



Statement of Basis  
(10/30/2019)

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**Source Information:**

Air Operating Permit (AOP) No.:	0000809
Source Name:	Cosmo Specialty Fibers Cosmopolis, Washington
County:	Grays Harbor
Issuance Date:	
Effective Date:	
Expiration Date:	

**Permitting Authority Information:**

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## List of Abbreviations and Acronyms

ADUT	Air-dried unbleached pulp, in tons
AEI	Air Emission Inventory
AOP	Air Operating Permit, also referred to as Title V Permit
BACT	Best Available Control Technology
Btu	British thermal units
BSW	Brown stock washer
CAA	Clean Air Act [42 U.S.C. section 7401 et seq.]
CAM	Compliance assurance monitoring
CEMS	Continuous emission monitoring system
CFR	Code of Federal Regulations
CO	Carbon monoxide
CO <sub>2</sub>	Carbon dioxide
CO <sub>2e</sub>	Carbon dioxide equivalent
dscf	Dry standard cubic feet
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
EU	Emission unit
GHG	Greenhouse gas
gr/dscf	Grains/dry standard cubic foot (7,000 grains = 1 pound)
HAP	Hazardous air pollutant
HCl	Hydrochloride
hr	Hour
IEU	Insignificant emission unit
lb	Pound
MACT	Maximum Achievable Control Technology
mm	One million
NESHAP	National Emission Standards for Hazardous Air Pollutants (40 CFR Parts 61 and 63)
NOC	Notice of Construction
NO <sub>x</sub>	Oxides of nitrogen
NSPS	New Source Performance Standards
O <sub>2</sub>	Oxygen
PM	Particulate matter
PM-10	Particulate matter with an aerodynamic diameter ≤ 10 microns
PM-2.5	Particulate matter with an aerodynamic diameter ≤ 2.5 microns
ppmdv	Parts per million, on a dry volume basis
PSD	Prevention of significant deterioration
PSEU	Pollutant-specific emission unit
PTE	Potential to emit
RCW	Revised Code of Washington
SIP	State Implementation Plan
SSM	Startup, Shutdown, Malfunction

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SO <sub>2</sub>	Sulfur dioxide
t-BACT	Best Available Control Technology for Toxic pollutants
tpy	Tons per year
U.S.C.	United States Code
VOC	Volatile Organic Compound
WAC	Washington Administrative Code

## 1.0 INTRODUCTION

This document, the statement of basis or support document, summarizes the legal and factual basis for the permit conditions in the air operating permit issued by the Washington State Department of Ecology (Ecology) to the source. When Ecology issues a draft operating permit, we must provide a statement that sets forth the legal and factual basis for these draft permit conditions, including references to the applicable statutory or regulatory provisions per Washington Administrative Code (WAC) 173-401-700(8).

Unlike the air operating permit, this document is not legally enforceable. This statement of basis summarizes the emitting processes at the facility, air emissions, permitting and compliance history, the statutory or regulatory provisions that relate to the facility, and the steps taken to provide opportunities for public review of the permit. The permittee is obligated to follow the terms of the permit. Any errors or omissions in the summaries provided here do not excuse the permittee from the requirements of the permit.

The format and content of this support document has changed over time to reflect the evolving thought about what constitutes an effective support document. The United States Environmental Protection Agency (EPA) audited Ecology's Title V Permitting in 2006. As a result of this audit, Ecology is currently developing a revamped support document format. The support document for this particular permit renewal effort follows the draft format for the statement of basis outline available at the time of this permit renewal effort.

## 2.0 PERMIT AUTHORITY

Title V of the Federal Clean Air Act Amendments required all states to develop a renewable operating permit program for industrial and commercial sources of air pollution. The Washington State Clean Air Act (RCW 70.94) was amended in 1991 and 1993 to provide the Department of Ecology and Local Air Agencies with the necessary authority to implement a state-wide operating permit program. The law requires all sources emitting one hundred tons per year (tpy) or more of a criteria pollutant, ten tons of a hazardous air pollutant, or twenty-five tons in the cumulative of hazardous air pollutants, to obtain an operating permit. Criteria pollutants include sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), particulate matter (PM), carbon monoxide (CO), lead (Pb) and ozone (O<sub>3</sub>), which is associated with emissions of volatile organic compounds (VOCs).

Chapter 173-401 of the WAC, which specifies the requirements of Washington State's Operating Permit Regulation, became effective November 4, 1993. The EPA granted Washington's program interim approval December 9, 1994. Final approval of Washington's program was granted on August 13, 2001. The current version of the regulation was filed in August 2018 and became effective September 16, 2018.

### 3.0 FACILITY DESCRIPTION

<b>Company/Owner</b>	Cosmo Specialty Fibers, Inc. (Cosmo)
<b>Plant or Facility Name</b>	Cosmopolis Pulp Mill
<b>Responsible Official</b>	James Smith, Mill Manager
<b>Facility Location</b>	1701 1st Street, Cosmopolis, WA 98537
<b>Mailing Address</b>	PO Box 539, Cosmopolis, WA 98537
<b>Telephone</b>	(360) 500-4638
<b>SIC Code</b>	2621 – Pulp Mills

Weyerhaeuser constructed the Cosmopolis mill in 1957 as a magnesium-based paper-grade sulfite mill and converted it into a dissolving-grade pulp mill in 1962. The company historically produced acetate grade, cellophane grade, and paper grade sulfite pulp with an overall production level of 88.9 percent dissolving pulp. Weyerhaeuser began to shift production toward more dissolving pulp shortly before the company shut down the mill in 2006. An investment group purchased the mill from Weyerhaeuser in 2010 and operates it as Cosmo Specialty Fibers, Inc. Cosmo restarted the mill in 2011 to produce dissolving pulp only. The mill no longer makes cellophane or paper grades. Cosmo’s site view and process flow diagram are in **Appendix A, Figures 1 and 2.**

The mill’s permitted production capacity is 500 tons per day. Production of different pulp grades can vary more than 20 percent month-by-month, based upon market demand. The mill currently produces acetate grade as well as viscose and ether grades. Cosmo uses the same pulping process and bleaching sequence and chemicals as Weyerhaeuser. For acetate grade production, the mill increases the “dosage” of bleach to make pulp with higher cellulose content.

### 4.0 BASIS FOR TITLE V APPLICABILITY

A major source is defined by 40 Code of Federal Regulations (CFR) 70.2 and WAC 173-401-200 as any stationary source (or any group of stationary sources) that are located on one or more contiguous or adjacent properties, are under common control of the same person belonging to a single major industrial grouping, and that meets any of the following criteria:

1) Hazardous Air Pollutants (HAPs)

A facility that emits or has the potential to emit 10 tpy or more of any one HAP triggers as a major source. Also, a facility that emits or has the potential to emit 25 tpy or more of any combination of HAPs triggers as a major source. 42 U.S.C 7412 lists the HAPs.

2) All Other Non-HAP Air Pollutants

A facility that emits or has the potential to emit 100 tpy or more of any air pollutant subject to regulation triggers as a major source.

3) Nonattainment Areas

A facility that is located within specific nonattainment areas that emits certain pollutants above a defined threshold may trigger as a major source. The pollutants and threshold are

specified by WAC 173-401-200(19)(c). Currently, the facility is not located in a nonattainment area.

According to the 2017 Air Emissions Inventory data reported by Cosmo, the annual emissions are shown in Table 1.

**Table 1 Cosmo 2017 Air Emissions Inventory Data**

<b>Pollutants</b>	<b>Emission (tpy)</b>	<b>Is the pollutant a HAP?</b>	<b>Does the emission trigger a major source?</b>
CO	872.10	No	Yes – Emits greater than 100 tpy.
NOx	402.40	No	Yes – Emits greater than 100 tpy.
PM-10	280.06	No	Yes – Emits greater than 100 tpy.
PM-2.5	280.06	No	Yes – Emits greater than 100 tpy.
SO <sub>2</sub>	242.00	No	Yes – Emits greater than 100 tpy.
VOC	26.64	No	No
Methanol	21.15	Yes	Yes <sup>(a)</sup>
Acetone	3.55	No	No
Acetaldehyde	2.70	Yes	Yes <sup>(a)</sup>
Methyl Ethyl Ketone	2.52	Yes	Yes <sup>(a)</sup>
Chlorine Dioxide	2.10	No	No
Formaldehyde	0.62	Yes	Yes <sup>(a)</sup>
Manganese	0.24	Yes	Yes <sup>(a)</sup>
Chlorine	0.22	Yes	Yes <sup>(a)</sup>
Lead	0.03	Yes	Yes <sup>(a)</sup>
Sulfuric Acid	0.02	No	No
Chromium	0.01	Yes	Yes <sup>(a)</sup>
Mercury	0.002	Yes	Yes <sup>(a)</sup>

(a) Emissions from methanol, acetaldehyde, methyl ethyl ketone, formaldehyde, manganese, chlorine, lead, chromium, and mercury for 2017 totaled 27.48 tpy, which was greater than the threshold of 25 tpy for any combination of HAPs.

Cosmo is a major source for emissions of CO, NO<sub>x</sub>, PM-10, PM-2.5, SO<sub>2</sub>, and HAPs based on the emissions inventory. As such, Title V operating permit regulations apply to the source, in accordance with 40 CFR 70.3 and WAC 173-401-300(1).

## **5.0 SOURCE DESCRIPTION**

### **A. PROCESS DESCRIPTION**

This section contains a summary of the mill’s processes. As stated previously, Cosmo is a magnesium-based dissolving sulfite mill. Cosmo will continue to use the same equipment, pulping processes, and bleaching chemicals as they did during the previous permit cycle. The process flow diagram and site map are in Appendix A, Figures 1 and 2.

### Chip Handling

The mill receives its supply of hemlock wood chips via trucks. The chip handling area includes truck unloading areas, chip piles, and conveyor systems. Conveyors deliver chips to the pulp building, where the chips are manually loaded from overhead chutes into the digesters. About 35 percent of the wood chip itself is the pulp fibers that are then converted into pulp products.

### Pulping

Cosmo processes the wood chips in nine batch digesters located in the pulp building. Within the digesters, the wood chips are subjected to high heat and pressure while being mixed with a cooking acid to separate the pulp fibers from the lignin and other organic components of the wood chips. The cooking acid is bisulfite, with magnesium ions as the basic buffering agent. Pulp exits the bottom of the digesters into dump tanks. The mill washes the pulp in a five-stage countercurrent system called the brown stock washers. Liquids left over from the pulp washing (cooking acid, lignin, etc) is collected and is referred to as weak red liquor, which is sent to the filtrate tanks for further processing.

