Statement of Basis for the Air Operating Permit

- FINAL -

Chemtrade Solutions LLC

Anacortes, Washington

April 9, 2021

northwest Clean Air agency

Serving Island, Skagit & Whatcom Counties

PERMIT INFORMATION

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NAICS: 325188
EPA AFS: 53-057-00002

NWCAA ID: 1010

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1 INTRODUCTION

Chemtrade Solutions LLC operates the Anacortes Works Facility (Chemtrade, permittee, or the facility), located near Anacortes, WA. The facility is required to obtain an Air Operating Permit (AOP or Permit) pursuant to Title V of the 1990 Federal Clean Air Act and chapter 173-401 of the Washington Administrative Code (WAC) because it has the potential to emit greater than 100 tons of sulfur dioxide (SO_2) per year among other reasons. See Statement of Basis (SOB) Section 3.2 for a discussion of the applicability of federal programs to the facility. As a sulfuric acid plant and a sulfur recovery plant are both on the list in 40 CFR 52.21(b)(1)(i)(a), the Chemtrade facility is major for the Prevention of Significant Deterioration (PSD) program for SO_2 as well with a potential to emit greater than 100 tons per year.

The purpose of this Statement of Basis is to set forth the legal and factual basis for the conditions of Chemtrade's AOP. This document also provides background information to facilitate review of the permit by interested parties. The Statement of Basis is not a legally enforceable document in accordance with WAC 173-401-700(8).

Northwest Clean Air Agency (NWCAA or Agency) issued the original AOP for Chemtrade on March 18, 2002. NWCAA issued the first AOP renewal (AOP 009R1) on April 14, 2009 which was modified on December 20, 2010 (AOP 009R1M1). The expiration date was April 14, 2014. Chemtrade submitted a timely complete renewal on April 10, 2013. See SOB Section 1.1 for the changes made to the AOP during this renewal and subsequent modifications.

1.1 Changes Made During the Second Renewal

NWCAA received the application for the second AOP renewal on April 10, 2013. The following revisions have been made to the permit during this renewal.

- Chemtrade Solutions LLC took possession of the Anacortes Works facility from General Chemical LLC in January 2014.
- Changed the "gap filling" marker in the MR&R column tables from "Directly enforceable under WAC 173-401-615(1)(b) & (c), 10/17/02." to "Directly Enforceable:".
- Updated the source contact information and general permit information on the permit information page.
- Revised AOP Section 1 to reflect the current list of emission units and regulatory applicabilities.
- Added the Gasoline Dispensing Facility (GDF) with applicable requirements in AOP Sections 1 and 5. Deleted gasoline tank from Insignificant Emissions Units in SOB Table 6.
- Removed Portable In-Line Natural Gas-Fired Catalyst Preheater for Sulfuric Acid Units 1&2 from Section 1 because it qualifies as an Insignificant Emission Unit. Inserted it into SOB Table 6.
- 20,000 gallon fuel oil tank taken out of service and piping removed. The facility is no longer capable of firing fuel oil and references to firing fuel oil and the fuel oil tank are removed from the AOP and SOB.
- Revised AOP Sections 2 and 3 to be consistent with current NWCAA format and content. Updated citations and dates as appropriate.
- Included greenhouse gas (GHG) reporting applicable requirements (AOP Terms 2.4.5, 2.9, and 2.10).

- In AOP Term 2.4.6, added requirement to keep records and report to verify emissions from potential PSD sources.
- Incorporated nonroad engine requirements from NWCAA Section 304 in AOP Term 2.8.2.
- Included generic administrative terms (e.g., access and sampling ports) from PSD 94-01 Amendment 1 under analogous terms in Section 2.
- Removed Startup, Shutdown, Malfunction Plan (SSMP) requirements under 40 CFR 63 Subparts A and UUU because they no longer apply.
- Added 40 CFR 63 Subpart CC general requirements that are applicable if triggered in AOP Terms 3.2.14.2 and 3.2.18.
- Revised AOP Sections 4 and 5 with current federal, state and NWCAA regulatory citations and their applicable requirements to reflect any new or revised applicable regulation.
- Updated the Monitoring, Recordkeeping, & Reporting (MR&R) for the generic opacity requirements in AOP Section 4 to be consistent with current NWCAA practice. For consistency and ease of implementation, the MR&R for the opacity limits in AOP Section 5 reference the MR&R in AOP Section 4.
- Moved generic 40 CFR 63 Subpart UUU administrative terms (e.g., deviation reporting; startup, shutdown, malfunction reporting requirements; operation, maintenance and monitoring plan) from AOP Section 5 to analogous terms in AOP Section 3.
- Incorporated Compliance Assurance Monitoring (CAM) requirements for the Sulfuric Acid Plant for sulfuric acid and opacity.
- Merged the 250 ppmvd at 0% excess air limit and requirements for the Sulfur Recovery Unit (SRU) from 40 CFR 60 Subpart J and 40 CFR 63 Subpart UUU into a single term.
- Added applicable requirements of 40 CFR 60 Subpart GGG – Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced after January 4, 1983 and on or before November 7, 2006 – to the SRU.
- Added applicable requirements of 40 CFR 63 Subpart DDDDD – Industrial, Commercial, and Institutional Boilers and Process Heaters.
- Updated the requirements in AOP Section 5 to reflect the most recent construction permit versions (i.e., 458d, 880c, and 650d).
- Changed gap-filled monitoring, recordkeeping, and reporting requirement for the tons SO2 emitted from the SRU limit (AOP Term 5.2.2) to reflect the rolling 12-month-total basis of the limit and current data availability.
- Updated the list of inapplicable requirements in AOP Section 6.

2 FACILITY DESCRIPTION

2.1 General Facility Description

The Chemtrade facility (Anacortes Works) comprises a sulfuric acid plant and a sulfur recovery unit. It is located on March Point, a heavy industrial area approximately 2 miles southeast of Anacortes, WA, and 11 miles west of Mount Vernon, WA in Skagit County. March Point is bordered on the west by Fidalgo Bay and on the east by Padilla Bay. The Chemtrade plant is located between the Tesoro Refining & Marketing Company LLC (Tesoro) facility to the north and the Shell Puget Sound Refinery to the southeast. The nearest Class I area is Olympic National Park, which is located 43 miles to the west. A location map is shown in Figure 1.

The Anacortes Works facility was operated by General Chemical LLC; Chemtrade took possession of the facility in January 2014.

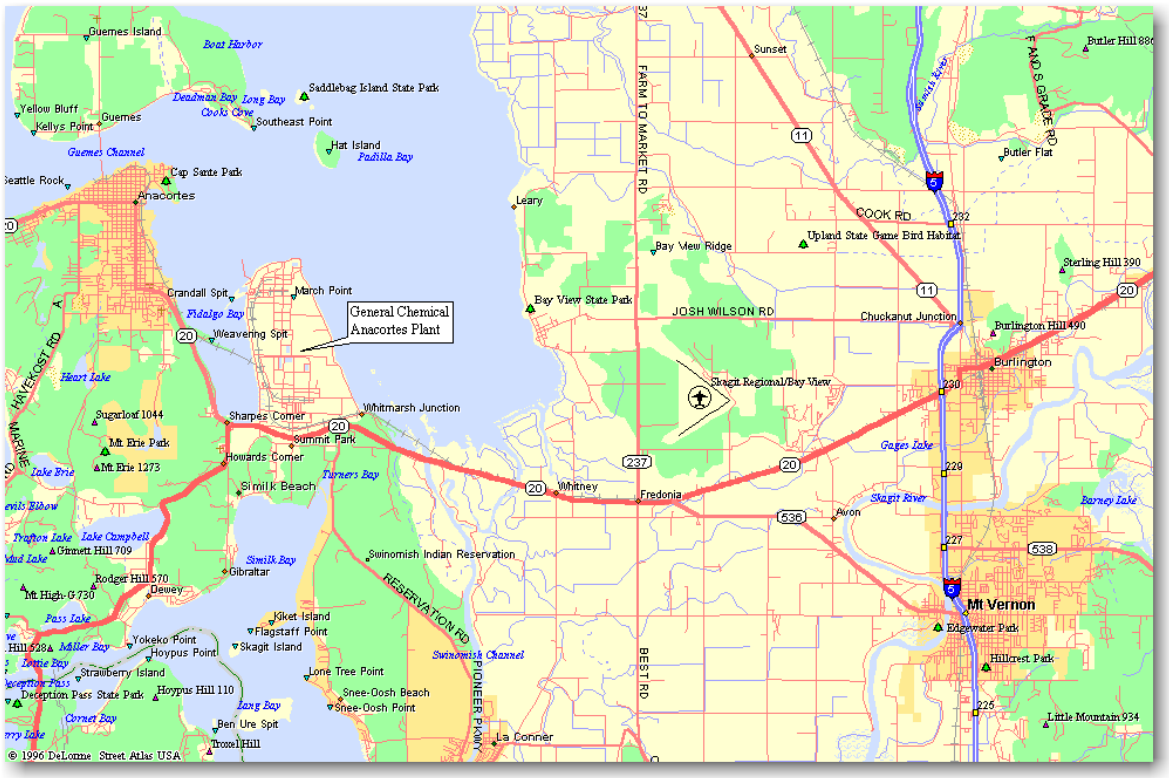

Figure 1 Location of Chemtrade Solutions LLC

The facility consists of three sulfuric acid production units (Sulfuric Acid Plant Units (SPU) 1, 2 and 3) with two abatement units (Abatement Units 10 and 11) and a Claus sulfur recovery unit (SRU) with a Shell Claus Off-gas Treating (SCOT) unit, Tail Gas Treatment Unit (TGTU), and incinerator. The Sulfuric Acid Plant units are owned by Chemtrade while the SRU and the land upon which the SRU is situated are owned by Tesoro. Chemtrade operates the entire facility.

Chemtrade receives spent sulfuric acid as a raw material primarily from the Tesoro refinery's and the Shell Puget Sound Refinery's alkylation units. Tesoro also sends its refinery acid gas for treatment in the Chemtrade SRU. Chemtrade processes these

materials into 99 percent sulfuric acid, 93 percent sulfuric acid, 30 percent sulfuric acid, and elemental sulfur. A large portion of the product acid is sold to nearby refineries where it is returned to the process as alkylation catalyst. The elemental sulfur is loaded into trucks and transported offsite for ultimate use in other industries, including fertilizer manufacturing. Natural gas is used for any supplemental fuel firing. A plot plan is included in Figure 2.

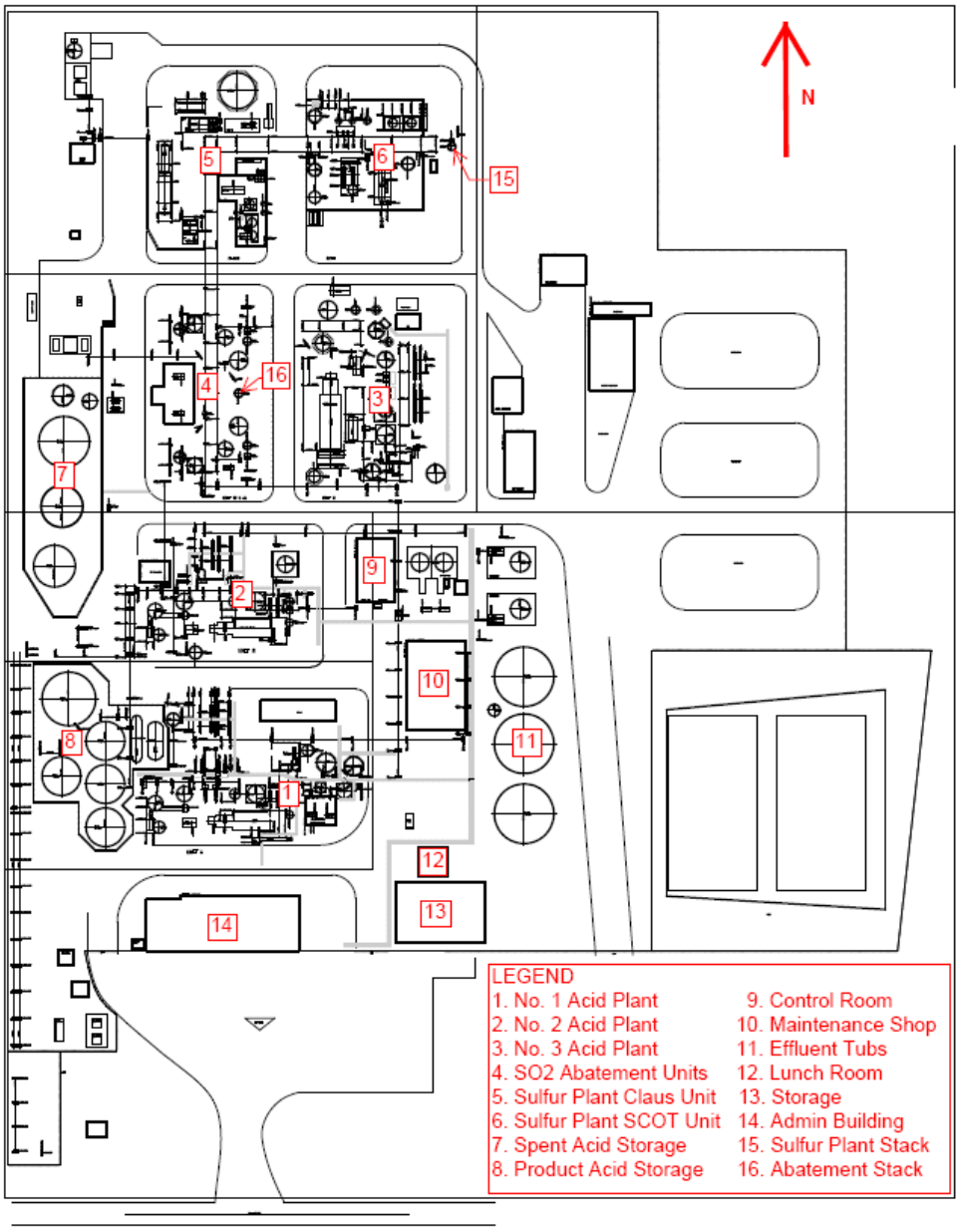

Figure 2 Chemtrade Plot Plan

Note that wastewater generated at the Anacortes Works is piped to the oily water sewer system at Shell Puget Sound Refinery. This water is treated in the PSR effluent plant and then released to Fidalgo Bay.

Chemtrade operates one 300-gallon above-ground fixed-roof gasoline storage tank used to fuel facility vehicles (referred to as a Gasoline Dispensing Facility (GDF)).

2.2 Emission Unit Description

Industrialization of March Point began in 1955 with the opening of the Shell (now Tesoro) refinery, followed by the Texaco (now Shell Puget Sound Refinery) refinery opening in 1958. The first sulfuric acid unit (SPU1) at the facility, then Allied Chemical Corporation, was built in 1957 in response to the availability of refinery wastes as raw materials. A second sulfuric acid unit (SPU2) was added in 1964. The two abatement units were added in 1971. The third sulfuric acid unit (SPU3) was added in 1975. The sulfur recovery unit (owned by Tesoro) was constructed in 1986.

For the purposes of this Air Operating Permit, the facility has been divided into two primary process areas: the sulfuric acid plant and the sulfur recovery unit.

2.2.1 Sulfuric Acid Plant

The Sulfuric Acid Plant is made up of three production trains (SPUs 1, 2, and 3). The sulfuric acid trains vent to two abatement processes (Abatement Units 10 and 11), which treat the exhaust gases prior to release to the atmosphere.

Figure 3 and Figure 4 are process flow diagrams illustrating the SPU1 & 2 and SPU3, respectively. The sulfuric acid trains have a combined maximum production capacity of 566 tons per day (tpd) of acid (100% basis). SPU1 and SPU2 each have a maximum production capacity of 143 tpd of acid (100% basis) and SPU3, 280 tpd of acid (100% basis).

