.16E-01	1.16E+00	1.41E-01

1. A Hazardous Air Pollutant (HAP) is any pollutant listed pursuant to Section 112(b) of the Clean Air Act.

2. Emission factors are taken from Appendix B of a report from Foulweather Consulting; this report evaluated the results of a stack test performed on Schnitzer's facility in Oakland. Emission factors were provided for shredder feed of 100% auto bodies and 100% light iron; the emission factor used for emissions at Schnitzer Tacoma is based on the infeed mix of these two categories. The emission factors provided are in Appendix B of the Foulweather Consulting report are provided specifically for the Puget Sound Clean Air Agency (PSCAA). Tentatively Identified Compounds (TICs), including 1,1-difluroethane, acetaldehyde, hexachloroethane (PCA), and norflurane (HFC134a), are not included in estimating TAP/HAP emissions from the shredder.

The incoming feedstock to the shredder is split between the primary categories of light iron and auto bodies. The percentage of each feed is based on operating data from Schnitzer.

Auto Bodies	35%
Light Iron	65%

3. Hourly Emissions (lb/hr) = Emission Factor (lb/ton) * Maximum Hourly Throughput (tons/hr) * 95% Enclosure Capture * (1 - Control Device Efficiency (%)).

4. Daily Emissions (lb/day) = Emission Factor (lb/ton) * Maximum Daily Throughput (tons/day) * 95% Enclosure Capture * (1 - Control Device Efficiency (%)).

5. Annual Emissions (tpy) = Emission Factor (lb/ton) * Maximum Annual Throughput (ton/yr) / 2000 (lb/ton) * 95% Enclosure Capture * (1 - Control Device Efficiency (%)).

6. The 98% control efficiency from the RTOs is not applied to the particulate HAP/TAP pollutants (cadmium, chromium or lead compounds). Instead, the calculations apply a control efficiency for the venturi scrubbers based on the controlled and uncontrolled PM emissions for the process.

Table 7. Acid Gas Emission Summary

Pollutant[1]	Emission Factor[2] (lb/ton)	Hourly Emissions[3] (lb/hr)	Daily Emissions[4] (lb/day)	Annual Emissions[5] (tpy)
Hydrogen Fluoride	1.56E-03	0.47	4.68	0.57
Hydrogen Chloride	1.34E-03	0.40	4.01	0.49

1. HCl and HF emissions occur when the chlorine-containing and fluorine-containing compounds are going through combustion at the RTOs.
2. Emission factors for HF and HCl are based on Oakland, CA's most recent source test results, averaging the lb/ton values observed from the two stacks and applying a conservative safety factor.
3. Hourly Emissions (lb/hr) = Emission Factor (lb/ton) * Maximum Hourly Throughput (tons/hr)
4. Daily Emissions (lb/day) = Emission Factor (lb/ton) * Maximum Daily Throughput (tons/day)
5. Annual Emissions (tpy) = Emission Factor (lb/ton) * Maximum Annual Throughput (ton/yr) / 2000 (lb/ton)

Table 8. Shredder Fugitive Criteria Pollutant PTE Summary

Pollutant	Fugitive Emission Factor[1] (lb/ton)	Hourly Emissions[2] (lb/hr)	Annual Emissions[3] (tpy)
PM[4]	1.32E-02	3.95	4.80
PM_{10}[4]	5.79E-03	1.74	2.11
$PM_{2.5}$[4]	5.79E-03	1.74	2.11
VOC[5]	3.18E-02	9.53	11.59

1. Fugitive Emission Factor (lb/ton) = Uncontrolled Emission Rate (lb/hr) / Maximum Hourly Throughput (ton/hr) * (1 - enclosure efficiency)