Residual gases inside the digesters can escape during chip loading operations. The mill collects these emissions from the digesters, as well as emissions from the dump tank vents and filtrate tank vents, as nuisance emissions. These emissions go to the nuisance tower (DB-26) equipped with a wet scrubber.

### Red Liquor Processing

Weak red liquor generated from the pulping washing contains spent cooking chemicals and organics. Cosmo concentrates the weak red liquor in a multi-effect and ACE evaporator series. The resulting liquor is about 56% solids. The evaporator system is equipped with barometric legs and sealpots to isolate it from ambient air. The process generates condensates and non-condensable gases (NCGs). The condensates go to a vented 1600-gallon tank and then the mill's biological treatment system. The NCGs and concentrated liquor are burned in Recovery Boilers No. 1 and 2.

### Recovery Boilers

The mill burns red liquor in the recovery boilers to generate steam to power the mill and to recover the original cooking chemicals, magnesium and sulfur.

There are three recovery boilers at the site. The original boilers, No. 1 and 2, were constructed in 1957. The newer boiler, No. 3, was constructed in 1966. All three boilers operate at 860 pounds per square inch (psi) and 825°F.

The mill uses oil to start the boilers. Red liquor is sprayed into each boiler to burn spent chemicals and wood constituents. Magnesium and sulfur in the red liquor are converted to magnesium oxide (MgO) and sulfur dioxide (SO<sub>2</sub>) during combustion. Flue gas from the boiler flows through multiclones, which captures MgO particulates. The mill sends the MgO to the slaking tank to form a magnesium hydroxide slurry, (MgOH)<sub>2</sub>. The slurry is used in the absorption towers to remove SO<sub>2</sub> by forming magnesium bisulfite Mg(HSO<sub>3</sub>)<sub>2</sub>. Magnesium bisulfite is reused- in the cooking acid at the beginning of the pulping process.

The flue gases from Boilers No. 1 and 2 flow from the multiclones to separate cooling towers, three SO<sub>2</sub> absorption towers in series, and associated induced-draft (I.D.) fans. The flue gases from Boiler No. 3 flows from the multiclones through an I.D. fan to a dual-purpose cooler/cyclone evaporator, and then through three venturi SO<sub>2</sub> absorbers in series. Flue gases from all three boilers are then combined and sent through a common educted venturi scrubber before being discharged from a common stack (AP-10).

Boilers No. 1 and 2 also burn NCGs from the concentrated oxygen extraction liquor (*COEL*) project (discussed below) and waste sludge from the biological treatment system. The recovery boilers have the capacity to burn oil to supply additional power. Cosmo may burn oil during power swings or during periods when red liquor is not available. The boilers generate steam needed to power the mill. Steam generated enters a common header shared by the power boiler.

#### Hogged Fuel Dryer and Boiler

The hogged fuel boiler, also known as the power boiler, provides the remaining energy needed to support the mill's processes. The power boiler area includes the hogged fuel dryer and its associated fuel yard and burner and a pulverizer for wood fines.

Cosmo receives hogged fuel via trucks and stockpiles it in the east yard. A conveyer belt system transports the fuel to the dryer prior to burning. The mill installed the dryer in 1974 to dry wood fuels and improve the boiler efficiency. The dryer is a Stearns-Rogers rotary drum heated by a fluidized bed combustion (FBC) unit. The FBC unit burns either diesel or wood fuel. The exhaust is then combined with air to bring it down to the appropriate operating temperature. Exhaust from the bed is used to heat the dryer and dry the hogged fuel. During startup, the FBC burns diesel to bring the bed to temperature. This temperature control step ensures the bed is at the operating level prior to introducing wood fuel to the bed or to the dryer. The dryer has a baghouse to control particulate. The mill installed a new bag house and triboelectric leak detection system in September 2004.

In addition to hogged fuel, the boiler can also burn wood residuals such as reject knots and fiber, un-dried hogged fuel, pressed hogged fuel, and hogged fuel dust.

Oil can be used during startup of the boiler, to supplement energy, or to provide stand-alone energy if hogged fuel is unavailable. Cosmo currently burns reprocessed fuel oil (RFO) and has the capability to burn residual oil, distillate oil, on-spec used oil, and oil spill materials generated on- or off-site. The boiler may use propane as an ignition or pilot fuel for the burners on startup and can burn miscellaneous combustible solid waste. The boiler has an integral air pre-heater equipped with multiclone collectors, separating screens and fly ash re-injection functions. Flue gas from the boiler flows through a venturi scrubber with a mist elimination section.

The power boiler shares a common steam header with the recovery boilers. The steam feeds into two turbine-generator sets and two pressure-reduction stations. The generators provide supplemental power or provide emergency power to the mill. The pressure reduction stations and turbine steam extractions provide two different pressure sources of steam.

### Bleach Plant

The mill converted to an elemental chlorine free (ECF) bleaching method in 1994. Bleaching chemicals are oxygen, caustic, peroxide, and chlorine dioxide. Cosmo makes chlorine dioxide onsite via the R8 process using methanol, sodium chlorate and sulfuric acid. The chlorine dioxide plant, including all tanks and appurtenances, is regulated under 40 CFR Part 63 Subpart S.

Bleached pulp from the oxygen bleaching stage goes to a blow tank. The blow tank has a vent (BP-6) with no emission control equipment. Emissions from the blow tank are VOCs and water vapors.

### Concentrated Oxygen Extraction Liquor (COEL)

The mill implemented a project in 1997 to reduce pollutant loading from the mill's wastewater treatment system to the Chehalis River. The project includes the addition of an Aqua-Chem Evaporator (ACE) and the Vapor Compression Evaporators (VCE) and Combustion Engineering Evaporators (CEE) evaporator sets. The evaporators use steam eductors (also known as hogging jets) for startup and upset conditions; the eductors exhaust to the atmosphere. Barometric legs and sealpots isolate the evaporators from ambient air.

The COEL evaporator system processes a portion of the bleach plant filtrate from the caustic (sodium hydroxide) wash. Emissions from the filtrate include VOC gases such as methanol, acetone, and acetaldehyde. NCGs are historically vented to the acid plant. The COEL project eliminated most of these emissions. The NCGs associated with the COEL project are burned in Recovery Boilers No. 1 and 2. The COEL evaporator's condensates go to a central vented tank for storage prior to treatment at the mill's bioponds.

The project results in a sodium-rich liquor, known as the COEL liquor. COEL liquor is shipped off-site and sold to Kraft pulping mills as a commodity.

### Acid Plant

The acid plant has two burners and fortification towers for generating makeup cooking acid. The acid plant is fully enclosed, except for two vents, AP-1 and AP-2. These are simple roof vents one over the control room and the other over the furnace room. The acid storage tank vent (AP-5) vents to absorption tower for SO<sub>2</sub> recovery. AP-1, AP-2, and AP-5 are identified as insignificant emission units.

Trucks deliver sulfur to the site. Molten sulfur is stored in a steam-heated tank. The mill also gets magnesium via truck delivery to supplement the magnesium lost during processing. The mill has a makeup storage tank for magnesium hydroxide.

In case of upsets in the recovery system, the acid plant also has a scrubber with a backup caustic system to recover residual SO<sub>2</sub> escaping from the absorption towers.

### Wastewater Treatment System

Cosmo has a primary and secondary wastewater treatment system for treatment of the facility's wastewater prior to discharging to Grays Harbor.

The primary treatment system consists of a clarifier ("ash clarifier"), a Disco strainer, and Brinkly screen. Primary treatment applies to process wastewater generated by the boilers, pulping area, bleach plant reject lines, and paper machine room.

The secondary (biological) treatment system includes an equalization lagoon, four aeration basins (called bioponds), and two secondary clarifiers. The system treats evaporator condensates and a portion of the bleach plant wastewater. The secondary effluent is combined with the rest of the wastewater in the "sour sewer." The effluent is discharged to Grays Harbor. The mill uses the Westport ponds, which consists of Ponds A, B, C, and D, to impound the treated effluent, as needed.

Stormwater and filter plant backwash go to a "sweet sewer" and is discharged through an outfall to the Chehalis River.

The discharges are authorized under NPDES permit no. WA000080-9. Federal effluent guidelines 40 CFR 430.44 through 430.47 apply to the treated process wastewater discharges.

## B. FEDERAL AIR QUALITY REQUIREMENTS

The Permittee is subject to the following federal National Emission Standards for Hazardous Air Pollutants (NESHAPs) for their pulp and paper operations, as specified by 40 CFR Part 63: Subpart S (63 FR 18617 dated April 15, 1998) and Subpart MM (66 FR 3193 dated January 12, 2001). Subpart S, known as MACT I, applies to the non-combustion processes associated with pulp and paper production facilities that chemically pulp wood. Subpart MM, or MACT II, applies to the chemical recovery combustion sources at kraft, soda, sulfite, and stand-alone semi-chemical pulp mills.

The mill's hogged fuel boiler is subject to NESHAP 40 CFR Pat 63 Subpart DDDDD, also known as the industrial boiler maximum achievable control technology (MACT).

The Permittee is also subject to 40 CFR Part 64 (adopted by reference in WAC 173-401-615) which specifies requirements for compliance assurance monitoring (CAM). See Section 11, CAM Analyses, for additional discussion.

## C. STATE AIR QUALITY REQUIREMENTS

The Permittee is subject to several state-only requirements, which are not enforceable under the Federal Clean Air Act. These requirements include the hydrogen sulfide (H<sub>2</sub>S) emission standards for sulfite mill specified by WAC 173-410-040(5) and the SO<sub>2</sub> ambient air quality standards in WAC 173-476. The greenhouse gas reporting requirement in WAC 173-441 is also state-only.

## D. REGULATORY ORDERS

As of the date of this renewal, the Permittee is subject to following regulatory orders and modifications in the table below. The orders and modifications were incorporated into the previous air operating permit.