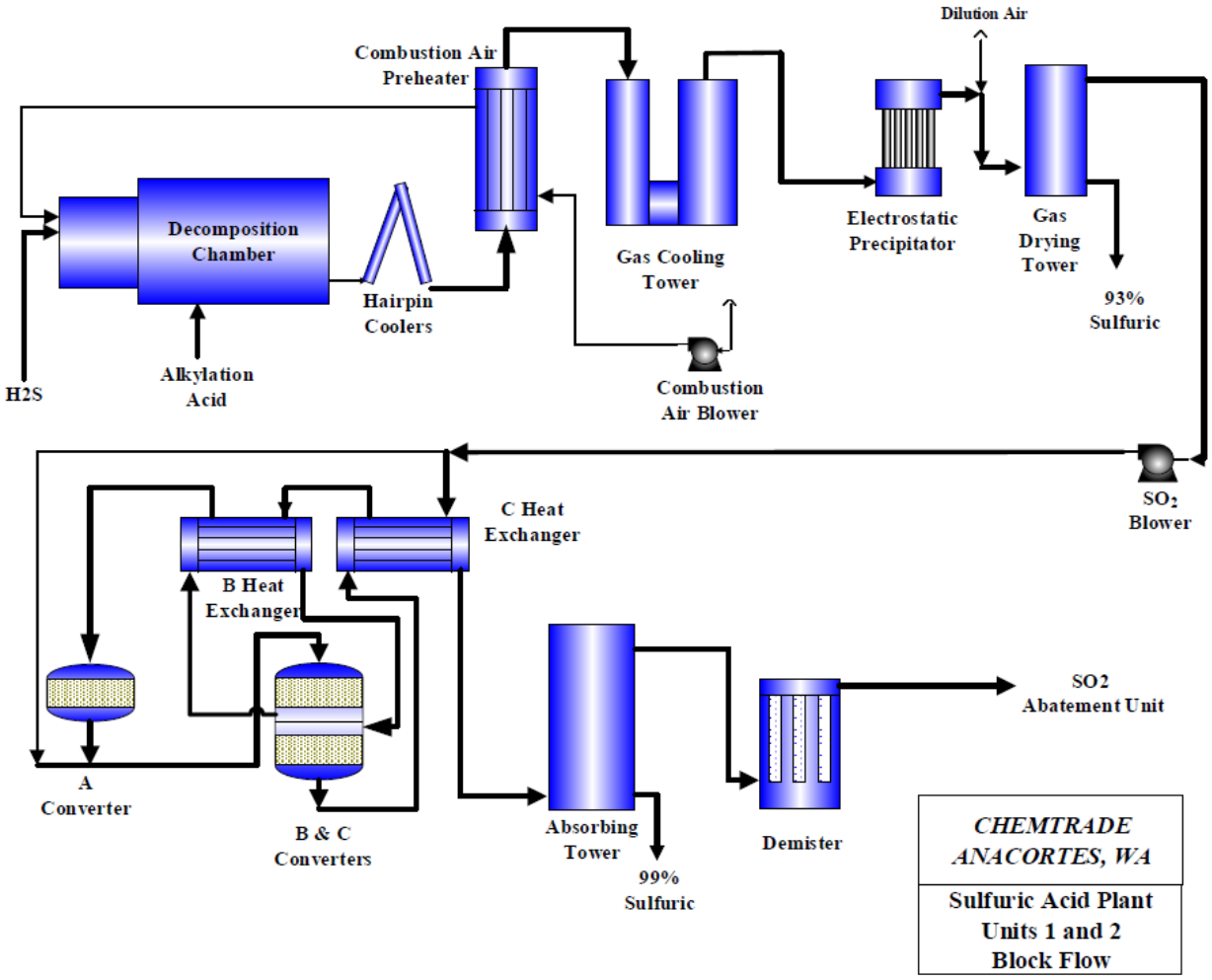

Figure 3 Sulfuric Acid Plant Units 1 and 2 Flow Diagram

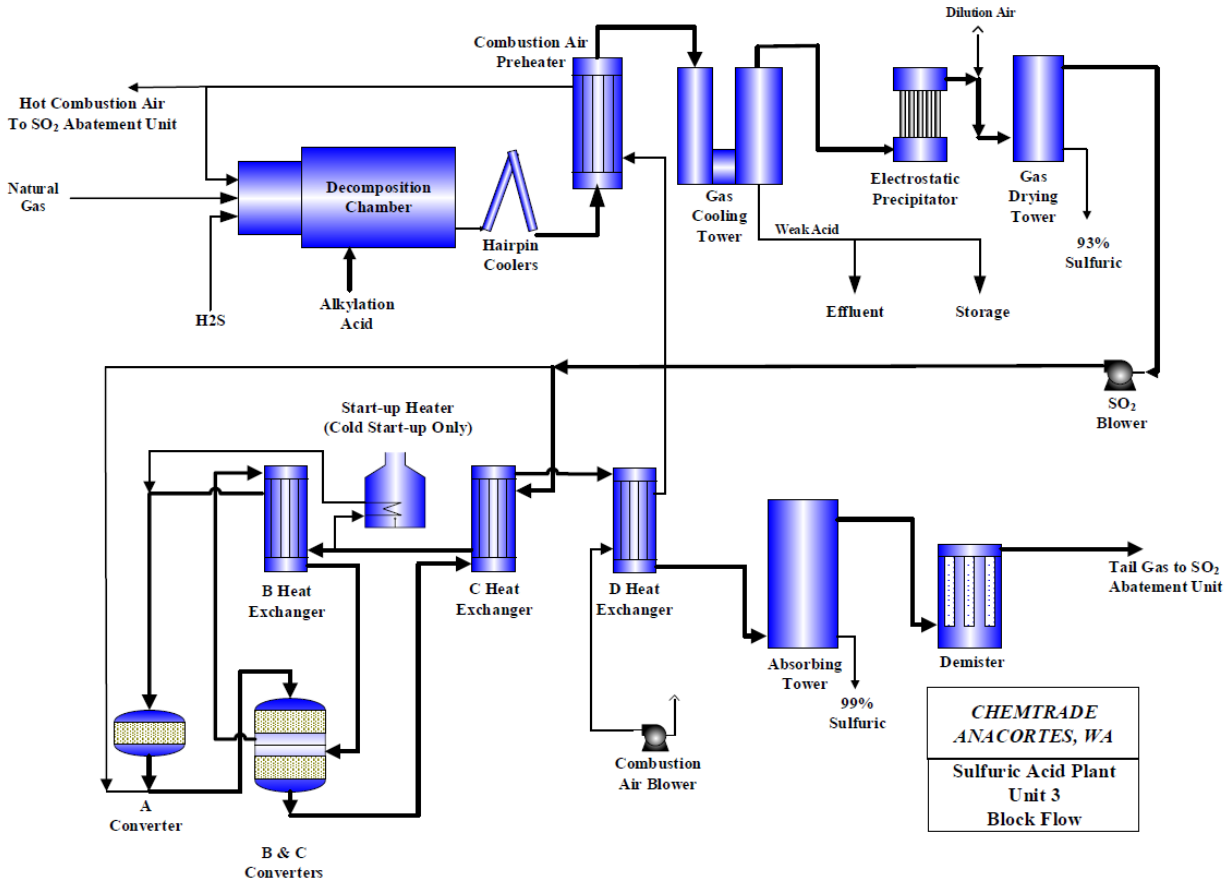

Figure 4 Sulfuric Acid Plant Unit 3 Flow Diagram

Each of the three sulfuric acid trains consists of the following equipment: decomposition chamber, gas cooling tower, electrostatic precipitator, gas drying tower, SO_2 blower, catalytic converter, absorption tower, and mist eliminator. SPUs 1 and 2 use a small portable natural-gas direct-fired in-line catalyst preheater (1-3 MMBtu/hr) to heat the catalyst during start up.[1] The SPU3 train includes a 9.2 MMBtu/hr natural gas-fired startup heater.

The facility is a spent acid regeneration (SAR) type sulfuric acid manufacturing facility that uses the contact process. The process is based on the catalytic conversion of SO_2 to SO_3 and the subsequent hydration of SO_3 to sulfuric acid.

Refinery acid gas and spent acid are subjected to high temperatures in the decomposition chambers where they are broken down into SO_2 and SO_3 gases. The hot acid gas is cooled and purified in a three-step process to eliminate acid mist, particulate matter, and water. The purified gas is then reheated to initiate the conversion reaction. The converter vessel holds catalyst that facilitates SO_2 in the stream to react with O_2, forming SO_3. The SO_3-rich stream then passes to the absorption tower where 99% sulfuric acid is produced.

[1] The portable in-line catalyst preheater is used to preheat the catalyst during start up moving between SPU1 and SPU2 as needed. While air quality standards generally do not apply to portable or temporary sources, the portable in-line catalyst preheater has been used at Chemtrade for years in the same service so, pursuant to NWCAA Section 200 (definition of Temporary Source), is considered part of the facility stationary source.

Particulate matter is generated from the decomposition of the metals, hydrocarbons, and other solid compounds in spent acid. The metals and ash are removed primarily at the gas cooling tower and the rest at the wet electrostatic precipitator (WESP). The gas stream also flows through a series of candle filters and mist pads which would remove potential material, although Chemtrade has no evidence of any remaining particulate being collected in the product acid.

Tail gas exiting the sulfuric acid train contains residual SO_3 and acid mist. The stream is further treated in the abatement units in order to meet emission requirements and to improve the overall efficiency of the plant. Each of the abatement units consists of a natural gas-fired heater (5.75 MMBtu/hr), a two-stage catalytic converter, and an absorption tower. Figure 5 is a process flow diagram of the Chemtrade abatement units.

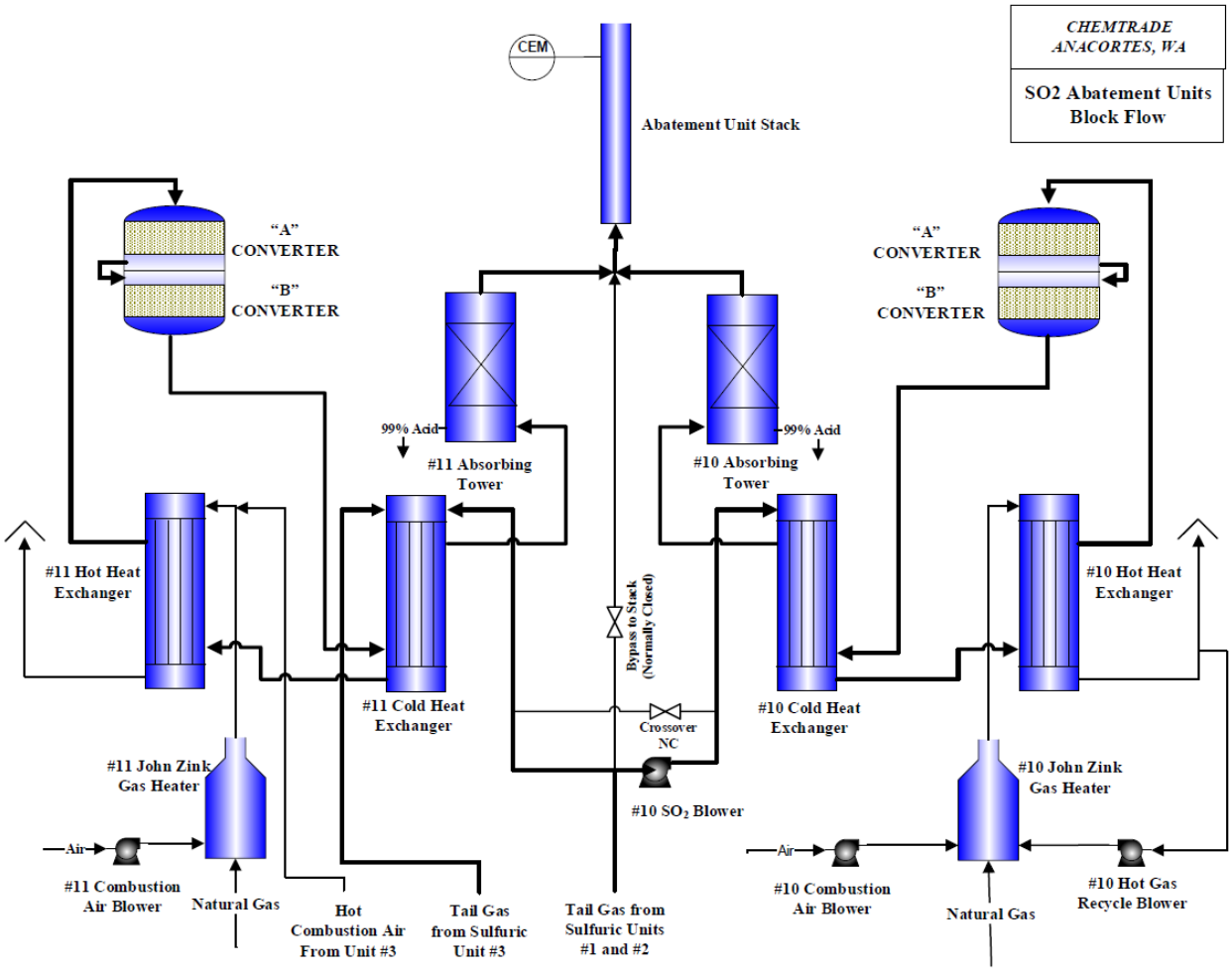

Figure 5 Abatement Unit Flow Diagram

Tail gas is heated prior to entering the catalytic converter, where SO_2 is converted to SO_3. The gas stream is cooled and then directed to the secondary absorption unit where SO_3 is absorbed by a countercurrent stream of 99 percent sulfuric acid. Gas from the absorption tower passes through a mist eliminator prior to exhausting through the common stack for Abatement Units 10 and 11.

A continuous emission monitoring system (CEMS) and a computerized data management system (DMS) are used to measure and record SO_2 emissions from the Sulfuric Acid Plant common stack. See SOB Section 3.5 for further discussion of the CEMS.

2.2.2 Sulfur Recovery Unit

The Sulfur Recovery Unit (SRU) uses the Claus process to recover and produce elemental sulfur from acid gas from the Tesoro refinery. Following the Claus unit is the Shell Claus Off-gas Treating (SCOT) process that reduces residual H_2S emissions. The SRU has the capacity to produce up to 50.6 tons of elemental sulfur per day. A process flow diagram is shown in Figure 6.

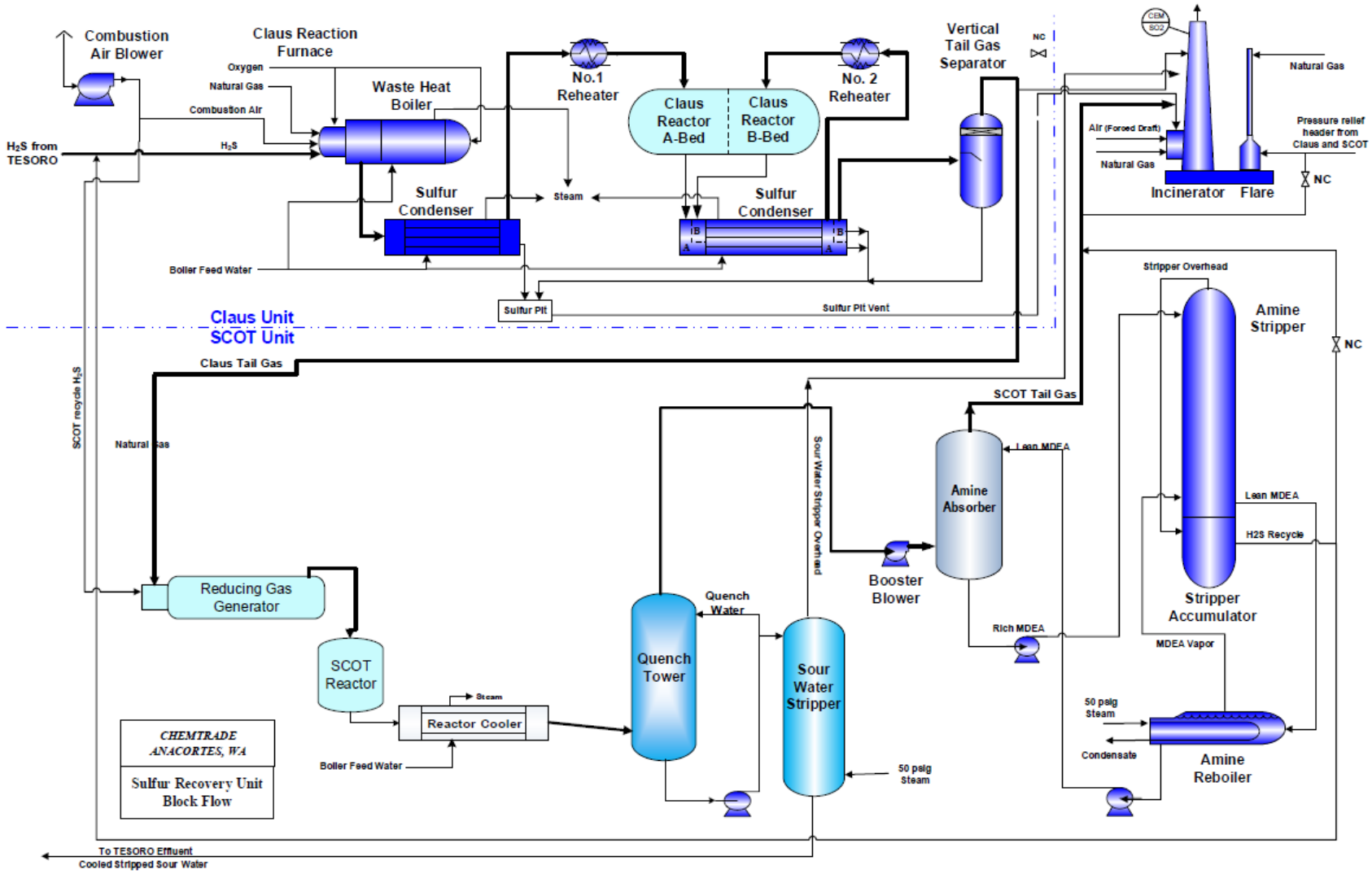

Figure 6 Sulfur Recovery Unit Flow Diagram

Acid gas from the refinery contains primarily H_2S and a minor amount of hydrocarbons. The incoming acid gas is combined with recycled gas from the SCOT process, air, and supplemental oxygen and fed into the Claus furnace with integral waste heat boiler. The Claus furnace converts the H_2S to SO_2 and water vapor. The gas is then passed through a series of reactors and condensers (Condensers A/B and C) and catalytic reactors (A-Reactor and B-Reactor), converting the sulfur dioxide to elemental sulfur and steam. Condensed elemental sulfur drains to the sulfur pit for collection and storage. Non-condensable gases from the Claus train are sent to the SCOT abatement unit for additional treatment.