2. Hourly Emissions (lb/hr) = Emission Factor (lb/ton) * Maximum Hourly Throughput (tons/hr).

3. Annual Emissions (tpy) = Emission Factor (lb/ton) * Maximum Annual Throughput (ton/yr) / 2000 (lb/ton).

4. Particulate emissions account for both filterable and condensable emissions

5. VOC emissions are provided on an as-methane basis

Table 9. Shredder Fugitive TAP and HAP Emission Summary

Pollutant	HAP[1] (Yes/No)	TAP (Yes/No)	Tacoma-specific Fugitive Emission Factor[2] (lb/ton)	Hourly Emissions[3] (lb/hr)	Daily Emissions[4] (lb/day)	Annual Emissions[5] (tpy)
1,3-Butadiene	Yes	Yes	3.63E-06	1.09E-03	1.09E-02	1.33E-03
Benzene	Yes	Yes	8.62E-05	2.59E-02	2.59E-01	3.15E-02
Cadmium Compounds	Yes	Yes	5.70E-08	1.71E-05	1.71E-04	2.08E-05
Chlorodifluoromethane	Yes	Yes	3.28E-04	9.84E-02	9.84E-01	1.20E-01
Chromium (non-VI) Compounds	No	Yes	1.75E-09	5.25E-07	5.25E-06	6.39E-07
Chromium (VI) Compounds	No	Yes	7.75E-10	2.33E-07	2.33E-06	2.83E-07
Chromium Compounds (total)	Yes	No	2.53E-09	7.58E-07	7.58E-06	9.22E-07
Cumene	Yes	Yes	1.00E-05	3.01E-03	3.01E-02	3.66E-03
Ethylbenzene	Yes	Yes	1.98E-04	5.94E-02	5.94E-01	7.23E-02
Hexane (n-Hexane)	Yes	Yes	3.22E-04	9.67E-02	9.67E-01	1.18E-01
Lead Compounds	Yes	Yes	4.03E-07	1.21E-04	1.21E-03	1.47E-04
Methanol	Yes	Yes	1.10E-04	3.29E-02	3.29E-01	4.00E-02
Methyl Chloroform (1,1,1-Trichloroethane)	Yes	Yes	4.76E-05	1.43E-02	1.43E-01	1.74E-02
Methyl Isobutyl Ketone (MIBK)	Yes	Yes	1.09E-05	3.27E-03	3.27E-02	3.98E-03
Methylene Chloride	Yes	No	3.08E-05	9.24E-03	9.24E-02	1.12E-02
Tetrachloroethylene (PCE)	Yes	Yes	5.20E-05	1.56E-02	1.56E-01	1.90E-02
Polychlorinated Biphenyls (PCBs)	Yes	Yes	2.76E-06	8.28E-04	8.28E-03	1.01E-03
Propylene	No	Yes	1.01E-04	3.04E-02	3.04E-01	3.70E-02
Styrene	Yes	Yes	4.84E-05	1.45E-02	1.45E-01	1.77E-02
Toluene	Yes	No	8.04E-04	2.41E-01	2.41E+00	2.93E-01
Xylenes (m-, o-, and p-)	Yes	Yes	1.02E-03	3.05E-01	3.05E+00	3.71E-01

1. A Hazardous Air Pollutant (HAP) is any pollutant listed pursuant to Section 112(b) of the Clean Air Act.

2. Fluorinated and chlorinated acid gasses emitted from the shredder stack are not included in the list of fugitive shredder emissions since those compounds are formed only when passing through the RTOs.
Fugitive Emission Factor (lb/ton) = [Uncontrolled Emission Factor (lb/ton) * (1 - Shredder Enclosure Capture Efficiency (%)].
3. Hourly Emissions (lb/hr) = Fugitive Emission Factor (lb/ton) * Maximum Hourly Throughput (tons/hr).
4. Daily Emissions (lb/day) = Fugitive Emission Factor (lb/ton) * Maximum Daily Throughput (tons/day).
5. Annual Emissions (tpy) = Fugitive Emission Factor (lb/ton) * Maximum Annual Throughput (ton/yr) / 2000 (lb/ton).