**Table 2 Regulatory Orders**

<b>Order Docket No.</b>	<b>Issuance Date</b>	<b>Description</b>
DE 95AQ-I034	May 26, 1995	Consolidation of previous NOC requirements for recovery boilers, hogged fuel boiler, and hogged fuel dryer.
DE96AQ-I089	Nov 12, 1996	Approval to construct and operate the COEL system.
DE 94AQ-I018 (Modification)	Jan 12, 1999	Modification of the 1996 NOC for the oxygen delignification/bleaching stage
DE 03AQIS-5813	Dec 5, 2003	Installation and operation of the baghouse for the hogged fuel dryer
2484 AQ-05	May 19, 2005	Rescinds the soot blowing time schedule in Order 95AQ-I034. Requirement to comply with 40 CFR Part 63 Subpart S by Nov 12, 2006 and perform quarterly particulate testing at the recovery boiler common stack.

## 6.0 COMPLIANCE WITH APPLICABLE REQUIREMENTS

The AOP requires the Permittee to comply with all applicable federal requirements and applicable state-only requirements. State-only requirements are clearly identified in the AOP; they are not federally enforceable. Explanations in this Support Document focus on those enforceable federal requirements.

In addition to the applicable emission limits, the AOP specifies monitoring methods, operating requirements, and reporting procedures for demonstrating compliance with the applicable limit. . Some emission points have more than one limit and/or applicable requirement for a particular pollutant. Multiple limits are usually based on two or more applicable requirements. Multiple limits are generally listed in order, from most stringent to least stringent, in a single Condition in the AOP. Applicable requirements may include federal regulations, state regulations, NOC Orders, and PSD permits.

Periodic monitoring requirements are generally specified in NOC Orders and PSD Permits.

Also, some periodic monitoring and reporting requirements are specified in regulations. In such cases, the monitoring and reporting required by applicable rule and regulations and the existing AOP is included in the permit. When no underlying periodic monitoring requirement exists, Ecology assigns periodic monitoring requirements in the AOP. Ecology derives the monitoring and reporting procedures by applying “best professional judgment” in context with the specific source’s historical performance and projecting the expected frequency and magnitude of potential “exceedances” (releases of more than the permitted amount). Ecology prescribes the periodic monitoring requirements to assure compliance with emission limits, as required by the AOP program.

Usually the AOP requires “direct measure” of the emissions as the monitoring method, in the absence of other regulatory requirements. Direct measure monitoring is preferred due to its accuracy. When obtaining a direct measure is difficult or impossible (e.g., taking an opacity measurement of wet stacks) an indirect surrogate parameter is specified. In some cases, performance measurement may rely on periodic direct source testing and on frequent indirect monitoring using surrogate parameters. Indirect monitoring using surrogate parameters is referred to as parametric monitoring. Excursions from surrogate parameter monitoring ranges require corrective action, just as deviations from direct measurements do. Parametric monitoring excursions are indicators of potential non-compliance, but are not necessarily a violation of the underlying emission limit. However, a Permittee’s failure to take timely corrective action constitutes noncompliance with good operation and maintenance requirements [WAC 173-405-040(10)] and possible noncompliance with the underlying requirement.

## A. COMPLIANCE ASSURANCE MONITORING

In addition to the discussion above, in order to satisfy the Title V and Title VII monitoring requirements for the federal Clean Air Act, the EPA promulgated the Compliance Assurance Monitoring (CAM) rule with an effective date of November 21, 1995. Through Chapter 173-401-615(4), Ecology adopted the CAM rule by reference.

The CAM rule requires facilities to monitor compliance indicators for certain pollutant specific emission units to provide reasonable assurance for compliance with regulatory emission limitations. When monitoring indicates the occurrence of a parameter excursion or exceedance, the facility is required to take corrective action to restore the monitoring parameter to the value range established as part of a source compliance or performance test. The facility is also required to document/report corrective actions, maintain monitoring records, and provide an annual certification of compliance to the delegated authority that administers the Title V operating permit program. The CAM rule applicability to each emission unit is defined in Section 11 below. Section 6.0 also contains a brief discussion of CAM applicability with respect to specific emission units.

## B. COMPLIANCE HISTORY

Ecology received an application for permit renewal from Cosmo on December 28, 2017. Ecology issued a letter on January 24, 2018 accepting the application as complete. Until the renewal permit is issued, the mill has a permit shield as described in the Permit Shield/Inapplicable Requirements Section of Cosmo’s permit issued on May 31, 2013.

This section summarizes the mill’s compliance with their AOP during the previous permit cycle which began on July 1, 2013. Compliance reflects the facility’s current operating practices. Cosmo reported the excess emissions to Ecology in the monthly air reports and in the annual compliance certifications. Excess emissions may be subject to enforcement actions. Enforcement actions include warning letters, notice of violations (NOVs), penalties, and compliance orders. These were as follows:

**Table 3 Compliance History**

<b>Date</b>	<b>Permit Condition</b>	<b>Limit</b>	<b>Exceedance</b>	<b>Root Cause</b>
July 13, 2013	A.5, Recovery Boilers common stack, SO <sub>2</sub> (hourly average)	360 parts per million (ppm)	451 ppm	Equipment malfunction
August 20, 21, 27, 2013	A.4a, time allowance for NCGs bypass	Less than 1 hour	2-6 hours	System safety trip
December 31, 2013	A.5, Recovery Boilers common stack, SO <sub>2</sub> (hourly average)	360 ppm	718 ppm	Power outage
January 16, 2014	A.5, Recovery Boilers common stack, SO <sub>2</sub> (hourly average)	360 ppm	373 ppm	Power outage
January 17, 2014	A.4a, time allowance for NCGs bypass	Less than 1 hour	18.25 hrs	Equipment malfunction
March 14, 2014	A.4a, time allowance for NCGs bypass	Less than 1 hour	2.6 hrs	System safety trip
June 28, 2016	A.4a, time allowance for NCGs bypass	Less than 1 hour	1.83 hrs	Operator error
November 5-6, 2016	A.4a, time allowance for NCGs bypass	Less than 1 hour	1.4 hrs	Operator error
March 5-8, 2017	C.2a, Hogged Fuel Boiler, opacity (minimum scrubber pressure drop)	≥ 10 in H <sub>2</sub> O	< 10 in H <sub>2</sub> O, intermittently	Controller and alarm failure
September 27, 2017	C.1, Hogged Fuel Boiler, opacity (3-minute average)	20%	30%	Boiler startup
November 13, 2017	C.2a, Hogged Fuel Boiler, opacity (minimum scrubber flow)	≥ 605 gpm	0 gpm for 2 hours	Operator error

Because each of the exceedances were for relatively short durations, Cosmo did not meet the EPA’s classification of a High Priority Violator for any of the listed violations.

## 7.0 SPECIFIC EMISSIONS UNIT

### A. RECOVERY BOILERS COMMON STACK (AP-10)

#### Condition A.1 – Particulate Matter (PM)

The particulate matter limit of 0.10 grains per dry standard cubic foot (gr/dscf), corrected to 8 percent oxygen, specified in WAC 173-410-040(2)(a) is an applicable standard and is federally enforcement as part of the State Implementation Plan (SIP). The same limit is established in Notice of Construction (NOC) Order No. DE 95AQ-I034. Ecology issued Order No. DE 95AQ-I034 to require monthly particulate matter source testing on the combined recovery boilers stack. The particulate matter limit at the stack is 0.10 gr/dscf, corrected to 8% O<sub>2</sub>. The multiclones and absorption towers, which are an inherent part of the chemical recovery process, removes MgO and other particulate matter from the boilers flue gas. From 1990 to present (except for 1998) particulate matter stack test results indicate that the probability of exceeding the particulate matter limit is very low. Specifically, 99 percent of the Method 5 particulate matter results measured less than 86 percent of the particulate matter limit. Since Cosmo began operating the mill in 2011, the company has been able to meet the particulate limits; all stack test results were less than 50 percent of the particulate matter limit. Based on this, it appears that the required emissions monitoring and the air pollution control configuration is adequate to maintain and demonstrate compliance with the particulate matter limit. Additionally, a minimum operating condition has been established to indicate continuous compliance. See opacity discussion below. The proposed permit requires the mill to report excursions of the minimum operating condition and any corrective actions in the respective monthly report.

Ecology issued NOC Order 2484 AQ-05 in 2005 to reduce the monitoring frequency from monthly to quarterly. The proposed renewal permit retains this testing frequency based on the most current stack test data. The proposed permit continues to specify that monthly monitoring is required when any quarterly test result is greater than 80 percent of the limit, which is 0.08 gr/dscf @ 8% O<sub>2</sub>. This is required to reflect the fact that a stack result close to the limit indicates a higher potential for exceeding the limit and more frequent testing is necessary to demonstrate that the emissions are not exceeding the limit. In addition, this maintains Cosmo's monitoring requirements with those of other active pulp mills and smelters regulated by the Industrial Section. Cosmo's emissions were normally in the range of 0.054-0.073 gr/dscf @ 8% O<sub>2</sub>; thus, particulate emission at 80 percent or above the limit indicates a potential malfunction or upset in the system. Lowering the threshold for monthly testing allows Cosmo to detect malfunctions or upsets and take corrective actions to prevent permit exceedances. Consequently, Ecology also requires four consecutive tests below the 80 percent limit threshold before the mill is allowed to return to quarterly monitoring; this is to ensure that malfunctions or upsets have been corrected.

As discussed in Section 11 below, particulate matter emissions are not subject to the CAM requirements. The multiclones, which capture MgO, are inherent process equipment necessary to the economical operation of the mill, and they would be operated even if the particulate matter limitation on the recovery boilers emissions was not in effect. Therefore, the multiclones are not control devices, as defined by the CAM rules. Additionally, the recovery boilers are not subject to the 40 CFR Part 63, Subpart MM (MACT II) rules, even though they are associated with the

chemical recovery process. The MACT II rule includes particulate matter emission limits and monitoring as a surrogate for certain HAP emissions from recovery boilers. Alternatively, the MACT II site-specific rules published in the Federal Register on February 18, 2003 require Cosmo to control HAP emissions from the hogged fuel dryer rather than the recovery boilers. Therefore, the particulate matter emissions from the recovery boiler are not subject to the rigorous parametric monitoring imposed by the MACT II rules.

Conditions A.2a and A.2b – Opacity

The recovery boilers common stack average opacity limit is no more than 35 percent for any six (6) consecutive minutes in any one-hour period, as specified by WAC 173-410-040(3).