Claus tailgas enters the SCOT unit through an in-line heater and is mixed with reducing gas. The stream then enters the fixed bed catalyst reactor (SCOT reactor) where sulfur compounds are converted back to H_2S. The gas is cooled with water in a quench tower. From the quench tower, the stream enters a countercurrent flow absorbing tower (amine absorber) contacting a 25-30% methyl diethanolamine (MDEA)/water solution to recover the H_2S. Overhead gas from the absorber (which contains small amounts of residual H_2S) is routed to the incinerator, where it is combusted to SO_2 prior to discharge to the atmosphere. H_2S-rich amine solvent from the bottom of the amine absorber is stripped in the amine stripper, recovering the H_2S back to the front end of the Claus train.

The Sulfur Recovery Unit is designed to handle up to 55 short tons/day of hydrogen sulfide. This is equivalent to 2,400 SCFM of acid gas with a H_2S content of 75%. The SRU incinerator stack is designed for a maximum natural gas heat input of 4.5 MMBtu/hr from the burner(s). This rate of heat release ensures that any H_2S in the process gas exiting the SCOT unit is combusted to SO_2. The incinerator stack is 2'-6" in outside diameter and 100'-1" in height.

The Sulfur Recovery Unit is also equipped with an emergency flare system. The flare is used for emergency situations to vent gas from the incinerator combustion zone to prevent explosive conditions. The bypass line to the flare is sealed with a manual lock system (i.e., carseal). The flare stack is 1'-0" in diameter and is designed to combust the acid gas stream to SO_2. Design combustion conditions are an operating temperature of 1,400°F and a residence time in the combustion zone of at least 0.6 seconds.

There is a small (3.348 MMBtu/hr) natural gas fired auxiliary boiler (B-501) that supplies heat to the Claus process during cold starts and low process rates. This boiler is equipped with a dedicated exhaust stack.

A CEMS and a computerized DMS are used to measure and record SO_2 emissions and oxygen concentrations from the incinerator stack. See SOB Section 3.5 for further discussion of the CEMS.

2.3 Facility Emissions Inventory

Each year all major sources are required to submit an air pollution emissions inventory upon request of NWCAA. This report includes criteria air pollutants, hazardous air pollutants (HAP), and greenhouse gas (GHG) emissions. NWCAA publishes an emissions inventory report each year that includes emissions summaries for all of the large industrial facilities located within Whatcom, Skagit and Island counties; emissions from Chemtrade are also included. Table 1 summarizes the last five years of available emissions data for the facility.

Table 1 Annual Actual Emissions from the Anacortes Works

Pollutant	Calendar Years Emissions (tons)				
	2015	2016	2017	2018	2019
PM_{10}	0	0	0	1	1
SO_2	210	174	203	152	153
NOx	3	3	3	0	1
VOC	0	0	0	1	1
CO	0	5	5	1	1
H_2SO_4	5	2	3	3	4
GHG (CO_2e)	7683	7782	7688	9162	9795

2.4 Permit History

NWCAA Order of Approval; Issued September 3, 1971
On September 1, 1971, Allied Chemical submitted a "Notice of Construction and Application for Approval" (NOC application) to NWCAA requesting approval to install two mist eliminators - one downstream of each of the two existing sulfuric acid units. The Order of Approval was issued on September 3, 1971. This permit is considered "narrative only" because it does not contain any specific conditions that are considered specifically applicable requirements under Title V and, therefore, is not included in the AOP.

NWCAA Order of Approval; Issued February 25, 1974
On July 2, 1973, Allied Chemical submitted NOC applications to NWCAA. One application requested approval for a third sulfuric acid unit. The second application requested approval for two sulfur dioxide abatement units. The Order of Approval issued on February 25, 1974 permitted both of these projects to proceed. Preliminary construction was allowed prior to issuance of the Approval Order. Though construction began in late 1973, the third sulfuric acid unit was not completed and brought online until April 2, 1975. As a result of this project, the entire Sulfuric Acid Plant became subject to 40 CFR 60 Subpart H – New Source Performance Standards (NSPS) for Sulfuric Acid Plants. This permit is considered "narrative only" because it does not contain any specific conditions that are considered specifically applicable requirements under Title V and, therefore, is not included in the AOP.

Ownership Name Change; April 27, 1981
On April 27, 1981, Allied Chemical Corporation (an indirectly wholly-owned subsidiary of Allied-Signal, Inc.) changed its name to Allied Corporation.

NWCAA Order of Approval to Construct (OAC) 307; Issued February 20, 1986
On December 5, 1985, Allied Corporation submitted an NOC application to NWCAA for the installation of a sulfur recovery unit. This unit included a single Claus process train with a SCOT process, an incinerator, and auxiliary equipment, including a start-up boiler, steam vent, and sulfur storage. The Sulfur Recovery Unit was subject to 40 CFR 60 Subpart J – NSPS for Petroleum Refineries upon startup.

New Facility Ownership; May 21, 1986
On May 21, 1986, Allied Corporation transferred ownership of the facility to General Chemical Corporation of Parsippany, New Jersey.

NWCAA OAC 421; Issued May 11, 1993
On February 11, 1993, General Chemical submitted an NOC application to NWCAA as required by the letter from NWCAA dated November 2, 1992. This NOC requested approval to increase sulfuric acid production at the facility through the use of a new blower on SPU3 and enhanced catalysts in the converters.

Ecology PSD Approval 94-01; Issued August 24, 1994
In late 1993, General Chemical proposed to increase production at SPU3 by increasing the size of the blower fan on the unit, enlarging the catalytic converters, and adding a new heat exchanger. This project qualified as a major modification, and was therefore evaluated and permitted under the Prevention of Significant Deterioration (PSD) rules. Washington State Department of Ecology (Ecology) PSD Approval 91-04 was issued on August 24, 1994.

NWCAA OAC 458; Issued August 29, 1994
On October 18, 1993, General Chemical submitted an NOC application to NWCAA requesting approval for the same plant expansion project covered by PSD 94-01. OAC 458 was issued on August 29, 1994 and essentially mirrors the requirements of the PSD permit.

Ecology PSD Approval 94-01 Amendment 1; Issued January 14, 1998
This approval removed the one-time requirements for emissions testing and made the interim emissions limits permanent. In addition, the method specified for determining compliance with the opacity (visible emissions) standard was changed from Ecology Method 9B to 40 CFR 60 Appendix A Method 9 (EPA Method 9).

NWCAA OAC 458a; Issued April 23, 1998
This revision included many of the changes incorporated by Amendment 1 of the PSD permit. Several other changes brought the OAC into better agreement with the PSD permit.

NWCAA OAC 650; Issued April 23, 1998
On February 12, 1998, General Chemical submitted an NOC application to NWCAA requesting approval to install liquid oxygen combustion augmentation equipment to the sulfur recovery unit. This installation would result in an increase in the processing capacity of the unit from 22 short tons (2000 lb/ton) of H2S per day to 55 short tons per day. On February 23, 1998, Ecology concurred with a NWCAA interpretation that the project was not subject to review under the PSD regulations.

NWCAA OAC 650a; Issued July 13, 2000
The acid mist mass emission limit was revised upward to account for increased emissions at the higher permitted production rate. Condition 9 was restated to require a single series of annual performance tests at a minimum production rate of 50% of the current limit of 50 tons per day (25 tons per day) using either air or oxygen as a combustion gas.

NWCAA OAC 458b; Issued June 25, 2001
This revision updated the compliance demonstration method for the opacity requirement to agree with the PSD permit by requiring EPA Method 9.

NWCAA OAC 650b; Issued June 25, 2001
This revision updated the compliance demonstration method for the opacity requirement to be consistent with other permits at the site (requiring EPA Method 9).

NWCAA OAC 458c; Issued December 13, 2001
This revision clarified the fact that OAC 458 supersedes all requirements found in OAC 421 and removed duplicate requirements.

NWCAA OAC 650c; Issued December 13, 2001
This revision incorrectly removed the reference to NSPS Subpart GGG found in version (b) of the OAC.

NWCAA OAC 880; Issued July 22, 2004
The facility filed an NOC application on December 12, 2003 for approval to construct a 7.7 MMBtu/hr natural gas fired heater for facilitation of startups on acid plant 3 without excess emissions. General Chemical actually installed a 9.2 MMBtu/hr heater instead of the 7.7 MMBtu/hr unit. The startup heater began operation on November 20, 2005 successfully eliminating excess emissions during cold startups of the unit. The heater is operated normally only during startup and is limited to less than 1,000 hours of operation in a 12 month operating period.

NWCAA OAC 307a; issued May 14, 2007
The OAC for the construction of the SRU (OAC 307) was revised to remove boilerplate language and eliminate the duplicative grain loading standard and opacity requirements.

NWCAA OAC 880a; Issued February 2, 2009
On January 16, 2009 General Chemical submitted a request for a modification of OAC 880 for the SPU3 9.2 (previously permitted as a 7.7) MMBtu/hr natural gas fired heater to allow a one-time exemption of the 1,000 hour per any 12-month period operating limit. The 1,000 hour rolling 12-month total limitation is the default. For the year of 2009, the facility is allowed a total of 5,000 hours. January 2010 is the first month of the next 12-month period during which the operating hours cannot exceed 1,000 hours. The heater is used for acid plant startup and for additional heat to decompose spent acid when the quantity of H_2S feed drops below the minimum amount required for optimum conversion temperatures.

NWCAA OAC 880b; Issued July 8, 2010
The OAC for the SPU3 Startup Heater (OAC 880a) was modified to allow additional operating hours during 2010 and to change the opacity compliance demonstration to EPA Method 9.

New Facility Ownership; January 27, 2014
On January 27, 2014, Chemtrade Solutions LLC took ownership of the facility from General Chemical.

NWCAA OAC 458d; Issued June 25, 2015
This revision deleted requirements that are duplicated in the PSD permit. Deleted completed tasks and duplicative requirements.

NWCAA OAC 650d; Issued June 25, 2015
This revision combined OAC 307a and OAC 650c. Deleted overlapping, duplicative, and completed requirements. Included applicability of NSPS Subpart GGG, MACT Subpart UUU, and MACT Subpart DDDDD.

NWCAA OAC 880c; Issued June 25, 2015
This revision removed the 2010 additional hours allowance. Deleted explicit term to fire natural gas. Clarified language and modified to match current usage.

2.5 Compliance History

2.5.1 Notices of Violation

The four Notice of Violation issued to the facility by NWCAA for the period from January 2015 through June 2020 are presented in Table 2. These violations have been resolved through a combination of penalty assessments and by corrective action taken by the source.

Table 2 Notice of Violations Issued

Case No	Violation Date	Issue Date	Description
4175a	4/24/15	2/9/16	Sulfuric acid mist emissions from the sulfuric acid abatement stack exceeded 0.15 lb H2SO4/ton of acid produced, expressed as 100% sulfuric acid, and 0.105 lb H2SO4/ton of acid produced on an hourly average, expressed as 100% sulfuric acid [AOP 009R1 Terms 5.1.11 & 5.1.12]. In addition, opacity from the sulfuric acid abatement stack exceeded an average of 10% for multiple six-minute periods and exceeded 10% for more than three minutes in a consecutive 60-minute period [AOP 009R1 Terms 5.1.13 & 5.1.14]. The excess emissions were a result of a failure of Abatement Unit #11 acid controller to accurately measure acid strength during a process start up due to contamination of the acid resulting in 765.5 lb H2SO4 excess emissions.
4177	6/15/15	11/17/15	A source test conducted on 6/9/15 showed that the sulfuric acid mist emissions from the sulfuric acid abatement stack exceeded both 0.105 lb H2SO4/ton of acid produced on an hourly average, expressed as 100% sulfuric acid and 1.5x10-6 lb/dscf on an hourly average [AOP 009R1 Term 5.1.12]. The source was retested on 6/12/15 and showed the emissions were in compliance with all relevant emission limits. The excess emissions were the result of installation of the incorrect demister pads in the Abatement Unit #11 resulting in 45.7 lb H2SO4 excess emissions.
4254	6/14/16	9/12/17	A source test conducted on 6/14/16 showed sulfur recovery unit (SRU) sulfuric acid mist emissions of 0.69 lb H2SO4/ton of sulfur produced on an hourly average. The SRU was retested on 8/1/16 demonstrating compliance. This event resulted in an estimated 170.2 lb of H2SO4 excess emissions above the 0.45 lb H2SO4/ton of sulfur produced hourly average limit in OAC 650d Condition (3) and listed in AOP 009R1M1 Term 5.2.7.
4396	2/5/19	11/7/19	On February 5, 2019, frozen equipment caused emissions from the Sulfur Recovery Unit (SRU) stack to exceed three emission limits: • 1,000 ppmvd SO2 at 7% oxygen, 60-minute average (AOP 009R1M1 Terms 4.20, 4.21, & 4.22) for approximately 12 hours resulting in an estimated 109 pounds of excess SO2. • 250 ppmvd at 0% oxygen, 12-hour average (AOP 009R1M1 Terms 5.2.10 & 5.2.11) for approximately 23 periods resulting in an estimated 297 pounds of excess SO2. • 9.2 lb/hr, 1-hour average (OAC 650d Condition (2)) for approximately 7 hours resulting in an estimated 163 pounds of excess SO2.

2.5.2 Compliance Reports

The Chemtrade AOP requires periodic, monthly, quarterly, semiannual, and annual reports to be submitted to NWCAA as part of the facility's ongoing compliance demonstration. When a permit deviation occurs, the facility is required to submit a periodic report within 30 days after the end of the month during which the deviation occurred identifying any excess emissions and provide a discussion as to the cause and what was done to correct the problem.

In addition, semiannual reports are submitted providing a certification by the Responsible Official of the truth, accuracy, and completeness of reports submitted during the previous six-month period. Annually, the Responsible Official also certifies compliance with all applicable requirements in the AOP term-by-term and whether the facility was fully or intermittently in compliance with each term.

3 GENERAL REGULATORY REQUIREMENTS

3.1 New Source Review

3.1.1 Minor NSR

Projects resulting in increases of regulated air pollutants less than the significance levels of the Prevention of Significant Deterioration (PSD) program must undergo minor new source review (NSR) in the State of Washington. NWCAA evaluates both criteria and toxic air pollutants that will result from new and modified sources of air pollution. NWCAA may then issue an "Order of Approval to Construct" (OAC) that identifies Best Available Control Technology (BACT), establishes maximum pollutant concentrations and emission rates, identifies required source testing and/or continuous emission monitors, and requires operation and maintenance procedures that will ensure continuing compliance with applicable air pollution rules and regulations. OAC conditions are federally enforceable because the NWCAA minor NSR program is approved in the State Implementation Plan (SIP). Several minor NSR permits have been issued by NWCAA to Chemtrade, as described in SOB Section 2.4. However, only three OACs currently contain applicable requirements and are listed in the AOP (i.e., OAC 458d, 880c, and 650d).

3.1.2 Prevention of Significant Deterioration (PSD)

Before a major source can be constructed or modified in an area that meets all the ambient air requirements, the owner or operator must demonstrate that the project will not cause or contribute to violations of any ambient air quality standard or air quality increment pursuant to the Prevention of Significant Deterioration (PSD) program under 40 CFR 52.21. Also, the owner or operator must demonstrate that the project will not cause significant deterioration in nearby Class I Areas (parks and wilderness areas).

Chemtrade qualifies as a PSD major source and is therefore potentially a subject source under the PSD program. PSD permit 94-01 was issued on August 24, 1994 by Ecology prior to the expansion of SPU3. The PSD permit was amended on January 14, 1998. The applicable requirements from PSD 94-01 Amendment 1 are listed in the AOP.

3.2 Federal Regulations

The applicability of certain federal rules to the SRU and to other emission units that are part of the Chemtrade facility depends on whether the SRU is considered part of the adjacent Tesoro refinery for the purposes of those rules or whether it is a separate stationary source. Additionally, federal rule applicability will also depend on whether the Sulfuric Acid Plant and the SRU are determined to be part of the same source as well.

By Definition Under NSPS and NESHAP (SRU & Refinery): As was discussed above, the Chemtrade SRU processes acid gas produced solely by the adjacent Tesoro refinery. Both NSPS 40 CFR 60 Subparts J and Ja explicitly include an SRU as part of petroleum refinery by definition:

> 40 CFR 60.100(a): The provisions of this subpart are applicable to the following affected facilities in petroleum refineries: fluid catalytic cracking unit catalyst regenerators, fuel gas combustion devices, and all Claus sulfur recovery plants except Claus plants with a design capacity for sulfur feed of 20 long tons per day (LTD) or less. The Claus sulfur recovery plant need not be physically located within the boundaries of a petroleum refinery to be an affected facility, provided it processes gases produced within a petroleum refinery.

> 40 CFR 60.100a(a): The provisions of this subpart apply to the following affected facilities in petroleum refineries: fluid catalytic cracking units (FCCU), fluid coking units (FCU), delayed coking units, fuel gas combustion devices (including process heaters), flares and sulfur recovery plants. The sulfur recovery plant need not be physically located within the boundaries of a petroleum refinery to be an affected facility, provided it processes gases produced within a petroleum refinery.

Note that the NSPS standards expressly provide for SRUs not located within the boundaries of a petroleum refinery to nevertheless be considered an affected facility for the purposes of these standards.