Table 10. RTO Natural Gas Consumption Parameters

Parameter	Value	Units
Maximum Daily Hours of Operation (Operating Capacity)[1]	24	hr/day
Daily Hours of Operation (Standby Capacity)[1]	0	hr/day
Maximum Annual Hours of Operation (Operating Capacity)[2]	8760	hr/yr
Single RTO Burner Maximum Heat Rating (Startup Capacity)[3]	20	MMBtu/hr
Natural Gas HHV[4]	1.02E-03	MMBtu/scf
Single RTO Gas Firing Rate (Operating Capacity)[5]	1.96E-02	MMscf/hr

1. The daily maximum hours of operation for the RTO is assumed to be 24 hours. Actual hours of operation are expected to be much less than this, and the RTOs will spend a significant amount of time in a standby mode.
2. Annual Hours of Operation of the RTO conservatively assumes the daily maximum hours of operation for 365 days.
3. Estimated heat rating for RTO operation at operating capacity based on a
4. Natural Gas HHV obtained from AP-42 Section 1.4 on Natural Gas Combustion
5. Gas Firing Rate (MMscf/hr) = Heat Rating (MMBTU/hr) / Natural Gas HHV (MMBtu/scf) / (10^6 scf/MMscf).

Table 11. Criteria Pollutant PTE Summary for Two RTOs

Pollutant	Emission Factor[1] (lb/MMscf)	Maximum Hourly Emissions[2] (lb/hr)	Annual Emissions[3] (tpy)
SO_2	0.6	0.02	0.10
NO_x	50	1.96	8.59
VOC	5.5	0.22	0.94
CO	84	3.29	14.43

1. Minimal combustion emissions are expected for most pollutants from the flameless RTOs; however, emissions are conservatively estimated based on AP-42 in place of manufacturer specifications. Emission factors obtained from AP-42 Section 1.4 Natural Gas Combustion, Tables 1.4-1 and Table 1.4-2. PM_{10} and $PM_{2.5}$ emissions are conservatively assumed to be equivalent to PM emissions.

2. Maximum Hourly Emissions (lb/hr) = Emission Factor (lb/MMscf) * Maximum Gas Firing Rate (MMscf/hr) * 2 RTOs.

3. Annual Emissions (tpy) = Emission Factor (lb/MMscf) / 2000 (lb/ton) * [Gas Firing Rate at Operating Capacity (MMscf/hr) * Annual Hours of Operation at Operating Capacity (hr/yr)] * 2 RTOs.

Table 12. TAP PTE Summary for Two RTOs

TAP	CAS	Emission Factor (lb/MMscf)	Maximum Hourly Emissions[1] (lb/hr)	Daily Emissions[2] (lb/day)	Annual Emissions[3] (tpy)	Emission Factor Source[4]
Acetaldehyde	75-07-0	4.30E-03	1.69E-04	2.02E-06	7.39E-04	1
Acrolein	107-02-8	2.70E-03	1.06E-04	1.27E-06	4.64E-04	1
Benzene	71-43-2	2.10E-03	8.24E-05	9.88E-07	3.61E-04	2
Copper Compounds	7440-50-8	8.50E-04	3.33E-05	4.00E-07	1.46E-04	2
Ethylbenzene	100-41-4	9.50E-03	3.73E-04	4.47E-06	1.63E-03	1
Formaldehyde	50-00-0	7.50E-02	2.94E-03	3.53E-05	1.29E-02	2
Hexane (n-Hexane)	110-54-3	1.80E+00	7.06E-02	8.47E-04	3.09E-01	2
Naphthalene	91-20-3	3.00E-04	1.18E-05	1.41E-07	5.15E-05	1
Propylene	115-07-1	7.31E-01	2.87E-02	3.44E-04	1.26E-01	1
Toluene	108-88-3	3.66E-02	1.44E-03	1.72E-05	6.29E-03	1

1. Maximum Hourly Emissions (lb/hr) = Emission Factor (lb/MMscf) * Maximum Gas Firing Rate (MMscf/hr) * 2 RTO units operating in parallel.