Ecology's Method 9B is the reference method for demonstrating compliance with the opacity limit. WAC 173-410-062(5) requires the mill to establish an approved program for continuous opacity monitoring to demonstrate compliance with the limit. A standard opacity meter will not accurately measure opacity for a wet plume. Therefore, Order No. DE 95AQ-I034 establishes an alternate opacity parameter, also referred to as a minimum operating condition, for assuring continuous compliance with the opacity limit, as allowed by WAC 173-410-062(5). The minimum operating condition is continuous operation of the recirculation pumps for the recovery boilers absorption towers, with the following exception: "During pump maintenance, one of the pumps may be out of service for a period no greater than 72 hours.

The Permittee will be in violation of the permit, if more than one pump is out of service at any one time or if the non-operating pump is out of service for [a period] greater than 72 hours." There are nine recirculation pumps, one recirculation pump associated with each absorption tower for each of the three boilers.

The recirculation pumps minimum operating condition applies only when burning spent sulfite liquors and/or wastewater treatment secondary sludge in the respective recovery boiler(s). Normally, a pressure drop or minimum flow rate shows that the pumps are operating properly. But on this system, the recirculation pumps control flow in the SO<sub>2</sub> absorption towers. As the mill continuously measures SO<sub>2</sub> concentration in the common stack, an inoperative pump would be noticed immediately. Therefore, monitoring whether the pumps are operating can demonstrate minimum operational conditions for opacity. Once per shift the operator shall record visual readings of how many pumps are in service. Within each 72 hour period, the Permittee shall take appropriate action to correct any minimum operational parameter excursion and record the action taken. Failure to document and take corrective actions is a violation of the permit. The Permittee shall report all excursions and corrective actions taken during each month in the respective monthly air emissions report.

As mentioned above, the same operating condition applies to particulate matter emissions. Since Ecology's Method 9B is the reference method for demonstrating compliance, the proposed permit requires that the Permittee must perform DOE Method 9B during the following circumstances: (a) if there is a malfunction or upset in any of the recovery boilers; or (b) if the minimum operating conditions are not.

As discussed in more detail in Section 11 below, even though a facility cannot be a major source for opacity, opacity may be correlated to particulate matter and must therefore be reviewed for CAM applicability (based on communication with the EPA). This opacity limit is not subject to the CAM rule because a control device is not used to achieve compliance with the opacity (particulate) limit. The multiclones and absorption towers, which are part of the process design and inherent to the mill's operations, are not control devices as defined in 40 CFR Part 64.

Condition A.3 – Sulfur dioxide (SO<sub>2</sub>)

The sulfur dioxide limit of 800 ppm in WAC 173-410-040(1)(d) is an applicable standard and is federally enforcement as part of the State Implementation Plan (SIP). Order DE 95AQ-I034 requires a continuous emissions monitoring system (CEMS) for SO<sub>2</sub> on the recovery boilers common stack. The Order references federal requirements associated with SO<sub>2</sub> CEMS regarding installation and operation and quality assurance procedures, 40 CFR Part 60 Appendix B and Appendix F, respectively. The SO<sub>2</sub> analyzer sample probe was installed in accordance with EPA Method 1 guidelines. The analyzer performs daily zero and span calibrations and is subject to quarterly gas cylinder audits and an annual relative accuracy test audit (RATA). The analyzer span above the limit is sufficient for an indicator range.

CAM potentially applies to this limit, as Cosmo uses a venturi scrubber to comply with the SO<sub>2</sub> limit and pre-controlled SO<sub>2</sub> emissions exceed the threshold for a major source. However, Cosmo is required to operate a CEMS as a permit-specified continuous determination method that satisfies the exemption cited in the CAM rule, per 40 CFR 64.2(b)(iv). Therefore, the limit is exempt from the CAM requirements.

Conditions A.4a and A.4b – Non-condensable gases (NCGs) & volatile organic compounds (VOCs)

The mill completed a COEL project to address non-condensable gases (NCGs) generated by the COEL evaporators. Cosmo burns NCGs generated by the COEL and red liquor evaporators in Recovery Boilers No. 1 and 2. This reduces NCG emission points to only the pressure relief valves on the COEL tanks. Ecology found that burning NCGs decreases overall VOC emissions by 129 tons per year and carbon monoxide emissions by 12.2 tons per year. The COEL project is considered BACT and t-BACT.

According to Order 95AQ-I089, the mill is in compliance if it burns NCGs continuously when the COEL system is in operation, except during startup and emergency shutdown of Recovery Boilers No. 1 or No. 2. During shutdown of one boiler, the Order requires the mill to route NCGs to the cooling towers until the gases can be re-routed to the operational boiler in a timely manner. The Order defines "timely manner" as one hour.

The mill has storage tanks EV-21 and EV-22 for weak oxygen and COEL liquids, respectively. Therefore, the permit requires the mill to comply with 40 CFR 60.116b(a) and (b) performance standards for storage tanks containing volatile organic compounds (VOCs).

Condition A.5 – Sulfur dioxide (SO<sub>2</sub>), state-only

The state-only requirement is identified separately from the federal requirement for SO<sub>2</sub> in Condition A.3. State-only requirements are not federally enforceable and are not included as part of the SIP.

In August 1985, the mill caused or contributed to an exceedance of the ambient SO<sub>2</sub> standards. The mill subsequently performed SO<sub>2</sub> modeling and constructed a scrubber with a single stack emission point. Based on the modeling, Ecology issued a compliance order under RCW 70.94.332 setting a limit of 360 ppm on the recovery boilers common stack. This limit is intended to protect against another exceedance of the ambient SO<sub>2</sub> standard, as specified by Chapter 173-476 WAC (formerly Chapter 185-56 WAC).

This SO<sub>2</sub> limit is not subject to the CAM rule, because it is a state-only limit. However, parametric monitoring under Condition A.3 ensures continuous compliance with the state-only limit of 360 ppm.

Condition A.6 – Total reduced sulfur compounds (TRS), state-only

The total reduced sulfur (TRS) limit for the recovery boilers common stack is a state only requirement. The emission limit for TRS is 17.5 ppm as a daily average, per WAC 173-410-040(5). The mill continuously monitors hydrogen sulfide as a surrogate for TRS.

TRS is not regulated under the SIP. Therefore, the TRS limit not subject to the CAM rule.

**B. HOGGED FUEL DRYER (HD-14)**

Condition B.1 – Opacity

The mill is required to comply with an average opacity limit of 20% for any 3 consecutive minutes in any 1 hour period. The limit is required by WAC 173-400-040(1). Ecology issued Order No. DE95 AQ-I034 which specify Ecology's Test Method 9A and an annual testing frequency for opacity. Under the order, the mill must meet minimum operating requirements specified in Conditions B.4b, B.4c, and B.4d in the AOP to indicate compliance with the opacity limit.

As discussed in more detail in Section 11 below, even though a facility cannot be a major source for opacity, opacity is subject to the CAM applicability analysis since opacity may be correlated to particulate matter (based on communication with the EPA). A baghouse is used to control particulate matter emissions from the Hogged Fuel Dryer. The pre-control particulate matter emissions exceed the major source threshold. Therefore, opacity, as a surrogate for particulate matter, is subject to the CAM requirements. As described above, the AOP contains minimum operating conditions and corrective actions in Conditions B.4b, B.4c, and B.4d to assure continuous compliance.

Condition B.2 – Sulfur dioxide (SO<sub>2</sub>)

The SO<sub>2</sub> emissions are limited to 1000 ppm, per WAC 173-410(1)(f). Ecology determined a SO<sub>2</sub> emission limit for each fuel type used by the dryer as follows.

Wood waste fuel: Wood waste is assumed to have a sulfur content of 0.031 pounds of sulfur per bone dry tons (lbs of sulfur/BDT). The calculation uses a heating value (HHV) of 8,800 British thermal units per pound (Btu/lb) and a conversion factor (F<sub>d</sub>) of 9,240 dry standard cubic feet per million Btus (dscf/MMBtu) for wood (40 CFR Part 60, Appendix A). Sulfur dioxide emissions (C<sub>d</sub>) for burning dried wood is calculated as follows:

$$C_d = \frac{(\text{Percent S in fuel}/100) \times (2 \text{ lbs SO}_2/\text{ lbs S}) \times (385 \text{ dscf SO}_2/64 \text{ lbs SO}_2)}{\text{HHV} \times F_d \times 10^{-6} \text{ MMBtu/Btu}}$$

$$C_d = \frac{(0.031 \text{ lbs S/BDT}) (\text{BDT}/2000 \text{ lbs}) \times (2 \text{ lbs SO}_2/\text{ lbs S}) \times (385 \text{ dscf SO}_2/64 \text{ lbs SO}_2)}{(8,800 \text{ Btu/lb wood}) \times (9,240 \text{ dscf/MMBtu}) \times (10^{-6} \text{ MMBtu/Btu})}$$

Therefore, C<sub>d</sub> = 0.000002 dscf SO<sub>2</sub>/dscf flue gas = 2 ppmv SO<sub>2</sub>.

The SO<sub>2</sub> limit of 1000 ppm will always be met if the dryer burns wood waste. The proposed permit does not require continuous monitoring for SO<sub>2</sub> or certification of the percent sulfur in the wood, since SO<sub>2</sub> emissions associated with burning wood waste is so low, there is no potential of exceeding the 1000 ppm limit.

Diesel fuel: The sulfur content of diesel can be as high as 0.5 percent. The calculation below uses a heating value of 19,309 Btu/lb and F<sub>d</sub> of 9,190 dscf/MMBtu (40 CFR Part 60, Appendix A, Method 19). Sulfur dioxide emissions (C<sub>d</sub>) for burning diesel fuel is calculated in the same manner as above.

$$C_d = \frac{(0.005 \text{ lbs S/lb diesel}) \times (2 \text{ lbs SO}_2/\text{ lbs S}) \times (385 \text{ dscf SO}_2/64 \text{ lbs SO}_2)}{(19,309 \text{ Btu/lbs diesel}) \times (9,190 \text{ dscf/MMBtu}) \times (10^{-6} \text{ MMBtu/Btu})}$$

Therefore, C<sub>d</sub> = 0.000339 dscf SO<sub>2</sub>/dscf flue gas = 339 ppmv SO<sub>2</sub>.

The SO<sub>2</sub> limit of 1000 ppm will always be met if the dryer burns diesel that is less than 0.5 percent sulfur. The permit will not require continuous monitoring for SO<sub>2</sub> or certification of sulfur content in diesel fuel, since burning diesel generates significantly less emissions than the 1000 ppm limit.