SRUs are considered by definition to be part of a petroleum refinery under 40 CFR 63 Subpart UUU as well (emphasis added):

> 40 CFR 63.1561(a)(1): A petroleum refinery is an establishment engaged primarily in petroleum refining as defined in the Standard Industrial Classification (SIC) code 2911 and the North American Industry Classification (NAIC) code 32411, and used mainly for:
>
> > (i) Producing transportation fuels (such as gasoline, diesel fuels, and jet fuels), heating fuels (such as kerosene, fuel gas distillate, and fuel oils), or lubricants;
> >
> > (ii) Separating petroleum; or
> >
> > (iii) Separating, cracking, reacting, or reforming an intermediate petroleum stream, or *recovering a by-product(s) from the intermediate petroleum stream (e.g., sulfur recovery)*.

Definition of Stationary Source (SRU & Refinery): Under New Source Review (NSR) and Title V, there are three criteria that must be met for pollutant emitting activities to be considered part of the same "stationary source" even if they are not located within the same plant site:

1. They belong to the same industrial grouping, or one entity is a "support facility" for the other;
2. They are located on one or more contiguous or adjacent properties; and
3. They are under the control of the same person, or of separate persons that are under common control.

The SRU is considered a "support facility" for the adjacent Tesoro refinery, so the first criterion is met. The SRU and the land on which the SRU is located is owned by Tesoro and is located contiguous to the refinery, so the second criterion is met. The question becomes whether the SRU is under common control with the adjacent Tesoro refinery.

Historically, EPA guidance held that a contract between companies was enough to demonstrate common control – that is, "companies don't just locate on another's property and do whatever they want. Such relationships are usually governed by contractual, lease or other agreements that establish how the facilities interact with one another. Therefore, we [EPA] presume that one company locating on another's land established a 'control' relationship."[2] In addition, "EPA interprets the term 'common control' of an owner to

[2] Letter from W. Spratlin, Director of Air, RCRA, and Toxics Division, EPA Region VII, to Peter R Hamlin, Chief, Iowa Department of Natural Resources, September 18, 1995.

include an operator (who is different from an owner) of a source that is operating under a contractual obligation with the owner and funded by the owner."[3]

Chemtrade currently has a contract with Tesoro to process up to 95 tons per day of Tesoro's hydrogen sulfide. In addition, as was mentioned above, Tesoro owns the land and the SRU equipment; the SRU receives all of the hydrogen sulfide raw material from Tesoro; and operation of the SRU is completely dictated by Tesoro's operation. These factors lead NWCAA to conclude that the SRU is under Tesoro's control, even though it is operated by Chemtrade.

EPA recently issued a memo (the Meadowbrook letter[4]) that states that the existence of a contract between two companies may not be sufficient to establish common control. "[T]he agency [EPA] believes clarity and consistency can be restored to source determinations if the assessment of 'control' for title V and NSR permitting purposes focuses on the power of authority of one entity to dictate decisions of the other that could affect the applicability of, or compliance with, relevant air pollution regulatory requirements." EPA said this can include the first entity having the ability to act in a way that effectively determines the second entity's actions.

Chemtrade has agreed to process all of Tesoro's hydrogen sulfide output, up to a contractual limit. Tesoro decides how much hydrogen sulfide Chemtrade will receive, except during rare maintenance stoppages. During maintenance or other stoppages or reductions in Chemtrade's capacity, Tesoro must implement a sulfur curtailment program, but a sulfur curtailment program would be necessary regardless of who directly operates the SRU.

Chemtrade could argue that its operation of the SRU is not under Tesoro's control, based on three points: (1) Chemtrade decides whether the hydrogen sulfide is directed to the SRU or to the Sulfuric Acid Plant; (2) Chemtrade is responsible for maintaining and operating the SRU; and (3) Chemtrade is responsible for compliance with SRU-related applicable requirements, as they are in Chemtrade's AOP.

(1) The fact that Chemtrade has authority to direct some of the hydrogen sulfide to the Sulfuric Acid Plant does not change the requirements applicable to the SRU when it is in use, nor Tesoro's obligation to comply with limits on its sulfur emissions. The relevant question is whether the SRU is used for Tesoro to achieve compliance with sulfur emission constraints, not whether Chemtrade has other equipment that also may be used for the same purpose. It is used for that purpose – indeed, solely for that purpose.

(2) Chemtrade is responsible for operation and maintenance of the SRU, but only because it has contractually committed to Tesoro that it will take on those responsibilities. Tesoro owns the SRU. Tesoro has contracted with Chemtrade to operate the SRU for Tesoro's benefit. Through the contract, Tesoro controls Chemtrade's operation and maintenance of a piece of equipment that is owned by Tesoro. Presumably if Chemtrade does not properly operate and maintain the SRU, Tesoro would have contractual remedies against Chemtrade for those failings. Tesoro's contractual rights and Chemtrade's contractual obligations give Tesoro control over Chemtrade's operation and maintenance of the SRU. This goes well beyond the "ability to influence".

[3] Letter from Kenneth Eng, Chief, Air Compliance Branch, US EPA, to Thomas Micai, Chief, Bureau of Operating Permits, New Jersey Department of Environmental Protection, April 5, 1995.
[4] Letter from William L. Wehrum, Assistant Administrator, Office of Air and Radiation, US EPA, to the Honorable Patrick McDonnell, Secretary, Pennsylvania Department of Environmental Protection, April 30, 2018 (Meadowbrook letter).

Tesoro also controls Chemtrade's use of the SRU through Tesoro's authority to control capital expenditures related to the SRU. Chemtrade relies on financial support from Tesoro (as the equipment owner) for maintenance activities and equipment upgrades to the SRU.

(3) Chemtrade did not become the operator of the SRU because it was issued an Air Operating Permit; it was issued an Air Operating Permit because it is the operator of the SRU. The obligation to obtain a permit rests on the "owner or operator". Here, the owner, Tesoro, has contracted with Chemtrade to be the operator of the SRU and all of Chemtrade's actions as SRU operator, including obtaining air permits, are in furtherance of its contractual obligations to Tesoro.

EPA also issued another memo (the Ameresco letter[5]) in which EPA differentiates between control of an entity and control of an activity. Chemtrade as an entity is not under Tesoro's control, but Chemtrade's activities in operating the SRU are under Tesoro's control. In this case, Tesoro does not just have some degree of control over the SRU. As the owner of the SRU, Tesoro controls the SRU and, through a contract, delegated some of that control to Chemtrade as operator of the SRU. Through that contract Tesoro controls Chemtrade's actions in relation to the SRU. This is substantially more than simply having shared responsibility for performance of a piece of equipment, as discussed in the Ameresco letter.

Chemtrade's status as operator of the SRU is entirely derived from its contract with Tesoro. It has no independent authority or control over the SRU. An emission unit is not removed from a source simply by the owner of the source delegating operation of the emission unit to a third party.

Note that both the Meadowbrook and the Ameresco letters state that they are EPA's opinions in these matters. The letters themselves each assert that the permitting authority retains the ultimate discretion to make source determinations based on its EPA-approved Title V and NSR rules. EPA approved NWCAA's Title V program most recently on January 2, 2003[6] and NSR rules on June 15, 2020[7]. NWCAA's determination that the SRU is under the control of Tesoro, and so is part of the Tesoro refinery stationary source, has been made giving consideration to EPA's interpretation but is an exercise of NWCAA's discretion under the Washington Clean Air Act and its own regulations.

In addition, EPA more recently issued additional memos (the Ocean County Landfill (OCLC) letter[8] and the Eastman letter[9]) that clarify that the new source determination policies and interpretations apply prospectively rather than retroactively:

> [A]s a general matter, the guidance contained in EPA's recent documents concerning common control was intended to assist with future source determinations and was not intended to prompt permitting authorities to revisit prior permitting decisions. EPA does not believe it would be appropriate in most circumstances for permitting authorities to re-evaluate prior source determinations based solely on the change in EPA policy on which the 2018 OCLC Letter relies, especially where, as is the case with the OCLC request, relevant facts have not changed.

[5] Letter from Anna Marie Wood, Director, Air Quality Policy Division, US EPA, to Gail Good, Director, Wisconsin Department of Natural Resources, October 16, 2018 (Ameresco letter).
[6] 40 CFR 70 Appendix A
[7] 40 CFR 52.2470(c) Table 5
[8] Letter from Anne L. Idsal, Acting Assistant Administrator, EPA Office of Air and Radiation, to Catherine McCabe, Commissioner, New Jersey Department of Environmental Protection, July 12, 2019 (OCLC letter).
[9] Letter from Cristina Fernandez, Director, Air and Radiation Division, EPA, to Brett A. Sago, Director, HSE Legal Services, Eastman Chemical Company, February 12, 2020 (Eastman letter).

NWCAA is not aware of any change regarding the relationship between Tesoro and Chemtrade triggering a new applicability review.

EPA Guidance (SRU & Refinery): EPA guidance has been clear that sources cannot avoid permit requirements by dividing the facility up.

> [W]e [EPA] have found at least one case where a company set up an 'unrelated' corporation in the middle of their property to split the property into multiple, distinct sites. After concluding that these 'distinct' sites were in fact under the common control of the companion company's president, the split was later disallowed for permitting purposes. …
>
> We [EPA] seriously urge you [Iowa Department of Natural Resources] to consider the principles found in the various guidance documents and in this letter when evaluating requires to split properties for permitting purposes. We [EPA] realize that in many cases it is easier not to second guess a company's motives. However, we [EPA] also believe this administratively expedient approach can result in allowing circumvention of the permit requirements and ultimately jeopardize the goals and effectiveness of the permitting programs.[10]

It would be illogical and unreasonable for the SRU to be subject to different requirements depending on who is operating it, Tesoro versus Chemtrade.

Major Source MACT Standards (SRU & Refinery): For purposes of MACT standards (40 CFR 63.2), a "major source" is "any stationary source or group of stationary sources located within a contiguous area and under common control" that emits more than the relevant threshold amount of HAPs. The Tesoro refinery is a major source for HAPs. The SRU is under common control with the Tesoro refinery, and so is subject to MACT standards that are applicable to petroleum refineries that are a major source of HAPs.

Conclusion (SRU & Refinery): Based on the above analysis, NWCAA has determined that the SRU is part of the adjacent Tesoro refinery stationary source under the applicable Title V and NSR definitions, and is an affected source for purposes of MACT standards applicable to refineries. The SRU is potentially subject to rules applicable to petroleum refineries and also major sources of HAP, such as NSPS (e.g, 40 CFR 60 Subparts J, QQQ, and GGG/GGGa) and NESHAP (e.g., 40 CFR 61 Subpart FF, 40 CFR 63 Subparts CC and UUU, DDDDD). NWCAA has assigned the SRU to Chemtrade's AOP because Chemtrade is the operator of the SRU. This does not affect the applicability of these various standards to the SRU. The requirements applicable to an emission unit are not changed by the owner contracting out operation of that emission unit.

Major Source MACT Standards (SRU & Sulfuric Acid Plant): For MACTs other than the petroleum refinery-related standards applicable to the SRU, the Chemtrade facility is not a major source of HAPs. To be a major source of HAPs, the emission units located within a contiguous area and under common control must emit more than 10 tons a year of any one HAP or 25 tons a year of all HAPs combined. The collective HAP emissions from the emission units that are within the Chemtrade facility boundaries and under Chemtrade's direct control are less than the HAP major source thresholds. While the SRU is considered part of the Tesoro refinery source, for reasons discussed above, and Chemtrade, as operator of the SRU, shares control of the SRU with the Tesoro refinery, Chemtrade does not control other parts of the refinery source. Accordingly, HAP emissions from other parts of the refinery source cannot be attributed to the Chemtrade facility for purposes of the major source determination. Therefore, the Sulfuric Acid Plant is not part of a HAP major source and is not subject to HAP major source MACTs (e.g., 40 CFR 63 Subpart DDDDD).

[10] Spratlin 1995.

However, it is potentially subject to area source NESHAPs including 40 CFR 63 Subparts JJJJJJ (area source Boiler NESHAP) and CCCCCC (gasoline dispensing facility NESHAP).

NWCAA considered whether the Sulfuric Acid Plant, like the SRU, should be considered part of the petroleum refinery source by definition. Each regulatory program has a specific definition of what is included in each source category (e.g., petroleum refinery) so a separate determination must be made for each. Note that less than 50% of the Sulfuric Acid Plant output is sent to a single facility by contract; as such, the Sulfuric Acid Plant is not considered a support facility to either of the adjacent refineries. For the same reason, the refineries do not exercise control over the Sulfuric Acid Plant, in the way that the Tesoro refinery controls the SRU. Accordingly, the Sulfuric Acid Plant is not subject to those regulatory programs applicable to petroleum refineries (e.g., 40 CFR 60 Subpart GGG/GGGa, 40 CFR 61 Subpart FF, 40 CFR 63 Subparts CC and UUU) unless explicitly listed as subject.

Because the SRU is considered part of a petroleum refinery and potentially subject to federal requirements for petroleum refineries, the AOP includes general requirements or applicable-when-triggered requirements from federal requirements applicable to petroleum refineries.

3.2.1 New Source Performance Standards (NSPS)

40 CFR 60 Subpart Cd - Emissions Guidelines and Compliance Times for Sulfuric Acid Production Units: The emission guidelines in NSPS Subpart Cd apply to existing sulfuric acid productions units (i.e., those that were constructed or modified before August 17, 1971). SPU1 was constructed in 1957 and SPU2 in 1964 so both units were potentially subject the emission guidelines. However, the construction of SPU3 in 1975 triggered the requirements for new sulfuric acid production units in NSPS Subpart H for all three trains. As such, NSPS Subpart Cd does not apply.

40 CFR 60 Subpart H – Standards of Performance for Sulfuric Acid Plants: The provisions of NSPS Subpart H are applicable to sulfuric acid production units constructed or modified after August 17, 1971. The construction of SPU3 in 1975 modified the Sulfuric Acid Plant triggering the applicability of this subpart to all three trains.

In late 1993, General Chemical proposed to increase production at SPU3 by increasing the size of the blower fan on the unit, enlarging the catalytic converters, and adding a new heat exchanger. This expansion project was considered a modification under NSPS Subpart H which triggered the initial requirements again.

40 CFR 60 Subparts J and Ja – Standards of Performance for Petroleum Refineries: 40 CFR 60 Subpart J applies to fluid catalytic cracking unit (FCCU) catalyst regenerators, fuel gas combustion devices, and Claus sulfur recovery plants greater than 20 long tons per day generally constructed, modified, or reconstructed after June 11, 1973 and on or before May 14, 2007. 40 CFR 60 Subpart Ja applies to FCCUs, fluid coking units (FCU), delayed coking units (DCU), fuel gas combustion devices, flares, and sulfur recovery plants generally constructed, modified, or reconstructed after May 14, 2007.

The SRU was originally constructed in 1986 with a throughput of 22 short tons per day (19.6 long tons per day). As such, it did not trigger Subpart J upon construction under OAC 307 (issued February 20, 1986). However, the 1998 modification under OAC 650 which increased production to 55 short tons per day (49.1 long tons per day) triggered direct applicability of Subpart J to the SRU. The SRU has not been modified since then so NSPS Subpart Ja does not apply.

The SRU emergency flare combusts refinery-generated gases (i.e., SRU exhaust gas) so it potentially is a fuel gas combustion device (FGCD) under NSPS Subpart J. Fuel gas

combustion devices must not burn fuel gas that contains hydrogen sulfide in excess of 162 ppmvd (40 CFR 60.104(a)(1)). However, the combustion in a flare of process upset gases is exempt from this emission limitation and associated monitoring. Process upset gases are defined as: "any gas generated by a petroleum refinery process unit as a result of start-up, shut-down, upset or malfunction." Because gases are only routed to this flare during emergencies, the flare is subject to NSPS Subpart J but is exempt from the FGCD emission limitation (40 CFR 60.104(a)(1)) and associated monitoring (40 CFR 60.105(a)(4)(iv)).[11] Because the flare has no emission limits or ongoing monitoring, NSPS Subpart J applicability to the flare is listed in AOP Section 1 but the flare is not listed in AOP Section 5.

40 CFR 60 Subparts K, Ka and Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels

The following New Source Performance Standards apply to tanks (i.e., vessels) depending on the date the tank was constructed, reconstructed or modified; what liquid it stores; and the storage capacity:

- 40 CFR 60 Subpart K - Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978
- 40 CFR 60 Subpart Ka - Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984
- 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

The only tanks at Chemtrade that are large enough and store material that may emit VOC to potentially be subject to NSPS requirements are the three 158,000-gallon storage tanks potentially storing spent acid. Spent acid does not qualify as a "petroleum liquid" under NSPS Subparts K and Ka. Based on information available as of this writing, Chemtrade's spent acid storage tanks are not affected facilities under NSPS Subpart Kb.

40 CFR 60 Subpart QQQ - Standards of Performance for VOC Emissions from Petroleum Refinery Wastewater Systems: 40 CFR 60 Subpart QQQ applies to individual drain systems, oil-water separators, and aggregate facilities in refinery oily wastewater systems that were constructed, modified, or reconstructed after May 4, 1987. The SRU and Sulfuric Acid Plants do not handle oil or hydrocarbons as part of the refining process so wastewater generated at Chemtrade is not considered oily wastewater subject to NSPS Subpart QQQ.