2. Maximum Daily Emissions (lb/day) = Annual Emissions (tpy) / (365 days/yr) * 2000 (lb/ton).

3. Annual Emissions (tpy) = Emission Factor (lb/MMscf) / 2000 (lb/ton) * [Gas Firing Rate at Operating Capacity (MMscf/hr) * Annual Hours of Operation at Operating Capacity (hr/yr) + Gas Firing Rate at Standby Capacity (MMscf/hr) * Annual Hours of Operation at Standby Capacity (hr/yr)] * 2 RTOs.

4. PSCAA has provided an informal list of TAP they will be reviewing for sources that use natural gas combustion. The emission factors for each TAP listed are taken from either (1) Ventura County Air Pollution Control District AB 2588 Combustion Emission Factors, Natural Gas Fired Combustion Equipment or (2) AP-42 Section 1.4 Natural Gas Combustion, Tables 1.4-3 and 1.4-4

There is a Consent Decree, Case 1:22-cv-10604 United States of America v. Schnitzer Steel Industries, Inc. states how Schnitzer Steel shall handle regulated scrap and in particular, recovering refrigerant. This is important to note, but should also limit TAPs that are not from the combustion of the RTO.

I. 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 9.09: 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:
Equipment Used in a Manufacturing Process: 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

J. PUBLIC NOTICE

This project does meets the criteria for mandatory public notice under WAC 173-400-171(3) because it includes a WAC 173-400-091 synthetic minor limit. 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
Schnitzer Steel Industries	1902 Marine View Dr, Tacoma, WA 98422	Enclosure of an existing metal shredder and install two Regenerative Thermal Oxidizers (RTOs) to control VOC emissions. The RTOs will be preceded by a high efficiency filtration sytem for particulate control, and followed by a packed bed acid gas scrubber.	8/31/20	Brian Renninger

The comment period was from Month Day, 2023, to Month day, 2023

K. 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.

Facility-wide Conditions:

3. The owner or operator shall limit facility-wide emissions of hazardous air pollutants in Section 112(b) of the federal Clean Air Act (HAPs) to no more than 9.0 tons of any single listed HAP, and no more than 24.0 tons of all HAPs combined, during any 12 consecutive rolling months after the completion of commissioning of the equipment authorized by of this Order of Approval. Also, the owner or operator shall limit facility-wide emissions of volatile organic compounds (VOCs) to no more than 90 tons during any 12 consecutive rolling months after the completion of commissioning of the equipment authorized by of this Order of Approval.

Specific Conditions:

4. The shredder shall not process scrap metal without the exhaust going through the emission control system (ECS), consisting of two wet venturi scrubbers, two regenerative thermal oxidizers (RTOs), and two acid gas scrubbers.

Shredder Enclosure

5. The Permittee shall demonstrate that the pollutant capture system (PCS) has been constructed to minimize the enclosure's draft openings, and the extraction vent system operates at a sufficient flow rate to promote air flow into the enclosure to sufficiently capture pollutants emanating from the shredder and ensure a minimum of 95% capture efficiency. The Permittee shall also monitor to verify that the permanent enclosure is continuously maintained under negative pressure during normal operations. The Permittee shall measure the total system air flow rate, or equivalent, to aid in the establishment of a parametric monitoring program for the PCS. The parametric monitoring

program shall be established in the facility's Operation and Maintenance Plan. The owner or operator shall notify the Agency any substantive changes of the Operation and Maintenance Plan.

Wet Venturi Scrubbers

6. The owner or operator shall install and maintain monitoring to measure the pressure drop across the wet venturi scrubbers and the recirculated water flow rates used at each wet venturi scrubber. Within 90 days after beginning operations, the acceptable range for the gauge shall be clearly marked on or nearby the gauge.