The FBC unit does not typically burn fuel oil. Should the mill choose to burn fuel oil, the fuel sulfur content must be 2 percent or less in accordance with Order No. DE 95AQ-I034.

In summary, the SO<sub>2</sub> limit of 1000 ppm will be met by using fuel that has a sulfur content of less than 2 percent.

As discussed in more detail in Section 11 below, the CAM requirements are not applicable for this limit as the hogged fuel dryer does not have a control device for the SO<sub>2</sub> emissions.

Conditions B.3a and B.3b – Particulate Matter (PM)

On January 12, 2001, the EPA promulgated the NESHAP for the Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semi-chemical Pulp Mills (40 CFR Part 63 Subpart MM). This rule applies to the chemical recovery and combustion areas and is commonly known as MACT II. On May 19, 2003, EPA promulgated a site-specific rule requiring the mill to control particulate matter from the hogged fuel dryer as a surrogate for HAPs emissions from the recovery boilers regulated by MACT II. In other words, the control of particulates from the dryer substitutes for meeting the MACT II requirements at the recovery furnace. The site-specific MACT II particulate matter standard for the hogged fuel dryer is 10 lbs/hr. EPA set a September 14, 2004 compliance date and a December 12, 2004 certification date for the MACT II hogged fuel dryer. The reporting requirements date per 40 CFR 63.867 is after December 12, 2004.

The dryer's baghouse controls both particulate matter and metal HAPs. The baghouse controls particulate matter emissions to 10 lbs/hour, which is about 0.03 gr/dscf. Ecology's Order No. DE 03AQIS-5813 also sets a particulate matter emission limit of 10 lbs/hour. The order also requires the mill to comply with MACT II monitoring (40 CFR 63.864), performance testing (40 CFR 63.865), recordkeeping (40 CFR 63.866), and reporting (40 CFR 63.867) requirements. The permit requires testing once every five years.

MACT II establishes surrogate parameters for demonstrating continuous compliance with the particulate matter emissions limit as follows:

- The Permittee must continuously monitor performance of the fabric filter associated with the baghouse using a bag leak detection system with audible alarm system. The Permittee must develop and implement a written startup, shutdown, and malfunction plan that contains: (1) specific procedures for operating and maintaining the hogged fuel dryer and the fabric filter during such periods of startup, shutdown, and malfunction; and (2) a program of corrective action if the hogged fuel dryer or fabric filter malfunction.
- The bag leak detection system must be certified by the manufacturer to be capable of detecting PM emissions at concentrations of 10 milligrams per actual cubic meter (0.0044 gr/acf) or less and have an audible alarm system to signal any bag failure.
- The Permittee must take corrective action as specified in its startup, shutdown, and malfunction plan whenever the bag leak detection alarm sounds. For the bag leak detection system on the hog fuel dryer fabric filter, the Permittee must file records of each alarm, the time of the alarm, the times of corrective action initiation and

completion, and brief descriptions of both the cause of the alarm and the corrective action taken.

The mill installed a Tribo-Guard particulate matter alarm system for the baghouse in September 2004. In January 2006, the mill submitted findings that its leak detection is producing false alarms. This was due to moisture from the flue gas accumulating on the probe. The probe erroneously detected the moisture as particulate matter. Ecology modified Order No. DE03AQIS-5813 to allow the mill to replace the Tribo-Guard with an equivalent, more sensitive bag leak detection system.

The mill is in violation of the alternative standard if:

- Corrective action is not initiated within one hour of a bag leak detection alarm;
- Corrective action is not completed in accordance with the startup, shutdown, and malfunction plan; or
- The alarm is engaged for more than five (5) percent of the total operating time during a six (6) month block reporting period.

In calculating the operating time fraction, if inspection of the fabric filter shows no corrective action was required, then no alarm time is counted; if corrective action is required, each alarm signal is counted as a minimum of one hour; or if corrective action is not initiated within one hour, the alarm time is counted as the actual amount of time taken to initiate corrective action.

The hogged fuel dryer is also subject to a less stringent particulate matter emissions limit of 0.10 gr/dscf, per WAC 173-410-040(2)(c)(iii).

In October 2004, Weyerhaeuser operated the hogged fuel dryer with a particulate matter emission rate of 0.08 to 0.15 lbs/hr (0.0003 to 0.0005 gr/dscf) at the stack. Cosmo performed a source test in May 2012 showing an emission rate of 1.21 to 1.51 lbs/hr (0.0035 to 0.0043 gr/dscf). The particulate matter emissions are well below the particulate matter limits of 10 lbs/hr and 0.10 gr/dscf. The most recent test conducted in November 2017 produced an emission rate measurement of 0.002 gr/dscf. Therefore, this permit retains the same testing requirements, particulate matter limits, and surrogate monitoring for continuous monitoring as the previous permit.

As discussed in more detail in Section 11 below, the particulate matter limits of 10 lbs/hr and 0.10 gr/dscf are both subject to CAM because pre-controlled emissions exceed the major source threshold and Cosmo uses a baghouse to achieve compliance with the particulate matter limits. The limit of 10 lbs/hr is based on 40 CFR Subpart MM, promulgated after 11/15/90, and is therefore exempted from CAM rule requirements. For Cosmo must comply Subpart MM requirements, which already has continuous assurance provisions.

Conditions B.4a through and B.4j – Compliance, Records, and Leak Detection System

The conditions in this section are based on applicable requirements per MACT II and Order 03AQIS-5813 (see section above for further discussion). Complying with these standards is compliance with 40 CFR Part 63 Subpart MM requirements for the recovery boilers common stack (AP-10) HAP emissions.

C. HOGGED FUEL BOILER (PH-42)

The Hogged Fuel Boiler is a hybrid suspension grate boiler that primarily burns hogged fuel. Cosmo also fires fuel oil during startup or grate cleaning. Under normal operating conditions, this boiler is a swing boiler.

Condition C.1a and C.1b – Opacity

The Hogged Fuel Boiler stack has an average opacity limit of no more than 20 percent for three consecutive minutes within an hour period. The minimum operating conditions in C.2a ensures continuous compliance with the opacity limit.

The mill reported at least two exceedances of the opacity limit during the last permit cycle. The exceedances were caused by a malfunctioning sensor in the damper resulting in a low oxygen flow to the boiler's firebox while burning fuel oil. The malfunction led to opacity exceedances on September 14 and September 16, 2011. Under such a circumstance, meeting the scrubber's minimum operating conditions would not guarantee compliance with the opacity limit during equipment malfunctions or upset conditions.

Therefore, the mill must perform DOE Method 9A if there is an upset or malfunction in the boiler to demonstrate continuous compliance. The mill must also perform DOE Method 9A when it fails to meet the minimum operating condition in C.2a.

A different limit for the boiler's emissions during soot blowing is specified by WAC 173-400-070(2). Routine soot blowing is necessary to ensure efficient boiler operation and workers' safety. During soot blowing and grate cleaning, hogged fuel boilers may exceed 20 percent opacity for up to 15 consecutive minutes once every 8 hours. The rule requires the mill to schedule soot blowing for the same specific times each day. On July 3, 2013, Cosmo submitted an updated soot blowing and grate cleaning schedule to Ecology. Soot blowing is scheduled at 1100, 1730, and 2300 hours. The permit requires Cosmo to notify Ecology of revisions to the schedule.

On May 22, 2015, EPA issued a SIP call requiring Ecology to update their state implementation plans to meet the CAA. The purpose of the SIP call is to amend the exemptions for excess emissions during periods of startup, shutdown, and malfunction. In response to the SIP call, Ecology revised WAC 173-400 on August 16, 2018. The revision addressed soot blowing and grate cleaning at hogged fuel boilers. The previous rule did not specify an opacity limit for up to 15 minute during soot blowing. This limit exemption has been removed and replaced with a limit of 40% opacity for soot blowing.

Cosmo's Order No. DE 95AQ-I034, similar to WAC 173-400-040(2)(a)(i), does not specify an upper limit for opacity up to 15 minutes during soot blowing. This language will remain in condition C.1a until it is removed through a modification of Order No. DE 95AQ-I03. From a compliance perspective, condition C1.a does not supersede the opacity limit in C.1b. As the more stringent opacity requirement, C.1b is in addition to the requirement of C1.a. Compliance with C.1b would demonstrate compliance with C.1a.

As discussed in more detail in Section 11 below, even though a facility cannot be a major source for opacity, opacity is subject to the CAM applicability analysis because opacity may be correlated to particulate matter (based on personal communication with the EPA). The Hogged Fuel Boiler's particulate matter emission limit is subject to CAM rule (see discussion about Condition C.3 below); therefore, the opacity limit is also subject to CAM. As discussed in more detail in Section 11 below, CAM is satisfied by continuous monitoring and compliance with the venturi scrubber pressure drop and flow limits in Conditions C.2a and C.2b.

*Condition C.2a and C.2b – Minimum operating parameter and corrective action*

Regulatory Order No. DE95 AQ-I034 imposes alternative opacity parameters, which are referred to as the minimum operating parameters. The Order requires the mill to monitor continuous operations as follow: "The permittee shall continuously monitor and record flow and pressure drop across the hogged fuel boiler's scrubber. The hogged fuel boiler scrubber's flow and pressure drop ( $\Delta P$ ) must maintain greater than or equal to 605 gallons per minute and 10 inches of water, respectively, to show continuous operation of the pollution control system." The minimum operating conditions were established based on the 1988 calibration test runs. The calibration test runs correlate opacity and particulate matter measurements to the operating parameters under full load conditions.

The Permittee must act as soon as practical to bring any operational parameter back into its required range if it falls below the minimum operating parameters and must perform DOE Method 9A to show compliance with Permit Conditions C.1a and C.1b. Failure to take corrective action is considered to be a violation of the permit and may be a violation of opacity and particulate matter permit limits. The Permittee shall report any excursions each month and the corrective actions taken in the respective monthly air report.

These permit conditions are established to satisfy the CAM rule for particulate and opacity limits.