Regardless of NSPS Subpart QQQ applicability, the wastewater generated at Chemtrade, including stormwater runoff and water falling on the pads supporting the process equipment, is collected and piped to the Shell PSR oily water sewer. The oily water sewer is routed to the effluent for treatment before being released to Fidalgo Bay. Shell chose to have Chemtrade's wastewater enter the oily water sewer system for convenience (e.g., it was the closest entry point) and also because the volume of water from the Chemtrade is fairly insignificant relative to the rest of the refinery's oily water sewer.

[11] See also EPA Applicability Determination Index (ADI) Control Number 0000086 (Gigliello to Guillemette, 12/2/99) and 1000045 (Czerniak (EPA) to Thiesse (Linde), 9/15/10)

40 CFR 60 Subparts GGG and GGGa - Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries

40 CFR 60 Subpart GGG applies to refinery process units with equipment components in VOC service that have been constructed, reconstructed, or modified between January 4, 1983, and November 7, 2006. As part of a petroleum refinery that was constructed during the applicability window, the SRU is potentially subject to NSPS Subpart GGG. The SRU does not generally handle VOC-containing materials. However, the amine absorption system in the tail gas treatment unit does use methyl diethanolamine (MDEA) which qualifies as a VOC. As such, the SRU is subject to NSPS Subpart GGG. MDEA is considered a heavy liquid under Subpart GGG so only heavy liquid requirements are included in the AOP.

40 CFR 60 Subparts IIII and JJJJ - Standards of Performance for Stationary Compression and Spark Ignition Internal Combustion Engines

40 CFR 60 Subpart IIII applies to stationary compression ignition internal combustion engines (ICE) that commenced construction after July 11, 2005 and were manufactured after, for engines that are not fire pump engines, April 1, 2006 and, for fire pump engines, July 1, 2006. NSPS Subpart JJJJ applies to stationary spark ignition internal combustion engines that commenced construction after the specified dates and were manufactured after the specified dates. Chemtrade does not maintain or operate any stationary internal combustion engines. Therefore, NSPS Subparts IIII and JJJJ do not apply.

3.2.2 National Emission Standards for Hazardous Air Pollutants (NESHAP)

40 CFR 61 Subpart FF - National Emission Standard for Benzene Waste Operations: 40 CFR 61 Subpart FF applies to the treatment, storage, and disposal of benzene-containing hazardous waste at petroleum refineries. NESHAP Subpart FF contains control requirements, limits, and work practice standards for equipment that handles and treats benzene-containing waste (e.g., tanks, individual drain systems, containers). In 1991, refineries were required to come into compliance with NESHAP Subpart FF. The purpose of this regulation was to reduce the amount of benzene emissions to the atmosphere from wastewater operations.

As part of a petroleum refinery, the Chemtrade SRU is potentially subject to NESHAP Subpart FF. However, because the facility does not handle or process oil or hydrocarbon that contains benzene, there are no ongoing requirements. Therefore, NESHAP Subpart FF applicability is not listed in the AOP.

Chemtrade's wastewater is piped into Shell's oily water sewer. Note that, regardless of the applicability of NESHAP Subpart FF to Chemtrade, Shell's oily water sewer complies with NESHAP Subpart FF.

40 CFR 63 Subpart Q – National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers: 40 CFR 63 Subpart Q applies to industrial process cooling towers at major HAP sources that used chromium-based water treatment chemicals as of the proposal date (August 12, 1993). Because the Chemtrade cooling towers did not use chromium-based treatment chemicals as of August 12, 1993, the cooling towers at the facility are not considered affected sources under MACT Subpart Q and, hence, are not subject.

40 CFR 63 Subpart CC - National Emission Standards for Hazardous Air Pollutants From Petroleum Refineries: 40 CFR 63 Subpart CC (commonly referred to as Refinery MACT 1) generally applies to fugitive HAP emission sources from petroleum refining process units. The subject unit categories include:

- Miscellaneous process vents (MPVs)
- Storage vessels
- Wastewater streams and treatment operations
- Gasoline loading racks
- Marine tank vessel loading
- Equipment leaks from petroleum refining process units
- Heat exchanger systems

The SRU is by definition a petroleum refining process unit subject to MACT Subpart CC. None of the SRU's process streams have a HAP content of more than the applicability thresholds. As such, any MPVs, storage vessels, wastewater streams and treatment operations, gasoline loading racks, marine tank vessel loading, fugitive components, and heat exchanger systems associated with the SRU are not subject to MACT Subpart CC. Note also that sulfur plant vents are explicitly exempted from being considered an MPV.

The Sulfuric Acid Plant is not considered a sulfur plant so is not a petroleum refining process unit subject to MACT Subpart CC. However, Chemtrade's spent acid are fed by the refinery alkylation units which are refining process units by definition. Based on information available as of this writing, Chemtrade's spent acid storage tanks are not subject to MACT Subpart CC.

40 CFR 63 Subpart UUU - National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units: 40 CFR 63 Subpart UUU (also referred to as Refinery MACT 2) became effective April 11, 2002 establishing hazardous air pollutant emission limits and control requirements at specific refinery operations including sulfur recovery units. The SRU is an affected source because it is owned by and serves the Tesoro refinery. The rule addresses emissions from bypass lines and startup, shutdown, and malfunction events, as well as normal operation requiring additional procedures, records, and reporting.

To control HAP emissions, SRUs have four options; however, if an SRU is already subject to NSPS Subpart J, such as at Chemtrade, it must comply with the Subpart J requirements option.

The Chemtrade SRU is equipped with a bypass line allowing the SCOT exhaust gas to bypass the incinerator and go directly to a flare. There is no way for the Claus outlet to bypass the SCOT to the flare. MACT Subpart UUU allows four different options for the control of HAP emissions from bypass lines. Chemtrade has chosen to install a manual lock system (i.e., carseal) to demonstrate compliance with MACT Subpart UUU.

Note that, due to the June 30, 2010 rule change, the startup, shutdown, malfunction plan (SSMP) requirements under 40 CFR 63 Subparts A and UUU no longer apply.

40 CFR 63 Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants: Reciprocating Internal Combustion Engines: 40 CFR 63 Subpart ZZZZ applies to various Reciprocating Internal Combustion Engines (RICE) located at area and major sources of HAP. Chemtrade does not maintain or operate any stationary internal combustion engines. Therefore, MACT Subpart ZZZZ does not apply.

40 CFR 63 Subpart DDDDD - National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters: 40 CFR 63 Subpart DDDDD applies to industrial, commercial, or

institutional boilers and process heaters that are located at a major source of hazardous air pollutants (HAPs), commonly referred to as the Major Source Boiler MACT.

See Table 3 for a list of the subject boilers and process heaters and associated ratings.

Table 3 Heaters and Boilers Subject to 40 CFR 63 Subpart DDDDD

Unit	Rating (MMBtu/hr)	Oxygen Trim?
SRU Auxiliary Boiler	3.348	No

Note that Chemtrade operates a couple of other "heaters". These are generally heat exchangers that use process gases to indirectly heat or cool other process gases with no supplemental fuel combustion.

Also, the SRU is equipped with an integral waste heat boiler that recovers some of the heat generated in the sulfur recovery process. Waste heat boilers are excluded from the definition of "boiler" as affected sources under the Boiler MACT. Therefore, the SRU waste heat boiler is not subject to Boiler MACT.

The subject boiler fires natural gas. As such, this unit falls into the "units designed to burn gas 1 fuels" subcategory. Boiler MACT does not require any pollutant-specific emission limits for existing or new heaters and boilers in the gas 1 subcategory. Instead, the rule requires work practice standards that include periodic "tune-ups" as described in 63.7540(a)(10). Note that none of the units at Chemtrade have oxygen trim. For those units rated at less than or equal to 5 MMBtu/hr, tune-ups are required once every five years; those rated between 5 MMBtu/hr and 10 MMBtu/hr must have tune-ups biennially.

Boiler MACT also requires a one-time energy assessment performed by a qualified energy assessor as described in 40 CFR 63 Subpart DDDDD Table 3.

40 CFR 63 Subpart CCCCCC - National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities: 40 CFR 63 Subpart CCCCCC applies to Gasoline Dispensing Facilities (GDFs) located at area sources of HAP. Because the Chemtrade facility is an area source of HAP as discussed in SOB Section 3.2, 40 CFR 63 Subpart CCCCCC applies to the facility's GDF. Because the GDF has a throughput of less than 10,000 gallons per month, it must comply with 40 CFR 63.11116.

40 CFR 63 Subpart JJJJJJ - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources: 40 CFR 63 Subpart JJJJJJ applies to industrial, commercial, and institutional boilers located at area sources of HAP. Because the Chemtrade facility is an area source of HAP as discussed in SOB Section 3.2, 40 CFR 63 Subpart JJJJJJ potentially applies. However, the heaters and boilers at the Sulfuric Acid Plant all fire natural gas exclusively so are considered gas-fired boilers under the rule and are, thus, not subject to this subpart (63.11195(e)). Because the SRU Auxiliary Boiler is an affected source under 40 CFR 63 Subpart DDDDD, it is not subject to this subpart (63.11195(a)). As such, NESHAP Subpart JJJJJJ does not apply at the Chemtrade facility.

3.3 Washington State Regulations (WAC)

WAC 173-400-105(5)(b) requires that sulfuric acid plants continuously monitor sulfur dioxide. However, WAC 173-400-105(5)(g) lists the exceptions to the continuous monitoring requirements under -105(5) which include emission units that are required to continuously monitor emissions due to a requirement under, among others, 40 CFR Part 60. Because the Chemtrade Sulfuric Acid Plant is subject to sulfur dioxide continuous monitoring requirements under 40 CFR 60 Subpart H, it exempt from the continuous monitoring requirements under WAC 173-400-105(5).

Chapter 173-491 WAC lists requirements for Gasoline Dispensing Facilities. Because Chemtrade's gasoline storage tank is less than 40,000 gallons and the Gasoline Dispensing Facility (GDF) has a throughput less than 200,000 gallons per year, it is only subject to the requirement that all storage tank openings not related to safety are to be sealed with suitable closures (WAC 173-491-040(1)(c)).

3.4 NWCAA Regulations

The NWCAA Regulation defines "petroleum refinery" in NWCAA Section 200 as:

> A facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, asphalt, or other products by distilling crude oils or redistilling, cracking, extracting, or reforming unfinished petroleum derivatives.

Because the Chemtrade is not engaged in producing hydrocarbon products, it is not considered a petroleum refinery under the NWCAA Regulation. As such, the facility is not subject to the requirements applicable to petroleum refineries (e.g., NWCAA Section 460, NWCAA 580.2). Because it is not a petroleum refinery subject to NWCAA Section 460, the Chemtrade facility is subject to the fuel sulfur requirements in NWCAA 520.14.

NWCAA Section 560 – Storage of Organic Liquid: NWCAA Section 560 requires that storage tanks of greater than 6,000 gallons that store organic liquids or solvents with a true vapor pressure greater than 1.5 psi or greater be equipped with vapor loss control devices.

Based on information available as of this writing, Chemtrade's spent acid storage tanks are not subject to NWCAA Section 560.

NWCAA 580.3 – High Vapor Pressure Volatile Organic Compound Storage Tanks: NWCAA 580.3 requires that storage tanks of greater than 40,000 gallons that store volatile organic compounds with a true vapor pressure greater than 1.5 psi or greater meet 40 CFR 60 Subpart Kb requirements.

Based on information available as of this writing, Chemtrade's spent acid storage tanks are not subject to NWCAA 580.3.

NWCAA 580.6 – Gasoline Dispensing Facilities: NWCAA 580.6 requires controls and testing for GDFs and storage tanks of a certain size. Chemtrade's Gasoline Dispensing Facility (GDF) has a throughput less than 120,000 gallons per year so is not subject to the control requirements. The storage tank is less than 2,000 gallons and was installed prior to January 1, 1990 so is not subject to most of the control and testing requirements. The storage tank is only subject to the requirement to maintain the tank in a vapor-tight condition and in good working order (NWCAA 580.6(E)).

3.5 Continuous Emission Monitoring Systems (CEMS)

Continuous Emission Monitoring Systems (CEMS) can be mandated via a variety of mechanisms, including federal or local rules (e.g., NSPS, NESHAP/MACT, NWCAA) and

construction permits (e.g., OACs, PSD). Table 4 lists the CEMS at Chemtrade and the type of requirement that mandates its use.

Table 4 CEMS at Chemtrade

Process Unit	Compounds Monitored	Type of Requirement
SPU Abatement Stack	SO_2	NWCAA Section 465, NSPS Subpart H, PSD 94-01 Amendment 1
SRU Incinerator Stack	SO_2, O_2	NSPS Subpart J, MACT Subpart UUU, OAC 650d

Note that, in addition to a CEMS, annual stack tests for SO_2 are required on both the Sulfuric Acid Plant and the SRU in addition to the CEMS as required by OAC 650d (SRU) and gap-filled under AOP Term 5.1.3 (SPU). This annual testing explicitly demonstrates compliance with the mass emission limits. These annual SO_2 tests are usually conducted in conjunction with the required annual sulfuric acid mist emission testing.

If the CEMS is mandated by NSPS or MACT, it must comply with the requirements in the applicable subpart along with the referenced terms in NSPS Subpart A (60.13) or in MACT Subpart A (63.8). The respective Subpart As list general CEMS installation, operation, and QA/QC requirements. In addition, the specific subpart (e.g., NSPS Subpart J, MACT Subpart UUU) mandates the specific QA/QC thresholds and also references the pollutant-specific Performance Specifications (PS) under 40 CFR 60 Appendix B for installation and initial evaluation and 40 CFR 60 Appendix F for the ongoing quality control and quality assurance.

In the case of NSPS Subpart J and MACT Subpart UUU, they can apply to the same pollutant and both require a CEMS to demonstrate compliance (i.e., SO_2 for SRU). As such, Subpart UUU has an overlap provision that generally aligns the requirements with those in Subpart J to simplify compliance.

In addition, all CEMS installed in the NWCAA jurisdiction must also comply with NWCAA Section 367 which references NWCAA Appendix A (formerly referred to as NWCAA Sections 365, 366 and the "Guidelines for Industrial Monitoring Equipment and Data Handling"). Note that NWCAA Sections 365 and 366 are federally enforceable (i.e., are included in the SIP). NWCAA Section 367 and NWCAA Appendix A were adopted on July 14, 2005; the new regulations are "State Only" until incorporated into the State Implementation Plan.

NWCAA Appendix A references the 40 CFR 60 Appendix B Performance Specifications for CEMS installation requirements and 40 CFR 60 Appendix F for ongoing operation. It also explicitly lists certain operating requirements (e.g., calibration; maintenance; auditing; data recording, validation, and reporting).

Generally, the calibration drift (zero and span) for each CEMS must be checked daily. Data accuracy assessments shall be performed at least once every calendar quarter. This entails a relative accuracy test audit (RATA) that must be performed once per year and cylinder gas audits (CGAs) performed once during each of the other calendar quarters. Data recorded during periods of CEMS breakdown, repair, calibration checks, and zero and span adjustments shall not be included in the data averages. Pursuant to NWCAA Appendix A III(F)(14), CEMs are required to maintain greater than 90% data availability on a monthly basis.

In addition, CEMS performance is required to be submitted to NWCAA on a monthly basis or as required by an applicable subpart. A large part of the CEMS report includes information

about the duration and nature of CEMS downtime, changes made to the CEMS, total operating time and dates of CEMS audits or certifications. Monthly reports include disclosure of deviations from required monitoring and exceedances of emission limits.

The CEMS quality assurance reports which document drift, out of control periods, and the results of relative accuracy test audits (RATA) and cylinder gas audits (CGA) are to be reported on a quarterly basis.

3.6 Compliance Assurance Monitoring

The 40 CFR Part 64 Compliance Assurance Monitoring (CAM) rule requires owners and operators to monitor the operation and maintenance of their control equipment so that they can evaluate the performance of their control devices and report whether or not their facilities meet established emission standards. If owners and operators of these facilities find that their control equipment is not working properly, the CAM rule requires them to take action to correct any malfunctions and to report such instances to the appropriate enforcement agency (i.e., State and Local environmental agencies). Additionally, the CAM rule provides some enforcement tools that will help State and Local environmental agencies require facilities to respond appropriately to the monitoring results and improve pollution control operations.

The CAM rule applies to each Pollutant Specific Emissions Unit (PSEU) when it is located at a major source that is required to obtain a Part 70 or 71 permit and it meets all of the following criteria:

- be subject to an emission limitation or standard
- use a control device to achieve compliance
- have potential pre-control emissions that exceed or are equivalent to the major source threshold

For large PSEUs (i.e., with controlled PTE emissions greater than 100 tons per year), CAM should be addressed in the initial Title V permit or as part of a significant revision. CAM for Other PSEUs is to be addressed at the first Title V permit renewal.

Note that the term "PSEU" means an emissions unit considered separately with respect to each regulated air pollutant. Also the term "control device" means equipment, other than inherent process equipment, that is used to destroy or remove air pollutants prior to discharge to the atmosphere. The term "control device" does not include passive methods that prevent pollutants from forming such as low NO_X burners, lids, or seals, or inherent process equipment provided for safety or material recovery.