7. The exhaust gas shall not exceed 0.0048 gr/dscf per U.S. EPA Method 5 as modified by Puget Sound Clean Air Agency Board Resolution 540 dated August 11, 1983.

RTOs

8. The RTOs shall be operated at all times when the shredder is operating.

9. Each RTO shall achieve a 98.0% or higher destruction efficiency, or 20 ppmdv or less at the RTO outlet, as determined by EPA Method 25A.

10. Two RTOs combined shall not emit more 4.96 lbs of NO_x as NO_2 per hour as measured by EPA method 7E.

11. The RTO shall operate at a combustion zone temperature of no less than 1,600 degrees F on an hourly average until completion of the performance test required in Condition 17. After completion of the performance test, the Owner and/or Operator shall maintain the RTO combustion zone temperature at no less than the "baseline" temperature, taken on an hourly average. The "baseline" temperature shall be defined as the lower of 1600 degrees F, or the average operating temperature that was observed in the most recent VOC performance test. The baseline temperature shall be clearly marked on or near the RTO temperature display.

12. The owner or operator shall install, operate, calibrate and maintain a monitoring device to monitor and record operations of each RTO to ensure that the minimum required combustion chamber temperature defined by condition 11 is achieved prior to feeding material into the shredder and ensure this minimum temperature is maintained at all times while material is being fed into and processed by the shredder. Both audible and visual alarms shall be used to indicate the need to initiate corrective actions and/or discontinue operation of the shredder infeed conveyor.

ACID GAS SCRUBBERS

13. The Permittee shall install, operate, calibrate and maintain a monitoring device to continuously monitor to ensure that each acid gas scrubber solution is recirculating at all times the unit(s) is/are in operation. The scrubbing solution flow monitors shall be connected to a visible and audible alarm to alert operator if scrubber solution flow is out of range.

14. Emissions from the acid gas scrubbers may exceed neither 0.40 lb/hr of HCl nor 0.47 lb/hr of HF as measured by EPA method 26, EPA Method 26A, EPA method 321 or other agency approved method.

15. **Performance Testing:**

a. The Owner and/or Operator shall conduct performance tests on the following equipment within 60 days after completion of commissioning of the applicable equipment. The testing deadline may be extended for good cause if preapproval is obtained in writing by the Agency, but in no case shall the testing deadline extend beyond 180 days after completion of commissioning of the new applicable equipment.
   i. Permanent enclosure
   ii. Wet Venturi Scrubbers
   iii. RTOs
   iv. Acid Gas Scrubbers

b. The Owner and/or Operator shall conduct a performance test of the equipment listed above while operating the shredder and ECS as close to normal operation as possible.

c. Emission Control System:

   i. The Owner and/or Operator shall measure the concentrations of PM, VOC, NOX and HCl and HF in the exhaust stream.

   ii. If showing destruction efficiency, the inlet to the RTO shall be measured for VOC, and determined on a lb/hr basis.

   iii. A capture efficiency evaluation shall be performed on the enclosure.

d. Test Frequency: Following the initial performance test for this permit, The Owner and/or Operator shall conduct a performance test every year (within 15 months) from the last respective test. Testing shall measure the concentrations of PM, NOx, VOC, HCl, and HF in the exhaust stream.

e. Testing Criteria: Testing of sources for compliance with emission standards shall be performed in accordance with Regulation 1, Article 3, Section 3.07. The Owner and/or Operator shall notify the Agency in writing at least 21 days in advance of the actual date and time of each performance test as required by Regulation 1, Section 3.07(b). The Owner and/or Operator shall complete and submit a separate test report for each performance test to the Department within 60 days after the completion of testing in accordance with the requirements specified in Regulation 1, Section 3.07(c).

f. Test Methods: Sampling sites and velocity traverse points shall be selected in accordance with EPA Test Method 1 or 1A. Adequate and safe access to the test ports must be provided. The gas volumetric flow rate shall be measured in accordance with EPA Test Method 2. The dry molecular weight shall be determined in accordance with EPA Test Method 3 or 3A. The stack gas moisture shall be determined in accordance with EPA Test Method 4. These methods must be performed, as applicable, during each test run.