*Condition C.3 – Particulate Matter (PM)*

The particulate matter emission limit for the Hogged Fuel Boiler is 0.10 gr/dscf corrected to 7% oxygen. The mill performed source tests on the Hogged Fuel Boiler ten times from 1995 through 2002. The results of these tests showed that the particulate matter emissions averaged about 50 percent of the limit. As such, Ecology considers annual monitoring sufficient to indicate on-going compliance. A summary of the historical emissions testing that served as the basis for determining monitoring frequency is in Appendix B, Figure 4. Source testing performed during the 2013 through 2018 permit cycle showed that the particulate matter emissions ranged from 0.013 to 0.067 gr/dscf, with the most recent test at 0.0315 gr/dscf, all

results corrected to 7% O<sub>2</sub>. The tests demonstrate that, with proper operation and maintenance, the mill continues to meet the particulate matter emission limit and that an annual source test frequency is still sufficient.

As discussed in more detail in Section 11 below, this particulate emission limit is subject to the CAM rule. Cosmo installed and operates a venturi scrubber to comply with particulate emissions limit and pre-controlled particulate matter emissions exceed the major threshold of 100 tpy. The permit specifies continuous monitoring and compliance with the scrubber pressure drop and flow limits in conditions C2.a and C.2b to indicate continuous compliance.

Condition C.4 – Sulfur dioxide (SO<sub>2</sub>)

The Hogged Fuel Boiler must comply with SO<sub>2</sub> emissions limit of 1000 ppm, as required by WAC 173-410-040(1)(f) and Order No. DE 95AQ-I034. The boiler is considered to be in continuous compliance with this limit if the boiler burns wood and diesel. This is demonstrated by the same emission calculations used in the previous section and detailed below.

When the Hogged Fuel Boiler burns fuel oil, SO<sub>2</sub> emissions (C<sub>d</sub>) are calculated using the equation below. Fuel oil has a heating value (HHV) of 19,309 Btu/lb and a dry basis F-factor, F<sub>d</sub>, of 9,190 dscf/MMBtu (40 CFR Part 60, Appendix A, Method 19).

$$C_d = \frac{(\text{Percent S in fuel}/100) \times (2 \text{ lbs SO}_2/\text{ lbs S}) \times (385 \text{ dscf SO}_2/64 \text{ lbs SO}_2)}{\text{HHV} \times F_d \times 10^{-6} \text{ MMBtu/Btu}}$$
$$C_d = \frac{(0.02 \text{ lbs S/lbs fuel}) \times (2 \text{ lbs SO}_2/\text{ lbs S}) \times (385 \text{ dscf SO}_2/64 \text{ lbs SO}_2)}{(19,309 \text{ Btu/lbs fuel}) \times (9,190 \text{ dscf/MMBtu}) \times (10^{-6} \text{ MMBtu/Btu})}$$

Therefore, C<sub>d</sub> = 0.001356 dscf SO<sub>2</sub>/dscf flue gas = 1356 ppmv SO<sub>2</sub>.

Corrected to 7% O<sub>2</sub>, C<sub>d</sub> = 1356 ppmv SO<sub>2</sub> × (20.9 – 7)/20.9 = 901 ppmv SO<sub>2</sub>.

The mill is in compliance with the 1000 ppm SO<sub>2</sub> limit if the boiler burns fuel oil with less than 2 percent sulfur. Therefore, continuous monitoring is not required to show continuous compliance. In place of continuous SO<sub>2</sub> monitoring, Cosmo must record the sulfur content of the fuel and certify that, from January 1 to December 31 of each year, the fuel contains no more than 2 percent sulfur. Certification of the sulfur content must be submitted with the January monthly air emission report. The fuel sulfur content requirements are specified in Order DE 95AQ-I034.

This sulfur dioxide emission limit is not subject to the CAM rule. The use of low-sulfur fuel is not considered a control device or an emission limit/standard as defined in the CAM rule.

Conditions C.5 through C.14 – Industrial Boiler MACT requirements

On June 4, 2010, the EPA published the proposed 40 CFR 63, Subpart DDDDD, NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters,

commonly called the Boiler MACT standards. The EPA later reissued the Boiler MACT in Federal Register Vol.76, No. 54 dated March 21, 2011. These boiler MACT standards were to be effective as of May 20, 2011. Affected sources such as Cosmo would have needed to comply with the standards by March 21, 2014.

The industries petitioned for the judicial review and for an immediate and indefinite stay of the boiler MACT's May 20, 2011 effective date. In response to the industries' petition, the EPA used the Administrative Procedure Act (APA) to stay the Boiler MACT. The stay is dated May 16, 2011 and set forth in the May 18, 2011 federal register 76 FR 28662. This stay was in place until the EPA completed its reconsideration of the rules on November 20, 2015. As set forth in the November 20, 2015 federal register 80 FR 72790, EPA retained a minimum carbon monoxide (CO) limit of 130 ppm and the particulate matter continuous parameter monitoring system (CPMS) requirements, consistent with the January 2013 final rule. EPA made minor changes to the proposed definitions of startup and shutdown and work practices during these periods, based on public comments received. Among other things, this final action addresses a number of technical corrections and clarifications of the rule. These corrections will clarify and improve the implementation of the January 2013 final Boiler MACT, but do not have any effect on the environmental, energy, or economic impacts associated with the proposed action.

The action also included the final decision to deny the requests for reconsideration with respect to all issues raised in the petitions for reconsideration of the final Boiler MACT for which EPA did not grant reconsideration. Facilities were required to comply with the emission limits no later than January 31, 2016.

#### Condition C.5 – Particulate Matter

Table 2 of the Boiler MACT (40 CFR Part 63, Subpart DDDDD) establishes particulate matter limits as a surrogate for non-mercury metal HAPs for different types of industrial boilers. The particulate matter emission limit applicable to Cosmo's Hogged Fuel Boiler is 0.44 lb/MMBtu of heat input. Cosmo chose to demonstrate initial compliance with this limit using performance testing. This limit applies when the unit is in operation, but does not apply during startup and shutdown periods, as prescribed in 40 CFR 63.7500(f). During startup and shut down, the work practice standards in Conditions C.9c and C.9d apply.

As discussed in Section 11 below, the boiler particulate matter emissions limit is subject to CAM rule. Cosmo installed and operates a venturi scrubber to comply with particulate matter emissions limits. Pre-controlled particulate emissions exceeded the major threshold of 100 tpy. Because this limit is based on boiler MACT regulations promulgated after November 15, 1990, the exemption in 40 CFR 64.2(b)(i) applies. As such, the CAM requirement do not apply to this limit.

#### Condition C.6 – Carbon monoxide (CO)

Boiler MACT (40 CFR Part 63, Subpart DDDDD) establishes CO limits as a surrogate for non-dioxin/furan organic HAPs. The CO emissions limit for the Hogged Fuel Boiler is 3,500 ppmvd at 3% O<sub>2</sub>, based on an average of three runs. Cosmo chose to demonstrate initial compliance with this limit using performance testing. This limit is applicable when the Hogged Fuel Boiler

is operating, but is not applicable during boiler startup and shut down periods, as prescribed in 40 CFR 63.7500(f). During startup and shutdown, the work practice standards in Conditions C.9c and C.9d apply.

The boiler CO emission limit is not subject to CAM rule, because the boiler does not have a control device for complying with the CO limit.

Condition C.7 – Hydrochloride (HCl)

Table 2 of the Boiler MACT (40 CFR Part 63, Subpart DDDDD) establishes hydrochloride as a surrogate for acid gas HAPs. The HCl emission limit is 0.022 lb/MMBtu of heat input. Cosmo chose to demonstrate initial compliance with this limit using performance testing. The limit is applicable when the Hogged Fuel Boiler is operating, but is not applicable during boiler startup and shutdown periods, as prescribed in 40 CFR 63.7500(f). During startup and shutdown, the work practice standards in Conditions C.9c and C9.5 apply.

Because hogged fuel is not a significant source of chlorine, Ecology has determined that the boiler control device is not necessary for compliance with the HCl limit. Therefore, the HCl limit is not subject to the CAM rule.

Condition C.8 – Mercury (Hg)

Table 2 of the Boiler MACT (40 CFR Part 63, Subpart DDDDD) establishes a mercury limit of 5.7E-06 lb/MMBtu of heat input for the Hogged Fuel Boiler. Cosmo chose to demonstrate initial compliance with this limit using performance testing. The limit is applicable when the Hogged Fuel Boiler is operating, but is not applicable during boiler startup and shutdown periods, as prescribed in 40 CFR 63.7500(f). During startup and shutdown, the work practice standards in Condition C.9c and C.9d apply.

Because hogged fuel is not a likely source of mercury, Ecology has determined that Cosmo's control device is not necessary for compliance with the Hg limit. As such, the boiler mercury limit is not subject to CAM rule. A CAM plan is not required for this limit.

Condition C.9c and C9.d – Work practice standards

40 CFR 63.7500(f) establishes work practices standards for the Boiler MACT, which applies only during the startup and shutdown of the Hogged Fuel Boiler. The Permittee has chosen to follow the definition (1) of startup in 40 CFR 63.7575. Startup means the firing of fuel in the boiler for any purpose after a shutdown event. Startup ends when any of the useful thermal energy from the boiler is supplied for heating, and/or producing electricity, or for any other purpose. Shutdown means the period in which the cessation of the boiler is initiated for any purpose. Shutdown begins when the boiler no longer supplies useful thermal energy or when no fuel is being fed to the boiler, whichever is earlier. Shutdown ends when the boiler no longer supplies useful thermal energy and no fuel is being combusted.

According to boiler MACT Cosmo must do all of the following during boiler startup:

- Operate all CMS;

- Use one or a combination of clean fuels defined as natural gas, synthetic natural gas, propane, other Gas 1 fuels, distillate oil, syngas, ultra-low sulfur diesel, fuel oil-soaked rags, kerosene, hydrogen, paper, cardboard, refinery gas, liquefied petroleum gas, clean dry biomass, and any fuels meeting the appropriate HCl, mercury and TSM emission standards by fuel analysis; and
- Vent emissions to the main stack and engage all applicable control devices, once Cosmo starts to feed non-clean fuel.

During the boiler shut down, Cosmo must do all of the following:

- Operate all CMS;
- While firing fuels that are not clean fuels during shutdown, Cosmo must vent emissions to the main stack and operate all applicable control devices when necessary to comply with other standards applicable to the source that require operation of the control device; and
- If, in addition to the fuel used prior to initiation of shutdown, another fuel must be used to support the shutdown process, that additional fuel must be one or a combination of the previous listed clean fuels.