Pursuant to 40 CFR 64.2(b)(i), emission limitations stemming from NSPS or NESHAP standards proposed after November 15, 1990 are exempt from CAM since those standards have been and will be designed with monitoring that provides a reasonable assurance of compliance. The Sulfuric Acid Plant has emission limits stemming from NSPS Subpart H. However, NSPS Subpart H was proposed in the early 1970s; therefore, its limits are not exempt from CAM requirements.

Table 5 provides a summary of the CAM applicability to the facility process units for those pollutants that have an emission standard.

Table 5 CAM Applicability

PSEU	CAM Applicability
Sulfuric Acid Plant	SO_2 (Abatement Units)– DOES NOT APPLY (equipped with continuous compliance determination method (CEMS)) H_2SO_4/Opacity (mist eliminators) – CAM APPLIES (see CAM Plan in SOB Appendix A) PM/Opacity – DOES NOT APPLY (no active control device)
Sulfur Recovery Unit	SO_2 (SCOT & Incinerator) – DOES NOT APPLY (equipped with continuous compliance determination method (CEMS)) H_2SO_4/Opacity – DOES NOT APPLY (no active control device) PM/Opacity – DOES NOT APPLY (no active control device)
SPU3 Startup Heater, Abatement Unit 10 & 11 Process Heaters, & SRU Auxiliary Boiler	SO_2 – DOES NOT APPLY (no active control device) PM/Opacity – DOES NOT APPLY (no active control device)

The Sulfuric Acid Plant is equipped with Abatement Units 10 and 11, which are considered active control devices that reduce SO_2 emissions. SO_2 emissions prior to the Abatement Units exceed major source thresholds (100 tons per year). However, the Sulfuric Acid Plant exhaust is equipped with an SO_2 CEMS. This CEMS is also subject to NWCAA Section 367 and NWCAA Appendix A which requires quality assurance for the CEMS. As such, the CEMS is considered a continuous compliance determination method, which exempts it from CAM requirements under 40 CFR 64.2(b)(1)(vi).

As can be seen in Table 5, CAM potentially applies to the Sulfuric Acid Plant for sulfuric acid mist. In this case, it has emission limits in terms of pounds per dry standard cubic foot (lb/dscf) and pounds per ton of acid produced (production expressed as 100% H_2SO_4) (lb/ton acid produced) and uses mist eliminators associated with Abatement Units 10 and 11 to meet these limits. Based on the emission limit in OAC 458d (i.e., 0.105 lb/ton acid produced), the SPU is a major source pre-control but post-control emissions are less than the major source threshold (i.e., 100 tons per year).[12] Therefore, the SPU is subject to CAM for the lb/dscf and lb/ton acid produced limits and a CAM Plan is required.

Note that OAC 458d requires that the compliance demonstration for the lb/dscf and lb/ton acid produced sulfuric acid mist emission limits is annual source testing. This source testing is also used to demonstrate compliance with the applicable sulfuric acid mist limits in NWCAA 465.12 and NSPS Subpart H. As a unit with potential post-control non-major source emissions, CAM mandates that the required monitoring be collected at least once per 24-hours. As such, this stack test does not satisfy the monitoring frequency requirement under CAM.

[12] Permitted maximum allowable emission rate is 0.105 lb/ton acid produced x 566 ton acid/day x 365 days/year x 1 ton/2000 lb = 10.8 tons per year post-control. Based on the control efficiency distribution for the chosen mist pads, the mist pads are at least 89.2% efficient by weight (1 - (10.8 tons per year post-control / 100 tons per year pre control) = 89.2%) so pre-control emissions are greater than 100 tons per year.

Two pollutants from the Sulfuric Acid Plant stack potentially cause opacity – particulate matter (from combustion of the spent acid contaminants) and sulfuric acid mist. CAM for opacity from sulfuric acid mist is addressed in the CAM Plan for sulfuric acid mist emissions.

Particulate matter from combustion is removed from the gas stream using a gas cooling tower and a wet electrostatic precipitator (WESP). The gas cooling tower is considered inherent process equipment because it serves primarily to cool the exhaust gas in preparation for the next process step and collection of entrained particulate is a side benefit.

The WESP is primarily used to remove particulate matter to prevent it from plugging equipment downstream and from collecting in the product acid. Because the product acid has specifications for particulate matter and metals, the WESP is considered inherent process equipment so is not subject to CAM requirements.

The SRU is equipped with the SCOT and incinerator to control SO_2. Pre-control SO_2 emissions exceed major source thresholds. However, similarly to the Sulfuric Acid Plant, the SRU exhaust is equipped with a continuous compliance determination method (i.e., a CEMS) for SO_2 so is exempt from CAM for SO_2 under 40 CFR 64.2(b)(1)(vi).

The SRU is also potentially subject to CAM for a sulfuric acid mist emission limit. However, the SCOT and incinerator do not reduce sulfuric acid mist emissions; the SRU is not equipped with an active control device for sulfuric acid mist. Therefore, CAM does not apply to the SRU for sulfuric acid mist.

Sources subject to CAM must submit CAM Plans, the requirements of which are to be included in the AOP. CAM Plans provide information on the monitoring requirements, appropriateness of the control approach, details of the quality assurance/quality control measures, and rationale for selection of indicator range. Chemtrade submitted a CAM Plan for the Sulfuric Acid Plant for the lb/dscf and lb/ton acid produced sulfuric acid mist limits, which is included in SOB Appendix A. Further discussion of the CAM Plan strategy and requirements can be found in SOB Section 5.6.

3.7 Risk Management Plan (RMP)

The goal of 40 CFR Part 68 and the risk management program is to prevent accidental releases of substances that can cause serious harm to the public and the environment from short-term exposures and to mitigate the severity of releases that do occur. If a facility contains the hazardous or flammable substances listed in 40 CFR 68.130 in an amount above the "threshold quantity" specified for that substance, the facility operator is required to develop and implement a risk management program.

Chemtrade does not maintain any substances in quantities greater than the listed thresholds. As such, Chemtrade is not required to submit an RMP to the EPA. This regulation is implemented in its entirety by the EPA. The facility certifies their compliance status with all applicable requirements of 40 CFR Part 68 in their annual compliance certification.

3.8 Greenhouse Gas (GHG) Regulation

Greenhouse gases are chemicals that contribute to climate change by trapping heat in the atmosphere. The greenhouse gases recognized by EPA and Ecology are: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF_6). "Hydrofluorocarbons" or "HFCs" means a class of greenhouse gases primarily used as refrigerants, composed of hydrogen, fluorine, and carbon.

Chemtrade is required to meet the following federal and state greenhouse gas emission requirements, as applicable.

3.8.1 40 CFR Part 98 – Federal Mandatory Greenhouse Gas Emission Inventory Regulation

The requirements for mandatory greenhouse gas reporting are contained in 40 CFR Part 98. This regulation is implemented in its entirety by the EPA. This regulation is excluded from appearing in a Title V air operating permit because it does not contain applicable requirements under the Title V program (WAC 173-401-200(4)). The following discussion is included here for completeness.

In order for a facility to be subject to 40 CFR Part 98, it must meet the requirements of 1, 2, or 3 below:

1. A facility that contains any source category that is listed in Table A–3 of 40 CFR 98 Subpart A.
2. A facility that contains any source category that is listed in Table A–4 of 40 CFR 98 Subpart A that emits 25,000 metric tons CO_2e or more per year in combined emissions from stationary fuel combustion units.
3. A facility that has stationary fuel combustion units with an aggregate maximum rated heat input of 30 MMBtu/hr or greater, and the facility emits 25,000 metric tons CO_2e or more per year in combined emissions from all stationary fuel combustion sources.

Table A-3 includes petroleum refineries, among other industrial categories; Subpart Y of 40 CFR Part 98 establishes reporting requirements for petroleum refineries. This source category addresses many petroleum processing units including sulfur recovery plants. Note that 40 CFR Part 98 defines a sulfur recovery plant as all process units which recover sulfur or produce sulfuric acid from hydrogen sulfide and/or SO2 from a common source of sour gas at a petroleum refinery. Tesoro includes the treatment of refinery sour gas at Chemtrade's facility GHG emissions in their 40 CFR Part 98 reporting.

3.8.2 WAC 173-401-200(19) & (35) – Greenhouse Gas Definition

WAC 173-401-200(19) & (35) define what the terms "major source" and "subject to regulation" regarding greenhouse gases (GHGs) mean and how to calculate GHG emissions.

Because the statutory authority for WAC 173-401-200 was the state Clean Air Act (ch 70.94 RCW), it is considered an applicable requirement under the air operating permit program (WAC 173-401-200(4)); as such, it is included in the AOP.

3.8.3 Chapter 173-441 WAC – Reporting of Emissions of Greenhouse Gases

Chapter 173-441 WAC, "Reporting of Emissions of Greenhouse Gases", adopts a mandatory greenhouse gas reporting rule for:

- Suppliers that supply applicable fuels sold in Washington state of which the complete combustion or oxidation would result in at least 10,000 metric tons of carbon dioxide annually, or
- Any listed source category that emits at least 10,000 metric tons of carbon dioxide equivalents (CO_2e) of greenhouse gases annually in the state.

Similar to the federal reporting rule under 40 CFR Part 98, the rule requires annual GHG inventories due to Ecology by no later than March 31 of the following year. This regulation is implemented in its entirety by Ecology.

Petroleum refineries is a listed source category. Tesoro includes the treatment of refinery sour gas at Chemtrade's facility GHG emissions in their ch 173-441 reporting.

Because the statutory authority for ch 173-441 WAC was the state Clean Air Act (ch 70.94 RCW), it is considered an applicable requirement under the air operating permit program (WAC 173-401-200(4)); as such, it is included in the AOP.

3.8.4 Chapter 173-442 WAC – Clean Air Rule

Chapter 173-442 WAC, "Clean Air Rule" (CAR), adopts a mandatory greenhouse gas reduction program for petroleum product producers, natural gas distributors, petroleum product importers, and other energy intensive, trade exposed (EITE) covered parties. EITE covered parties include "all other basic inorganic chemical manufacturing" (NAICS code 325188) which includes the Chemtrade facility.

This regulation is implemented in its entirety by Ecology. Because the statutory authority for ch 173-442 WAC was the state Clean Air Act (ch 70.94 RCW), it is considered an applicable requirement under the air operating permit program (WAC 173-401-200(4)); as such, it is included in the AOP.

Note, however, that per Ecology's website (https://ecology.wa.gov/Air-Climate/Climate-change/Greenhouse-gases/Reducing-greenhouse-gases/Clean-Air-Rule accessed 7/15/20):

> In March 2018, Thurston County Superior Court ruled that parts of the Clean Air Rule are invalid. The Superior Court's ruling prevents us from implementing the Clean Air Rule regulations. This means that compliance with the rule currently is suspended.
>
> On Jan. 16, 2020, the Washington State Supreme Court ruled that the portions of the rule that applied to stationary sources, such as a factory, were upheld, but that the portions that applied to indirect sources, such as natural gas distributors and fuel suppliers, were invalid. The Supreme Court remanded the case to Thurston County Superior Court to determine how to separate the rule.

4 GENERAL ASSUMPTIONS OF THE PERMIT

4.1 Permit Content

The permit contains standard terms; generally applicable conditions for the type of facility permitted; and specifically applicable conditions originating from PSD permits, orders of approvals to construct, and any orders issued to the facility. Applicable requirements that were satisfied by a single past action on the part of the source are not included in the AOP but are discussed in the SOB. In addition, as discussed below, conditions that do not contain substantive requirements and have no ongoing compliance demonstrations are excluded from the AOP. Also, regulations that require action by a regulatory agency, but not of the regulated source, are not included as applicable permit conditions.

4.2 Excluded Requirements

The following requirements are excluded from the AOP:

4.2.1 Sulfuric Acid Plant

40 CFR Part 60 Subpart H – Initial Construction:

- The facility notified NWCAA of the commencement of construction of the third Sulfuric Acid Plant unit by letter dated September 4, 1973. (40 CFR 60.7(a) and 40 CFR Part 60 Subpart H)
- The facility submitted the notification of initial startup of the third Sulfuric Acid Plant unit as required by 40 CFR 60.7(a) by letter, dated April 14, 1975.
- The initial performance test results required by 40 CFR 60.84 and 60.8 were submitted to NWCAA and EPA Region 10 dated June 2, 1976.
- The facility submitted initial monitoring information to EPA Region 10 indicating compliance with the monitoring requirements of 40 CFR 60.84 by a letter dated January 21, 1977.

40 CFR Part 60 Subpart H – Modification: The Sulfuric Acid Plant was expanded and modified under 40 CFR 60 Subpart H triggering the initial requirements again.

- The facility notified NWCAA of the proposed modification under 40 CFR 60.7(a) in a letter dated October 18, 1993.
- Notification of initial startup under 40 CFR 60.7(a) was submitted by letter, dated September 20, 1995.
- The facility notified NWCAA of the initial performance test as required by 40 CFR 60 Subpart A. The letter is dated February 22, 1996.
- Notification of a Relative Accuracy Test Audit (RATA) on the Sulfuric Acid Plant CEMS was provided via letter dated July 30, 1996. Note that the Sulfuric Acid Plant CEMS has been in operation and in compliance with 40 CFR 60 Subpart H since initial construction.

New Source Review Permits:

- Condition 6 of PSD 94-01 Amendment 1 (1/14/98) includes language regarding operating in accordance with the PSD application unless otherwise approved. This condition has no specific substantive ongoing requirements. As such, it is not listed in the AOP.

- PSD 94-01 Amendment 1 Condition 7 (1/14/98) states that "Any activity that is undertaken by General Chemical that is inconsistent with the PSD application shall be subject to enforcement." NWCAA recognizes the difficulty in showing continuous compliance with this broadly-stated requirement and therefore considers that it does not have substantive requirements that need to be included in the AOP.

4.2.2 Sulfur Recovery Unit

40 CFR Part 60 Subpart J – Initial Construction:

- Records were not located in the NWCAA files demonstrating that the facility met the one-time initial notification requirements of the rule (40 CFR 60.7). There is evidence that the facility had some difficulty meeting the requirement to install and operate a CEM in accordance with 40 CFR 60.105. In a letter dated October 12, 1989, NWCAA stated that the facility had made "a determined effort" to comply with this requirement, and allowed additional time for this to occur. NWCAA does not assert that any outstanding requirements to provide the initial notifications remain for this rule at this time.

40 CFR Part 60 Subpart J – Modification: The SRU was modified under 40 CFR 60 Subpart J triggering the initial requirements again.

- The facility notified NWCAA of the proposed modification as required by 40 CFR 60.7(a) in a February 12, 1998 letter.
- The facility submitted the notification of commencement of construction as required by 40 CFR 60.7(a) in a September 9, 1998 letter.
- The facility submitted the notification of initial startup as required by 40 CFR 60.7(a) in an October 28, 1998 letter.
- The facility notified NWCAA of the initial performance test as required by 40 CFR Part 60 Subpart A in a March 25, 1999 letter.

40 CFR Part 63 Subpart UUU – Initial Applicability:

- The initial notification was required by 40 CFR 63.1574(a)(3)(i) and (d) to be submitted within 30 days of completion of the initial compliance demonstration. The facility submitted two documents labeled "initial notification".

4.2.3 Boilers and Process Heaters

40 CFR Part 63 Subpart DDDDD – Initial Compliance:

- The Initial Notification under 40 CFR 63. 7545(b) was due 120 days after January 31, 2013 (i.e., May 31, 2013). On February 3, 2009, NWCAA received an initial notice from Chemtrade listing all the subject units at the facility, all having a heat input capacity less than 10 MMBtu/hr, all firing only natural gas, and all commenced construction prior to June 4, 2010 (i.e., are considered existing units).
- 40 CFR 63.7530(e) and (f) requires that the Notification of Compliance Status be submitted within 60 days of the compliance date (January 31, 2016). Chemtrade submitted the Notification of Compliance Status on February 18, 2016 and submitted supplemental information on March 31, 2016.
- The initial tune-ups must be completed by the compliance date (January 31, 2016). Chemtrade reported in the Notification of Compliance Status that they completed the initial tune-ups in a timely fashion.

- The energy assessment must be completed by the compliance date of January 31, 2016. Chemtrade reported in the Notification of Compliance Status that they completed the energy assessment in a timely fashion. The energy assessment was completed on January 23, 2016.

RCW 70.94.992 – Energy Assessment Submittal

- The nonproprietary information in the energy assessment required under 40 CFR 63 Subpart DDDDD must be submitted to NWCAA by January 31, 2018. Chemtrade submitted their energy assessment received on November 1, 2017.
- The nonproprietary information in the energy assessment required under 40 CFR 63 Subpart DDDDD must be submitted electronically to the Washington State University extension energy program by January 31, 2018. The Washington State University extension energy program received Chemtrade's energy assessment on November 7, 2017.

4.3 Federal Enforceability

Federally enforceable requirements are terms and conditions required under the Federal Clean Air Act or under any of its applicable requirements (e.g., NSPS or NESHAPs). Local and state regulations become federally enforceable if they are adopted into the state implementation plan (SIP) or through other delegation mechanisms. Federally enforceable requirements are enforceable by the EPA and citizens of the United States and as delegated to NWCAA. All applicable requirements in the permit including standard terms and conditions, generally applicable requirements, and specifically applicable requirements are federally enforceable unless they are specifically identified as enforceable by only the state or NWCAA (i.e., labeled as "State Only").