   i. PM testing shall be conducted in accordance with PSCAA Method 5.

   ii. VOC testing shall be conducted in accordance with US EPA Test Method 25A. Testing to quantify exempt compounds, such as methane, shall be conducted in accordance with US EPA Test Method 18.

   iii. NOX testing shall be conducted in accordance with US EPA Test Method 7E.

   iv. The fugitive visible emissions evaluation shall be conducted in accordance with US EPA Test Method 22.

v. HCl and HF shall be measured using US EPA Method 26, 26A or 321.

vi. Test methods listed above may be modified if approved by the Agency ahead of performance testing.

g. The Owner and/or Operator shall submit a separate test protocol for each performance test to the Department for Review at least 21 days prior to each performance test.

h. Minimum Testing Requirements: Each performance test shall consist of three separate test runs with each test run being at least one hour in duration unless otherwise specified in the applicable standard or test method. The same test methods shall be conducted for both the inlet and outlet measurements, if applicable and technically feasible, which must be conducted simultaneously. Emissions rates, concentrations, grain loadings, and/or efficiencies shall be determined as the arithmetic average of the values determined for each individual test run. Performance tests may only be stopped for good cause, which includes forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the Owner and/or Operator's control. Termination of a performance test without good cause after the first test run has commenced shall constitute a failure of the performance test.

i. During the compliance testing, the following shall be measured and recorded:
   a. Production rate through the shredder
   b. Fan speed and amperage of the exhaust fans.
   c. The operational temperature of the RTO
   d. pH of the acid gas scrubber liquid.
   e. Pressure difference across the wet venturi scrubbers and recirculated water flow rate.

General Reporting and Recordkeeping

16. Records to be maintained by this Order of Approval shall be kept onsite for at least two years from the date of generation, and made available to Puget Sound Clean Air Agency personnel upon request.

17. Within 30 days of the end of each month after completion of commissioning of the emission control system, the owner or operator shall calculate the facility-wide VOC emissions for the previous 12 months using the emission factor in lb per ton shredder feed derived from the last source test, or based on the source test performed at the Schnitzer Steel facility in Oakland, CA, as documented in Foulweather Consulting's memorandum of recommended emission factors (dated October 2019).

18. Within 30 days of the end of each month after completion of commissioning of the emission control system, the owner or operator shall calculate the facility-wide HAP emissions for the previous 12 months. This shall be done using the most recent source tests for HCl and HF, and appropriate emissions factors for emissions, including fugitives, of other HAPs. If emission factors are based on source tests from other facilities, those source tests shall be provided to the Agency.

19. The Owner and/or Operator shall notify the Agency, in writing, within 30 days after the end of each 12-month period if, during that period, emissions of any single HAP exceeded 9 tons, emissions of all HAPs combined exceeded 24 tons, or emissions of VOCs exceeded 90 tons. The report shall include emissions data for the time period for which these thresholds were exceeded.

20. The Owner and/or Operator shall calculate the emissions of PM, NOx, and CO from the shredder using the arithmetic average of emission factors from the three most recent stack tests or using emission factors from AP-42 or other references if stack test information is not available.

21. The owner and/or operator shall notify the Agency, in writing, within 30 days of discovering an exceedance of any limitations identified in Conditions #5, #7, #9, and #10 .

CORRESPONDENCE AND SUPPORTING DOCUMENTS

NOC 11986 Schnitzer Steel SEPA.r

GMT RTO NOC 11986 Supplemental

L. REVIEWS

Reviews	Name	Date
Engineer:	Carl Slimp	12/28/22, 5/3/2023, 7/19/2023
Inspector:	Rick Woodfork	12/28/22
Second Review:	John Dawson	1/3/2023 5/1/2023
Applicant Name:	Scott Sloan	7/25/2023