Fuels burned during startup include hogged fuel, distillate oil, and potentially residual fuel oil. To be considered a clean fuel, the hogged fuel must meet the definition of clean dry biomass with a moisture content of less than 20 percent. If the startup uses only residual oil, the residual fuel oil must meet the definition of clean fuel, which is fuel that meets the applicable HCl, Hg, and TSM standards by fuel analysis. The fuel analysis may be done by Cosmo or provided by the fuel supplier. In either case, the analysis must follow the methods prescribed in 40 CFR Part 63, Subpart DDDDD, Table 6.

*Condition C.10a and C10.b – Scrubber operating limits*

40 CFR Part 63, Subpart DDDDD, §63.7500(a)(2) and Table 4, establish the operating limits for various control devices, including the wet scrubber. Cosmo uses a wet (venturi) scrubber to control pollutants from the Hogged Fuel Boiler. The operating limit applies to scrubber flow rate and pressures drop.

The scrubber flow rate is based on the 30-day rolling average, which must be greater than or equal to the lowest one-hour average scrubber flow rate measured during the most recent performance testing. Cosmo must establish the minimum flow rate as the operating limit during the three-run performance test. The permit requires Cosmo to collect scrubber flow rate data every 15 minutes during the performance test and compute the lowest one-hour average flow rate using all of the 15-minute readings.

The scrubber pressure drop limit for the Hogged Fuel Boiler is based on the 30-day rolling average, which must be greater than or equal to the lowest one-hour average scrubber pressure drop measured during the most recent performance testing. Cosmo must establish the minimum

pressure drop as the operating limit during the three-run performance test. The permit requires Cosmo to collect scrubber pressure drop data every 15 minutes during the performance test and compute the lowest one-hour average pressure drop using all of the 15-minute readings. Prior to the promulgation of the Boiler MACT, Cosmo was already continuously monitored for both of these parameters.

Condition C.11 – Operating load

In accordance with §63.7520(c), the Hogged Fuel Boiler is subject to either the operating load or steam generation limit, as specified in Table 4 of the subpart. The operating load or steam generation limit is based on measurements taken during the most recent performance testing. The limit is computed using the highest hourly average during three test runs, multiplied by 1.1. This established a 30-day average limit.

Condition C.12 – Oxygen content

40 CFR Part 63, Subpart DDDDD Table 8 requires an oxygen analyzer system in accordance with the §63.7525(a) requirement to maintain an oxygen analyzer system. Cosmo is subject to requirement because the Hogged Fuel Boiler does not have an oxygen trim system in accordance with §63.7525(a)(7).

The limit for oxygen content is based on the most recent CO performance testing. The limit will be set based on the lowest hour average O<sub>2</sub> measured during the testing. This establishes a 30-day rolling average limit.

Condition C.13a through C.13e – Fuel requirements

This condition requires fuel analysis requirements for chloride and mercury for each type of fuel burned. Fuel sample collection and analysis must follow the applicable methods in §63.7521(c) and (d) and 40 CFR Part 63, Subpart DDDDD, Table 6. Fuel analysis is not required for fuels used only for startup, shut down, or transient flame stability purpose.

Cosmo must use the fuel analysis to establish the maximum fuel input for chlorine and mercury, in accordance with §63.7530(b). Cosmo must maintain a copy of all calculations and supporting documents. Fuel analysis associated with a performance test must be submitted within 60 days after the completion of the performance test.

The chloride fuel input Boiler MACT limit for the Hogged Fuel Boiler must be less than or equal to the maximum chlorine fuel input during the last performance test. If Cosmo plans to burn a new fuel, the maximum chloride fuel input must be re-calculated in accordance with §63.7530. If the chloride input is greater than the maximum input during the previous performance test, Cosmo must conduct a new performance test within 60 days of burning the new fuel. The site-specific test plan must be submitted in accordance with §63.7(c) 60 days before the scheduled test date. Test results must be submitted within 60 days after the completion of the performance test. New operating limits must be established based on this new performance test. These requirements are also applicable for mercury fuel analysis. New fuel described in §63.7510(a)(2)(i) and (iii) is not subject to this requirement.

Condition C.14 – Reporting

Boiler MACT requirement §63.7550(b) requires submittal of a semiannual compliance report. Information required in the report includes fuel usage, performance test dates, operational changes that could increase emissions, any deviations from limits or standards, malfunction with corresponding corrective actions, and startup and shutdown records.

Because the Hogged Fuel Boiler is subject to the emission limits and the requirements of Table 4, the reporting frequency will not be reduced to annual or once every five years.

D. OXYGEN BLOW TANK VENT (BP-6)

Conditions D.1 and D.2 – Volatile Organic Compounds (VOCs) and minimum operational parameter

The Oxygen Blow Tank vent is part of the mill's oxygen delignification bleaching stage. Oxygen delignification eliminates the use of elemental chlorine bleaching at the mill. Ecology issued Order No. DE94AQ-I018 which establishes an emission limit for volatile organic compounds (VOCs) of 34 tons per year, on a as carbon basis. The limit is based on an assumed emission factor and a production of 624 air-dried, unbleached short ton (ADUT) of pulp per day. The Order requires the mill to use EPA Method 25A Modified to confirm the emission factor on an annual basis. The Order also requires to mill to monitor and record the daily average ADUT in the respective monthly air report.

The only chemicals emitted by the Oxygen Blow Tank vent are water vapor and VOCs. Water vapor is exempt from opacity observations. The VOCs are colorless vapors and are at very low concentration. The VOCs do not appear to condense and do not contribute to opacity. Therefore, the permit does not require an opacity limit or monitoring.

As discussed in Section 11 below, VOC emissions from the Oxygen Blow Tank vent are not subject to the CAM rule. VOC emissions from the Oxygen Blow Tank are limited to less than 34 tpy, well below the major source threshold of 100 tpy for VOCs.

E. NUISANCE TOWER (DB-26)

Conditions E.1 and E.2 – Sulfur dioxide (SO<sub>2</sub>) and minimum operating parameter

Emissions from the digesters, dump tank vents, and filtrate tank vents go to the nuisance tower/stack equipped with a wet scrubber. The SO<sub>2</sub> emissions limit is 0.20 lbs/min, on a fifteen-minute average, per air-dried unbleached ton of pulp (ADUT) discharged from the digester, in accordance with WAC 173-410-040(1)(c). Ecology requires monthly source testing at the nuisance stack using EPA Method 6 Modified. Modified means that the source test is time-adjusted to 15 minutes, which is the average duration of one digester dump. Method 6 results is used for compliance by dividing it by the corresponding digester pulp production to obtain emissions rate per air-dried unbleached pulp.

The mill submitted data from a three-day performance test conducted in July 1984 that includes SO<sub>2</sub> emissions from the Nuisance Tower stack. The testing was conducted at the stack under

two operating conditions: 1) scrubber flow rate of 150 gpm; and 2) no scrubber flow for about one hour of the three hour test. The measured results for when the scrubber flow was 150 gpm were between 0.002 and 0.038 lbs of SO<sub>2</sub>/min/ADUT. When the scrubber was down for an hour, SO<sub>2</sub> emissions were measured to be 0.116 lbs/min/ADUT. Both operating conditions maintained the SO<sub>2</sub> emissions below the 0.20 lbs/min/ADUT limit. Based on the testing, Ecology set the minimum operating condition for the scrubber as 150 gpm of flow or more. If the flow drops below 150 gpm, the mill has one hour to take corrective action.

The most recent source tests in 2016 and 2018 show SO<sub>2</sub> emissions between 0.004 and 0.049 lbs/min/ADUT. This is consistent with the 1984 data, given that the pulping operations have not changed since Cosmo started operating the mill. Therefore, Ecology continues to require the mill to meet the minimum operating parameter and perform monthly source tests.

As discussed in more detail in Section 11 below, the CAM rule applies to the SO<sub>2</sub> emissions from the Nuisance Tower because pre-controlled emissions exceed the major source threshold and Cosmo uses a scrubber to achieve compliance with the SO<sub>2</sub> limit. As described above, the AOP contains a minimum operating condition and corrective action requirement in Condition E.2 to assure continuous compliance.

## F. MILL-WIDE EMISSIONS

### Conditions F.1 – Sulfur dioxide (SO<sub>2</sub>) and minimum operating condition

The total mill emissions, as defined by WAC 173-410-040(1)(a), must not exceed an SO<sub>2</sub> emissions rate of 20 lbs/day/ADUT. This limit applies to all emissions, except those associated with the hogged fuel dryer and associated boiler. The total mill emissions include the following units/sources:

- (a) SARA Title 304 releases
- (b) Recovery Boilers Common Stack (AP-10)
- (c) Nuisance Tower vent (DB-26)
- (d) Brown Stock Washers (BSW) Vents No. 1, 2, and 3, and BSW and Deknotter Vent No. 4 (BS-7 and BS-6, respectively)
- (e) No. 4 Filtrate Tank vent (BS-4) (IEU)
- (f) North and South Weak Red Liquor Tank vents (IEUs)
- (g) Condensate Day Tank vent and stand pipe (IEU)
- (h) CE and ME Hogging Jet vents (IEU)
- (i) Heavy Liquor Vent Tanks No. 1, 2, and 3 (IEUs)
- (j) Condensate Tank overflow sump (IEU)

Permit Condition F.1 requires on-going monitoring using continuous monitoring instruments, minimum operating parameters, process knowledge, and/or emission factors for all individual units/sources. Appendix C contains the algorithm for calculating total mill SO<sub>2</sub> emissions.

Sulfur dioxide emissions from individual unit (other than a recovery system, a blow system or an acid plant) must not exceed 1,000 ppm corrected to 7% oxygen. The mill may use emission factors and/or process knowledge to calculate the emission for these units.

The mill-wide SO<sub>2</sub> emissions limit is not subject to CAM, because it is not a limit for a specific emissions unit.

## G. SULFITE PULPING GROUP (MACT I)

### Conditions G.1, G.2, and G.3

On April 15, 1998, the EPA promulgated a NESHAP for the Pulp and Paper Industry as 40 CFR Part 63, Subpart S, commonly referred to as MACT I. MACT I regulates emissions from the pulp and paper production area of the process.

With the exception of the bleach plant provisions, sources were required to comply with MACT I by April 16, 2001. WAC 173-400-075 requires the Permittee to comply with MACT I.