Most rules and requirements are followed by a date in parentheses. Two different versions (identified by the date) of the same regulatory citation may apply to the source if federal approval/delegation lags behind changes made to the WAC or the NWCAA Regulation. For WAC regulations, the date listed in parentheses in the AOP represents the State Effective date. For the NWCAA regulations, the date represents the most recent Board of Directors adoption date, which is identified as the "Passed" or "Amended" date in the NWCAA Regulation. The date associated with an OAC or PSD permit represents the latest revision date of that order. For a federal rule, the date is the rule's most recent promulgation date.

Chapter 173-401 WAC is not federally enforceable although the requirements of this regulation are based on federal requirements for the air operating permit program. Upon issuance of the permit, the terms based on ch 173-401 WAC become federally enforceable for the source.

4.4 Gap Filling

EPA's memo to Alaska (Memo from Jeff KenKnight, Office of Air, Waste and Toxics to John Kuterbach, Alaska Department of Environmental Conservation dated January 27, 2005) states that "the Title V permit must contain periodic monitoring sufficient to yield reliable data from the relevant time period that are representative of the source's compliance with the permit." As such, the permitting agency may develop site-specific MR&R requirements that the source must follow pursuant to WAC 173-401-615(1)(b) & (c) (10/17/02). The inclusion of the customized MR&R requirements is called "gap-filling". For instance, nuisance rules and opacity requirements have site-specific gap-filled obligations for the source. If gap-filling has been incorporated for a requirement of the AOP, the MR&R for that term will state "Directly Enforceable:" above the gap-filled text.

On August 19, 2008, the U.S. Court of Appeals vacated EPA's 2006 interpretive rule that prohibited states from enhancing monitoring in Title V permits. As a result, permitting authorities again must ensure that monitoring in each permit is sufficient to assure compliance with the terms and conditions of the permit.

4.5 Future Requirements

Applicable requirements promulgated with future effective compliance dates may be included as applicable requirements in the permit. There are no requirements with future compliance dates in Chemtrade's AOP.

Some requirements that are not applicable until triggered by an action, such as the requirement to file an application prior to constructing a new source, are addressed within the standard terms and conditions section of the AOP. Chemtrade certified in the permit application that the facility will meet any future applicable requirements on a timely basis.

4.6 Compliance Options

Chemtrade did not request emissions trading provisions or specify more than one operating scenario in the air operating permit application. Therefore, the permit does not address these options as allowed under WAC 173-401-650. This permit does not condense overlapping applicable requirements (streamlining) nor does it provide any alternative emission limitations.

5 PERMIT ELEMENTS AND BASIS FOR TERMS AND CONDITIONS

5.1 Permit Organization

The permit is organized in the following sequence:

- Permit Information
- Attest
- Table of Contents
- Emission Unit Identification (AOP Section 1)
- Standard Terms and Conditions (AOP Section 2)
- Standard Terms and Conditions for NSPS and NESHAP (AOP Section 3)
- Generally Applicable Requirements (AOP Section 4)
- Specifically Applicable Requirements (AOP Section 5)
- Inapplicable Requirements (AOP Section 6)

5.2 Permit Information and Attest

5.2.1 Permit Information

The Permit Information page of the permit identifies the source and provides general information about the permit, the responsible official, and the agency personnel responsible for permit preparation, review, and issuance.

5.2.2 Attest

The Attest Page provides authorization for the source to operate under the terms and conditions contained in the permit.

5.3 AOP Section 1 Emission Unit Identification

The Emission Unit Identification section lists emission units, equipment ratings, and control devices present at Chemtrade along with applicable requirement programs. Additional information about the facility may be found in the operating permit application and in associated files.

5.4 AOP Section 2 Standard Terms and Conditions

The Standard Terms and Conditions section contains administrative requirements and prohibitions; most of which do not have ongoing compliance monitoring requirements. The citations giving legal authority to the Standard Terms and Conditions are provided in the section. At times, requirements are paraphrased. In this case the language of the cited regulation takes precedence over the paraphrased summary. For clarity and readability, the terms and conditions have been grouped by function. Similar requirements from the State and the NWCAA regulations are grouped together where possible. There are several requirements included that are not applicable until triggered such as the requirement to file an NOC application.

Compliance Certification (AOP Term 2.4.1.3): NWCAA gap-filled language allowing facilities to send in certification statements once every six months that covers the reports

the listed reports during that period. In conjunction with AOP Term 4.1, these six month periods are based on a calendar year. The addition of this requirement and clarification meets the intent of the requirement in the WAC in that all reports are certified, while minimizing the burden on a facility to go to the responsible official every time a report is submitted.

Required Recordkeeping (AOP Term 2.4.3): For clarity, NWCAA gap-filled language stating that monitoring and recordkeeping are not required when the source is not operating but the facility must report when the source is shut down.

Reporting of Deviations from Permit Conditions (AOP Term 2.4.7): WAC 173-401-615(3)(b) states that "The permitting authority shall define "prompt" in each individual permit in relation to the degree and type of deviation likely to occur and the applicable requirement." NWCAA gap-filled language to clarify the timeframe of the reporting of deviations that represent a potential threat to human health or safety.

5.5 AOP Section 3 Standard Terms and Conditions for NSPS and NESHAP

The Standard Terms and Conditions for NSPS and NESHAP section contains applicable requirements from Subpart A of 40 CFR 60 and Subpart A of 40 CFR 63.

5.6 AOP Sections 4 and 5 Generally and Specifically Applicable Requirements

Requirements that limit emissions and broadly apply to all sources within NWCAA's jurisdiction are identified in AOP Section 4 - Generally Applicable Requirements. Requirements that limit emissions and apply specifically to emission units at Chemtrade are identified in AOP Section 5 - Specifically Applicable Requirements.

The first column lists the condition number and identifies the pollutant. The second column identifies the regulatory citation. The third column provides a brief description of the applicable requirements for informational purposes and is not enforceable. The fourth column identifies the periodic or continuous MR&R obligations the source must perform as required by WAC 173-401-605(1), -615(1) & (2), or the underlying requirement. MR&R obligations do not apply to insignificant emission units pursuant to WAC 173-401-530(2)(c).

The requirements in the MR&R column labeled "*Directly Enforceable:*" are legally enforceable requirements added under NWCAA's "gap filling" authority (WAC 173-401-615(1)(b) & (c)).

The requirements in the MR&R column labeled "*CAM:*" stem from the CAM Plan that are unique to the CAM Plan (i.e., not repeated elsewhere) including descriptions of "excursion" and "exceedance" events, as appropriate. An excursion is a departure from an indicator range established for monitoring consistent with the averaging period specified for the monitoring. An excursion does not necessarily indicate that a permit limit has been exceeded. An exceedance is an incident when emissions limits have been surpassed. The CAM Plan for the Sulfuric Acid Plant for sulfuric acid (and opacity) is included in SOB Appendix A.

Other MR&R requirements not labeled "*Directly Enforceable:*" or "*CAM:*" are brief descriptions of the regulatory requirements for informational purposes and are not enforceable, unless they are identical to the cited requirement; the language of the cited regulation takes precedence over a paraphrased requirement. The following paragraphs provide additional information describing the basis of those MR&R requirements that do not stem directly from other regulations (i.e., those requirements that are directly enforceable).

Required Monitoring Reports (AOP Term 4.1): To explicitly place all AOP sources in NWCAA jurisdiction on the same reporting schedule based on the calendar year, NWCAA gap-filled the schedule for report submittal under AOP Term 4.1.

Operation and Maintenance (AOP Term 4.2): For clarity, NWCAA gap-filled language that monitoring, recordkeeping, and reporting in accordance with the AOP can also demonstrate compliance with operating in good operating condition and repair.

Nuisance – Odor and Fugitive Dust (AOP Terms 4.3 through 4.6 and 4.7 through 4.11): None of the listed conditions related to nuisance, odor, and fugitive dust have explicit monitoring, recordkeeping, and reporting requirements. As such, NWCAA gap-filled in an MR&R program to address how nuisance issues and complaints are handled by the facility. Generally, all NWCAA AOP facilities have similar requirements.

Opacity Requirements (AOP Terms 4.12 through 4.16; 5.1.8 through 5.1.13): The Generally and Specifically Applicable Requirements sections of the permit list opacity limits stemming from NWCAA, State, and federal rules along with OAC and PSD permits. Note that the terms "opacity" and "visible emissions" mean the same thing and are used interchangeably.

The SPU, SRU, and SPU3 Startup Heater are variously subject to three opacity limitations with two demonstration methods:

- Shall not exceed 10% or 20% for any period aggregating more than three minutes in any one hour (demonstrated using Ecology Source Test Method 9A - Visual Determination of Opacity for a Three Minute Standard (7/12/90)) (AOP Terms 4.12, 4.13, 5.1.11, 5.1.12 & 5.1.13) and
- Shall not exceed 10% on a six-minute average (demonstrated using 40 CFR 60 Appendix A Method 9 – Visual determination of the opacity of emissions from stationary sources) (AOP Terms 5.1.8, 5.1.9, & 5.1.10).

Opacity is also being used as a surrogate for the grain loading standards in NWCAA 455.1 (AOP Term 4.14), WAC 173-400-060 (AOP Term 4.15), and WAC 173-400-050 (AOP Term 4.16).

Note that opacity can stem from fuel combustion or from the emission of sulfuric acid mist.

For clarity and simplicity, the MR&R requirements for each of these requirements have been consolidated and gap-filled as directly enforceable. Demonstration of compliance with the visible emission limits for the emission units (e.g., Sulfuric Acid Plant, SRU, SPU3 Startup Heater, Abatement Unit 10 and 11 Process Heaters, SRU Flare, SRU Auxiliary Boiler) will be based on periodic qualitative visual opacity observations, initially conducted monthly. Any observed visible emissions at any time will require within 24 hours either corrective action, shutting the unit down, or an EPA Method 9 observation. If any single reading is greater than an applicable numerical opacity limit (e.g., 10%), a certified reading must be taken in accordance with the appropriate method for each opacity limit (i.e., a 6-minute EPA Method 9 and a 1-hour Ecology Method 9A). This must be repeated daily until visible emissions are determined to be compliance with each opacity limit.

All EPA Method 9 or Ecology Method 9A opacity readings must be taken by an individual holding a valid Certification of Completion for Plume Evaluation Training from the Washington State Department of Ecology or other authorized training facility. Both methods call for opacity readings to be taken at 15-second intervals.

If no opacity is seen during the monthly qualitative observations for six consecutive months, the periodic reading can drop to quarterly.

Generally, all NWCAA AOP facilities have similar requirements.

Ambient Station (AOP Term 4.17): NWCAA 465.21, 465.22, and 465.24 list requirements for sulfuric acid plants, including installing a continuous recording ground level sulfur dioxide (SO_2) monitor "as approved by the Control Officer". The requirement for the SO_2 ambient station has been gap filled with a reference to the operation of the ambient station in accordance with NWCAA 367 and NWCAA Appendix A.

Sulfur Compound Emissions (AOP Terms 4.18, 4.19, and 4.20): NWCAA Section 462 and WAC 173-400-040(7) limit sulfur dioxide emissions from stacks but do not have any specific MR&R requirements. Because Chemtrade is required to monitor sulfur dioxide emissions from each of their stacks, the gap-filled MR&R was linked to the monitoring requirements in AOP Section 5.

Sulfur Compounds in Fuel (AOP Terms 4.21 and 4.22): NWCAA 520.11, 420.12, 520.13 and 520.15 limit the fuel sulfur content but do not have any specific MR&R requirements. To document the fuel sulfur content, NWCAA gap-filled language requiring that fuel specifications and purchase records be retained.

Sulfuric Acid Plant Requirements – SO_2 under NWCAA 465.11, 465.23, and 465.24 (AOP Term 5.1.3): NWCAA 465.11 limits SO2 from sulfuric acid plants with different limits for "new" and "existing" facilities. Because SPU3 was added in 1975 and SPU3 production was significantly expanded in 1994, the Chemtrade SPU is considered a new facility under NWCAA 465.11.

NWCAA 465.11, 465.23, and 465.24 lists requirements for sulfuric acid plants, including installing a continuous emission monitoring system (CEMS) for SO_2 "if required by the Control Officer". As such, the requirement for the CEMS has been gap filled with a reference to the operation of the SO_2 CEMS under 40 CFR 60 Subpart H and to NWCAA Section 367. The limit has an averaging period similar to that in 40 CFR 60 Subpart H.

In addition, annual performance testing using EPA Methods 1-4 and 6 or 6C was gap filled to explicitly demonstrate compliance with the mass emission limits.

Sulfuric Acid Plant Requirements – SO_2 under PSD 94-01 Amendment 1 (AOP Term 5.1.4): Annual performance testing using EPA Methods 1-4 and 6 or 6C was gap-filled to explicitly demonstrate compliance with the mass emission limits.

Sulfuric Acid Plant Requirements – H_2SO_4 Compliance Demonstration (AOP Terms 5.1.5 through 5.1.7): To clarify how compliance will be demonstrated with sulfuric acid limits based on facility production, NWCAA gap-filled that the daily production rate may be used, even for shorter-term limits, since, according to the facility, it is the most accurate data currently available without significant expense at the time of this writing. This language will be reviewed during future AOP renewals for appropriateness.

As part of the CAM Plan, Chemtrade proposed to monitor differential pressure daily across each mist eliminator pad in the Abatement Units absorption towers coupled with daily visible emissions observations when indicated. A potential excursion is defined as two consecutive daily differential pressure readings less than 0.2" H2O for Abatement Unit 10 and 0.4" H2O for Abatement Unit 11. A potential excursion triggers an inspection. If it is determined that the decreased differential pressure is due to a decrease in SPU operation, this is not an excursion but shall be noted in a log and daily qualitative visible emission observations of the Sulfuric Acid Plant stack shall commence. If there is no corresponding SPU operation decrease, this is an excursion which requires corrective action as soon as practicable and reporting.

A visible emissions (VE) observation excursion is defined as a single daily qualitative reading where opacity is observed. A VE excursion triggers an inspection, corrective action as soon as practicable, and reporting. Daily VE observations will end for that abatement unit when the daily differential pressure reading rises above the designated threshold.

In addition to the CAM monitoring, Chemtrade also is required to stack test the Sulfuric Acid Plant annually for demonstrating compliance with the lb/dscf and the lb/ton acid produced limits. The testing will provide additional data to "spot-check" compliance and also evaluate the suitability of the CAM monitoring strategy.

This monitoring strategy is determined to be adequate to satisfy CAM requirements.

Sulfuric Acid Plant Requirements – Opacity Compliance Demonstration (AOP Terms 5.1.8 through 5.1.13): See discussion above related to AOP Terms 4.12 through 4.16 regarding gap filling for opacity compliance.

Because sulfuric acid emissions can cause opacity, the proposed CAM monitoring strategy for sulfuric acid will also satisfy monitoring for opacity.

Sulfur Recovery Unit Requirements – SO_2 Tons Per 12-Month Period (AOP Term 5.2.2): OAC 650d Condition (7) limits SO_2 emissions from the SRU to 40 tons during any consecutive 12-month period. The OAC did not include any ongoing compliance demonstration. The compliance demonstration was gap filled as using the CEMS concentration data (an hourly average of ppm/minute data) multiplied by an average stack flow from the most recent 12 passing performance tests. Note that the appropriate average stack flowrate basis must be chosen for this calculation – to use the hourly average of ppm/minute data, it must be multiplied by the average actual cubic feet/minute flowrate; it must be converted to ppm/hour (i.e., multiplied by 60) to be multiplied by the actual cubic feet per hour flowrate.

An average stack flow was chosen because, according to the facility, it is the most reasonable and conservative method for determining stack flow currently available without significant expense at the time of this writing. This will be reviewed during future AOP renewals for appropriateness. Because the performance tests are generally performed at the upper end of SRU operation, using the stack flow from source tests is conservative. In addition, over the range of operating rates in the last 11 years of testing, the stack flow is fairly constant. A rolling average of the tested stack flows was to reflect potential shifts in tested operating rates and equipment age; an average of many performance tests was to avoid potential large step changes in flow rate.

Gasoline Dispensing Facility (AOP Terms 5.3.1 and 5.3.2): Periodic inspections when gasoline is delivered were gap-filled to ensure the gasoline storage tank is maintained in a vapor-tight condition and in good working order.

5.7 AOP Section 6 Inapplicable Requirements

WAC 173-401-640 allows a determination regarding inapplicable requirements. AOP Section 6 contains a list of inapplicable requirements and the causal basis.

6 INSIGNIFICANT EMISSIONS UNITS

Table 6 below lists emission units present at Chemtrade that are insignificant based their emission rate, size, or production rates in accordance with WAC 173-401-530 and -533. The third column of the table provides a justification for the exemption based on operational characteristics for each unit. Some categorically exempt insignificant emission units as defined in WAC 173-401-532 are present at Chemtrade but are not required to be listed herein. An emission unit cannot be considered insignificant if it is subject to any federally-enforceable applicable requirement.

Note that the Generally Applicable requirements in AOP Section 4 apply to all insignificant emission units, although the monitoring, recordkeeping, and reporting requirements are deemed to not apply.

Table 6 Insignificant Emissions Units

Exempt Unit	WAC Citation	Comment
Diesel Storage Tank (250 gal)	WAC 173-401-533(2)(c)	Operation, loading and unloading of VOC storage tanks of ten thousand gallons or less with lids or other appropriate closure, vp not greater than 80mm Hg at 21°C
Waste Oil Storage Tank (300 gal)	WAC 173-401-533(2)(c)	
MDEA Storage Tank (2,800 gal)	WAC 173-401-533(2)(c)	
Portable In-Line Catalyst Preheater	WAC 173-401-533(2)(e)	Rated at less than 5 MMBtu/hr (natural gas fired)
Cooling Tower	WAC 173-401-533 (2)(m)	Water cooling tower not in contact with process streams, not using chromium-based corrosion inhibitors
Space and hot water heaters	WAC 173-401-533(2)(r)	Used for comfort. Space heaters and water heaters using natural gas, propane, or kerosene, and generating less than 5 million Btu per hour
Caustic Storage Tank (9,400 gal)	WAC 173-401-533(2)(s)	Tanks, vessels and pumping equipment, with lids or other appropriate closure for storage or dispensing of aqueous solutions of inorganic salts, bases, and acids.
93% H_2SO_4 Tanks (3 @ 71,400 gal each)	WAC 173-401-533(2)(s)	
30% H_2SO_4 Tanks (2 @ 17,000 gal each, 5,000 gal, 4,000 gal)	WAC 173-401-533(2)(s)	
Battery Acid Tanks (14,000 gal & 9,400 gal)	WAC 173-401-533(2)(s)	
Quality Control Lab	WAC 173-401-533(3)(c)	Chemical or physical analytical laboratory operations or equipment.
Effluent Neutralization	WAC 173-401-533(3)(d)	NPDES permitted ponds and lagoons utilized solely for the purpose of settling suspended solids and skimming of oil and grease

7 PUBLIC DOCKET

Copies of Chemtrade's Air Operating Permit, permit application, and any technical support documents are available at the following locations:

Online:

www.nwcleanairwa.gov

Office:

Northwest Clean Air Agency
1600 South Second Street
Mount Vernon, WA 98273-5202

(360) 428-1617 (call for an appointment to review)

8 DEFINITIONS AND ACRONYMS

Definitions are assumed to be those found in the underlying regulation. A short list of definitions has been included below.

An "applicable requirement" is a provision, standard, condition or requirement in any of the listed regulations or statutes as it applies to an emission unit or facility at a stationary source.

An "emission unit" is any part or activity of a stationary source that emits or has the potential to emit any regulated air pollutant.

A "permit" means, for the purposes of the air operating permit program, an air operating permit issued pursuant to Title V of the 1990 Federal Clean Air Act.

"State" means, for the purposes of the air operating permit program, NWCAA or the Washington State Department of Ecology.

The following is a list of acronyms used in the Air Operating Permit and/or Statement of Basis:

AOP	Air Operating Permit
ASTM	American Society for Testing and Materials
BACT	Best Available Control Technology
CAM	Compliance Assurance Monitoring
CEM	continuous emission monitor
CFR	Code of Federal Regulations
CO	carbon monoxide
EPA	Environmental Protection Agency
FCAA	Federal Clean Air Act
dscf	dry standard cubic foot
Ecology	Washington State Department of Ecology
GDF	Gasoline Dispensing Facility
HAP	Hazardous Air Pollutants
H_2S	hydrogen sulfide
H_2SO_4	sulfuric acid
MACT	Maximum Achievable Control Technology
MDEA	methyl diethanolamine
MR&R	Monitoring, Recordkeeping, and Reporting
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOC	Notice of Construction
NOx	Oxides of Nitrogen
NSPS	New Source Performance Standard
NSR	New Source Review
NWCAA	Northwest Clean Air Agency
O_2	oxygen
OAC	Order of Approval to Construct
PM	particulate matter
PM_{10}	particulate matter less than 10 microns in diameter
ppmvd	parts per million by volume, dry
psia	pounds per square inch absolute
PTE	Potential to Emit (annual, unless otherwise noted)

QA/QC	Quality Assurance/Quality Control
RCW	Revised Code of Washington
RMP	Risk Management Plan
SCF	Standard Cubic Feet
SCOT	Shell Claus Off-gas Treating
SIP	State Implementation Plan
SO_2	sulfur dioxide
SOB	Statement of Basis
SRU	Sulfur Recovery Unit
VOC	volatile organic compounds
WAC	Washington Administration Code

APPENDIX A

CAM Plan for Sulfuric Acid and Opacity from the Sulfuric Acid Plant

Compliance Assurance Monitoring
H_2SO_4 Mist (Acid Mist) and Opacity Control
Chemtrade Facility – Anacortes Washington

I. BACKGROUND

A. EMISSIONS UNIT

Description: Sulfuric Acid Plant
Identification: Sulfuric Acid Plant Units (SPUs) 1, 2, & 3
Facility: Chemtrade – Anacortes, WA

B. APPLICABLE REGULATIONS AND EMISSION LIMIT

Air Operating Permit:	AOP 009R2
Emission Limit:	Sulfuric Acid Mist:
	Sulfuric acid mist emissions (including sulfur trioxide) from the acid plant stack shall not exceed 0.15 lb/ton of sulfuric acid produced (expressed as 100% sulfuric acid). (40 CFR 60.83(a)(1), NWCAA 465.12)
	Sulfuric acid mist emissions from the acid plant stack shall not exceed 1.5×10^{-6} lb/dscf and 0.105 lb/ton of acid produced on an hourly average (expressed as 100% H2SO4). (OAC 458d Conditions (1) & (3))
Emission Limit:	Opacity
	Sulfuric acid plant tailgas emissions shall not exhibit 10% opacity or greater using Method 9. (40 CFR 60.83(a)(2), OAC 458d Condition (2), PSD 94-01 Amendment 1 Condition 2)
	Visible emissions from the sulfuric acid plant shall not exceed 10% opacity or greater for three minutes. (NWCAA 465.13)
	No person shall cause or permit the emission, for any period aggregating more than 3 minutes in any 1 hour, of an air contaminant from any source which, at the point at emission, or within a reasonable distance of the point of emission, exceeds 20% opacity. (NWCAA 451.1)

No person shall cause or allow the emission for more than three minutes, in any one hour, of an air contaminant from any emissions unit which at the emission point, or within a reasonable distance of the emission point, exceeds twenty percent opacity except: When the owner or operator of a source supplies valid data to show that the presence of uncombined water is the only reason for the opacity to exceed twenty percent. (WAC 173-400-040(2))

II. MONITORING APPROACH

The Sulfuric Acid Plant is made up of three production trains (SPUs 1, 2, and 3) and two abatement units (Abatement Units 10 & 11) to treat the exhaust gases prior to release to the atmosphere. SPU 1 and SPU 2 each have a maximum production capacity of 143 tpd of acid (100% basis) and SPU3, 280 tpd of acid (100% basis) for a total capacity of 566 tpd of acid (100% basis). SPUs 1 & 2 vent to Abatement Unit 10 and SPU3 vents to Abatement Unit 11. Each abatement unit is equipped with a mist eliminator pad in the absorption tower to control sulfuric acid mist. Abatement Units 10 & 11 vent to a common Sulfuric Acid Plant stack. The selected indicators of performance are differential pressure across each mist eliminator pad coupled with visible emissions observations when indicated.

Chemtrade installed differential pressure monitoring devices to measure the pressure drop across Abatement Unit 10 and 11 mist eliminator pads in accordance with manufacturer's specifications. When the abatement unit is operating, the differential pressure of the associated mist eliminator pad will be measured and recorded in a written log daily.

Note that differential pressure across the mist eliminator pads will vary with flow rate which is directly related to production rate of the associated SPUs. There will be limited periods, such as startup, shutdown, maintenance, significant reductions in oil refinery production rates, and limited raw material supply, where the decreased SPU operation will result in a differential pressure across the mist eliminator pad(s) to be below the normal operating envelope without it necessarily being an indicator that the mist eliminator pad is being bypassed. Note that it is expected to be in a startup, shutdown, or maintenance condition only approximately 400 hours per year.

Prior to COVID-19, it was extremely rare to reduce operations below 400 tons per day sulfuric acid produced (as 100% H2SO4) (except when one or more SPUs are down during maintenance or the refineries were down for turnaround). For instance, during July 2019, acid production did not drop below 416 tons per day; during July 2020, production was below 416 tons per day for 20 days and below 300 tons per day for 14 days. As such, in the current situation, Chemtrade spends significant time at lower operating rates, potentially lower than what was used in the original CAM threshold testing, and is proposing an alternative compliance method for this low operation mode.

When the SPU production rate decreases such that the differential pressure across the mist eliminator pad falls below the designated thresholds, Chemtrade will continue daily differential pressure readings but also will conduct daily qualitative visible emissions observations of the Sulfuric Acid Plant stack. When SPU operation shifts such that both of the differential pressure readings are above the designated thresholds, the daily visible emissions observations will no longer take place. Note that because the three SPUs can operate independently of one another, the monitoring status of one abatement unit mist eliminator pad may be different from the other at any one time.

The key elements of the monitoring approach are presented in Table 1.

TABLE 1 SULFURIC ACID PROCESS UNIT AT ANACORTES, WASHINGTON

REQUIREMENT	PARAMETER
Indicator: Differential Pressure Inspection	
Measurement Approach	Differential pressure across Abatement Units 10 and 11 mist eliminator pads
Indicator Range	
Indicator Range	A potential excursion is defined as two consecutive daily differential pressure readings below 0.2" H2O for Abatement Unit 10 or 0.4" H2O for Abatement Unit 11. Potential excursions trigger an inspection. If it is determined that the decreased differential pressure is due to a decrease in SPU operation, this is not an excursion but shall be noted in a log. If there is no corresponding SPU operation decrease, this is an excursion which requires corrective action as soon as practicable and a reporting requirement. If the corrective action requires the unit be shut down, the issue will be corrected during the next shutdown of the unit but no later than 90 days after the initial excursion. The date and a description of the corrective actions taken in response to each excursion shall be documented. Excursions, including corrective actions taken, shall be reported in writing to NWCAA within 30 days after the end of the calendar month in which the excursion occurred.
Performance Criteria	
A. Data Representativeness	A differential pressure monitoring device will be installed at each abatement unit mist eliminator pad to measure differential pressure across the mist eliminator pad. Its minimum precision will be at most 0.05" H2O.

B. Verification of Operational Status	The monitoring system shall be operated according to manufacturer specifications.
C. QA/QC Practices and Criteria	The monitoring system shall be maintained according to manufacturer specifications. Calibrate device(s) according to manufacturer's specification but no less frequently than every 12 months. Calibration information shall be recorded.
D. Monitoring Frequency and Data Collection Procedures	When the abatement unit is operating, differential pressure readings shall be measured and recorded on a daily basis in a log for each associated mist eliminator pad. The log shall include the date, time, and initials for each reading.
Indicator: Visible Emissions Qualitative Observations	
Measurement Approach	Qualitative visible emissions observations from the Sulfuric Acid Plant stack when indicated
Indicator Range	
Indicator Range	An excursion is defined as a single daily qualitative observation where visible emissions are present. Excursions trigger an inspection, corrective action, and a reporting requirement.
Performance Criteria	
A. Data Representativeness	While Method 9 certification is not required, staff will be trained with respect to the general procedures for determining the presence of visible emissions.
B. Verification of Operational Status	NA
C. QA/QC Practices and Criteria	Staff will be trained initially and have a refresher at least once every 12 months. Keep training records.
D. Monitoring Frequency and Data Collection Procedures	When indicated, visible emissions observations of the Sulfuric Acid Plant stack shall be taken on a daily basis.

III. JUSTIFICATION

A. RATIONALE FOR SELECTION OF PERFORMANCE INDICATORS

Differential Pressure Monitoring

Mist eliminators are essentially coarse filter pads that allow sulfuric acid in the exhaust gas stream to collect on the mesh and drip back into the process. The most common failure mechanisms that potentially result in emissions are when the mesh pad is being bypassed either via a hole in the mesh, the reactive sheathing on the mesh wears out (thereby reducing its cross-section), or the mesh modules shift or are not installed correctly.

When the mist eliminator pad is operating properly and there is no bypassing, the differential pressure should be relatively constant with constant flow rate (i.e., operating rate). If bypassing occurs, the differential pressure across the mist eliminator pad will decrease below its normal operating envelope. Differential pressure monitoring is the suggested long-term method of monitoring by the manufacturer. When the mist eliminator pad becomes fouled, the differential pressure can also increase; however, this issue should not impact emissions so is not addressed in the monitoring strategy.

Visible Emissions Qualitative Observations

Since sulfuric acid mist emissions are visible, the presence of visible emissions is also an indicator of sulfuric acid mist emissions. This monitoring procedure requires only the qualitative determination of whether visible emissions are present since the presence of any visible emissions is an indicator of process issues. A determination of opacity levels is not required; therefore, observer certification according to the procedures of Method 9 is not required. However, it is necessary that the observer is knowledgeable with respect to the general procedures for determining the presence of visible emissions. At a minimum, the observer must be trained and knowledgeable regarding the effects of background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor) on the visibility of emissions. This training will be based on the lecture portion of the Method 9 certification course. This training will occur initially and once every 12 months thereafter and be documented.

This monitoring procedure is conservative because facility staff will be responding upon the presence of any visible emissions from the Sulfuric Acid Plant stack rather than the allowed 10% opacity on a 6-minute average (EPA Method 9) and 10% on a 3-minute aggregate in 1 hour (Ecology Method 9A).

Note that because both abatement units feed into a single stack, observing opacity from the single combined stack is conservative because both units are being monitored simultaneously and if visible emissions are observed, operation of the mist eliminator pad with the low differential pressure will be checked but so will all three SPUs.

B. Rationale for Selection of Indicator Ranges

Differential Pressure Monitoring

The selected indicator ranges for mist eliminator pad differential pressure are lower limits (i.e., shall not fall below) based on emission testing. There is no upper limit for the differential pressure, since a high differential pressure will indicate fouling of the mist eliminator pad but that condition will have no impact on emissions. Different values were selected for each abatement unit because, while the mist eliminator for each abatement unit is constructed identically, Abatement Unit 10 has a greater range of flow and therefore, experiences a larger range of operable differential pressures (i.e., Abatement Unit 10 handles the exhaust of two of the SPUs while Abatement Unit 11 handles only one SPU).

The differential pressure was measured periodically during the June 16, 2016; August 3-4, 2016; and June 14, 2017 stack tests. These tests were conducted to comply with the annual testing requirement while the overall SPU was operating at a "normal conditions" rate. Table 2 lists the results of this testing. The selected differential pressure values reflect the lowest value measured for each mist eliminator pad during both tests. All three stack tests showed no opacity and compliance with both of the sulfuric acid emission limits.

Because differential pressure across the mist eliminator pads varies with flow (i.e., operating rate), Chemtrade performed engineering testing at lower operating rates to set the differential pressure threshold values to allow more operational flexibility while still demonstrating compliance with the applicable limits. This testing took place on June 15, 2017 and the results are listed in Table 2. The engineering test indicated no opacity and compliance with the sulfuric acid emission limits.

TABLE 2 CAM THRESHOLD TESTING RESULTS

Test Date	Total (tpd)	Lb/ton	Lb/dscf	Abatement Unit 10 dP (" H2O)	Abatement Unit 11 dP (" H2O)	Opacity?
6/16/16	485	0.029	4.08E-07	0.8	0.7	No
8/4/16	483	0.02	2.84E-07	1.1	0.6	No
6/14/17	489	0.03	4.60E-07	0.8	0.6	No
6/15/17 Run 1	388	0.014	2.30E-07	0.51	0.49	No
6/15/17 Run 2	302	0.01	1.70E-07	0.3	0.4	No
6/15/17 Run 3	301	0.011	1.90E-07	0.17	0.4	No
Limit	--	0.105	1.5E-6	--	--	10%

The differential pressure meter has a degree of accuracy of ±0.05" H2O. As such, the thresholds chosen are 0.2" H2O for Abatement Unit 10 and 0.4" H2O for Abatement Unit 11 since they are the lowest differential pressure for which compliance is demonstrated. Note that at these low production rates, the emissions are less than 15% of the limits. Should the facility wish to change these thresholds, Chemtrade may source test at any time and submit the results for approval.

Two consecutive daily readings below the threshold was selected as triggering an excursion because, during the stack tests for which data were collected, the differential pressure across each mist eliminator pad can be extremely stable at constant production rates. Generally, Chemtrade sets the daily operation rate and maintains that operating rate throughout each day so swings in operation throughout a day are not expected.

This monitoring strategy was developed to monitor for sudden changes in differential pressure (e.g., when a hole is punched through the mesh or the mesh modules shift). Should the pressure gradually decrease, for example when the sheathing on the mesh is wearing off, this strategy may not explicitly capture this shift but as long as the differential pressure stays above the threshold

value, emissions should be below the emission limits as demonstrated by the testing. However, the sheathing wearing off should only be a problem if an improper mist eliminator pad is installed so this should be unlikely at best.

This differential pressure monitoring strategy will help to ensure that the mist eliminator pads are operating properly and, thus, maintain sulfuric acid mist emissions below the mandated thresholds.

Visible Emissions Qualitative Observations

The selected indicator range for visible emissions observations are a single daily reading of essentially an upper limit (i.e., shall not go above) based on emission testing. A single daily qualitative observation of the presence of visible emissions was selected because any presence of visible emissions is an indicator of a process issue. No visible emissions have been observed during any historical passing source tests including the engineering tests on June 15, 2017.