MACT I, as specified in 40 CFR Part 63.444(a), applies to emissions from: a) digester vents and pulp washing systems; and b) evaporator system vents. The rules require these emissions to be enclosed and vented into a closed vent system. These emissions, plus the vents, wastewater, and condensate streams from the control device used to reduce HAP emissions, must emit no more than 1.1 kg of total HAPs or methanol per megagram (2.2 lbs/ton) of oven-dried pulp (ODP), per 40 CFR 63.444(c)(2).

#### **a. Digesters and Brownstock Washer**

The mill routes collected gases from their digesters and brown stock washer filtrate tank vents to the Nuisance Tower, where SO<sub>2</sub> is controlled by a wet scrubber. The scrubber flow must be greater than 150 gpm in order to meet the SO<sub>2</sub> emissions limit. The mill must also monitor this flow to comply with the continuous monitoring system (CMS) requirements in MACT I specified by 40 CFR 63.453. The scrubber also removes HAPs from the gaseous stream. The HAPs contained in the gaseous stream were measured to be 0.000009 lbs methanol per ton ODP. This amount must be included when calculating the HAP emissions per 40 CFR 63.444(c)(2). The HAPs in the scrubber water stream has been measured to be 0.818 lbs methanol per ton ODP. This stream is being reused in the process as the stream goes back into the acid plant to be used to make more pulp.

The total uncontrolled emissions from the brownstock washing system is 0.15 lb of methanol per ton ODP. 40 CFR 63.444(b) exempts emissions from equipment in 40 CFR 63.444(a) where it is unnecessary to be reduced to meet the standard of 2.2 lbs methanol per ton ODP in 40 CFR 63.444(c)(2) from being required to be routed to a control device. The mill emissions per 40 CFR 63.444(c)(2) are 1.32 lbs methanol per ton ODP (see Table 4 below). Therefore, the permit does not require the mill to control emissions from the brown stock washing system.

#### **b. Evaporator systems**

Under MACT I (40 CFR Part 63, Subpart S), the evaporator system is defined as “all equipment associated with increasing the solids contents and/or concentrating spent cooking liquor from the pulp washing system, including pre-evaporators, multi-effect evaporators, concentrators, and vacuum systems, as well as associated condensers, hotwells, and

condensate streams, and any other equipment serving the same function as those previously listed.” The “evaporator systems” under this section refers to those associated with the pulping process. Therefore, COEL evaporator gases, which is associated with the Bleach Plant 2A filtrate, does not fall under 40 CFR Part 63.444(a).

The red liquor evaporator gases are collected in a closed vent system and sent directly to the fireboxes of Recovery Boilers No. 1 and No. 2 for destruction.

Compliance with Permit Conditions G.2a through G.2e fulfills the CMS requirements in 40 CFR 63.453 associated with the collection of evaporator gases in a closed vent system.

Monthly source tests from January to October 1999 show that emission from the recovery boilers was less than 0.012 lbs of methanol per ton ODP, which was less than 0.5 percent of the limit. Additional performance testing showed emissions to be as low as 0.002 lbs of methanol per ton ODP. Therefore, burning the gases in the recovery boilers ensures continuous compliance; recordkeeping for burning the gases in the recovery boilers meets the CMS requirements.

During startup and emergency shutdown, the red liquor evaporator gases may bypass the recovery boilers and be directed to the cooling towers for safety reasons. This bypass allowance is included in Order No. DE 96AQ-I089, which approved modifications to the red liquor evaporator system. The modifications included crossover piping, which allows the recovery boilers to burn gases from the red liquor evaporator, NCGs from the COEL, or both. The Order does not allow bypass of the recovery boilers for longer than one hour. Source testing in October 2001 measured the maximum emissions rate of 0.820 lbs methanol per ton ODP. This emission rate is included the Table 4 below. This result in a total emission of 1.32 lbs methanol per ton ODP. This total emissions rate is below the 2.2 lbs methanol per ton ODP limit.

The most recent test was on May 31, 2018, which showed compliance with the limit.

**Table 4 Emissions Regulated under MACT I, 40 CFR 64.444(c)**

Source of HAPs	Control Device	Emissions (lb methanol per ton ODP)*
Digester and Washer digester vents	Wet scrubber	Included in Nuisance Tower stack emissions
Digester and Washer brownstock washer vents	None	0.15
Digester and Washer washing system	None	0.34
Nuisance Tower stack (gas)	None	0.0005
Evaporators red liquor processing	Combustion in recovery boilers (or cooling towers if recovery boilers are down)***	0.820

Source of HAPs	Control Device	Emissions (lb methanol per ton ODP)*
Total	All	1.32

- \* Based on emission tests dated October 2001 prior to the mill shut down.
- \*\* Discharge from the scrubber system (at 0.818 lb methanol per ton ODP) is collected and re-used in the process.
- \*\*\*Emissions from the processing of the red liquor are combusted in the recovery boilers or routed to the cooling tower during recovery boiler shut down.

There are no bypass lines that vent to the atmosphere; therefore, the 40 CFR 63.450(d) requirement that the manual bypass line valves must be sealed and monitored does not apply. However, the system has manual bypass valves for routing COEL evaporator gases and red liquor evaporator gases to the cooling towers. Bypassing either recovery boiler is only for periods of startup, shutdown, and malfunctions. To prevent leaks and unintentional bypass, the permit requires the mill to follow the protocol in 40 CFR 63.453(k)(5) for these bypass line valves. The closed vent system has no hood or seals; therefore, the 40 CFR 63.450(b) requirement that hoods and seals be maintained in a closed position during performance tests does not apply.

The mill must comply with the MACT I inspection and monitoring requirements (40 CFR 63.453), recordkeeping requirements (40 CFR 63.454), and reporting requirements (40 CFR 63.455). The mill must perform source tests using EPA Method 308 every fifth year of the permit to demonstrate compliance with the HAPs emission standards.

CAM does not apply to the HAP emissions, because there are no control devices for achieving compliance with the HAPs limit. The wet scrubber for the digester vents is for compliance with SO<sub>2</sub> limit. While the wet scrubber reduces HAP emission, it is not necessary to comply with the HAPs limit. Uncontrolled emissions are 2.1 lbs per ton of ODP, which is sum of all emissions in Table 4 plus the 0.82 contribution from the scrubber water. The uncontrolled emissions would be in compliance with the limit of 2.2 lbs per ton ODP.

Condition G.4 – Reporting Requirements

The previous permit required the mill to comply with the reporting requirements in 40 CFR Part 63 Subpart A and 40 CFR 63.455. The previous permit also required a non-binding control strategy report every two years from April 15, 1999 until three years after the effectiveness date of NPDES permit. The NPDES permit is renewed about every five years and each renewal has a different effective date, including November 16, 2003 or July 1, 2007. The previous permit did not specify which NPDES permit renewal or effective date was used. Nevertheless, the last submittal date for the strategy report was either November 16, 2006 or July 1, 2010. Therefore, a strategy report is no longer required in this permit renewal.

Reporting requirements are not subject to the CAM rule.

## H. GENERAL MACT I Requirements

### Conditions H.1 through H.5

Conditions H.1 and H.5 previously contained the General MACT I and Startup, Shutdown, and Malfunction (SSM) Plan Requirements based on the general provisions and applicable requirements per 40 CFR Part 63, Subparts A and S. In 2008, the exemptions for SSM in Subpart A were vacated by the court.

In September 2012, EPA revised Subpart S to specify that the SSM plan, recording keeping, and reporting provisions in Subpart A no longer apply. Therefore, Ecology has removed the requirements associated with SSM in the draft renewal permit. These conditions now contain reporting and record keeping for emissions and units associated with the pulping area.

The requirements of under these conditions reflected good air pollution control practices, recordkeeping, and reporting. These requirements are not subject to the CAM rule.

## I. GREENHOUSE GAS

### Conditions I.1 through I.3

Based on the 2016 greenhouse gas report, Cosmo emitted 989,316 metric tons of carbon dioxide equivalents (CO<sub>2e</sub>). About 3% of those emissions (26,250 metric tons) were from non-biogenic sources.

Federal regulations 40 CFR 98.2 requires GHG reporting for pulp and paper source category facilities that emit 25,000 or more metric tons of CO<sub>2e</sub> per year. WAC 173-441 also requires GHG reporting for facilities that emit 10,000 or more metric ton of CO<sub>2e</sub> per year. These reporting requirements are incorporated into the permit. The applicable requirements of WAC 173-441 are state-only enforceable requirements.

Reporting requirements are not subject to the CAM rule.

## **8.0 INSIGNIFICANT EMISSION UNITS**

The facility-wide general requirements apply to the whole facility, including insignificant emission units and activities (IEUs), as required by the operating permit rule. The rule states, however, that IEUs are not subject to monitoring requirements unless the generally applicable requirements in the State Implementation Plan (SIP) impose them per WAC 173-401-530(2)(c). The Washington SIP does not impose any specific monitoring-related requirements for the facility-wide requirements for IEUs at this source. The permit, therefore, does not require any testing, monitoring, reporting, or recordkeeping for insignificant emission units or activities. Per WAC 173-401-530(3), IEUs are not covered by the permit shield, described in the “Permit Shield/Inapplicable Requirements” Section of the permit.

A list of IEUs is available in Cosmo’s Permit Renewal Application (December 28, 2017), Section 6.0.

## 9.0 OPERATIONAL FLEXIBILITY

Ecology does not specify a time period for bringing operating parameters to predetermined values. Individual exceptions may require a shorter or longer time period than could be foreseen by the permit. By specifying a definite time period, one would be lengthening the required time in certain cases.

In other cases, the Permittee may need more time to respond to unforeseen breakdown. Therefore, Ecology gives the individual Ecology's project officer the flexibility to determine the definition of the shortest period of time on a case-by-case basis when all the facts are known for each individual exception using the company's incident report on the occurrence.

## 10.0 CHANGES TO PERMIT

This section documents the changes in this permit renewal. These changes are related to monitoring, record keeping, and reporting requirements of the permit. Minor changes, such as references, reformatting, or typos, are not included.

- Condition B.1, Hogged Fuel Dryer: Ecology added the applicable CAM requirements, per 40 CFR Part 64, for the particulate matter limit. In the previous permit renewal process, the fact that CAM was required was discussed in the Support Document. This change is to formally include this requirement in the permit.
- Condition B.3b for Hogged Fuel Dryer: Ecology added the requirement for electronic submittal of the source test results to CEDRI, per 40 CFR 63.863.
- Condition C.1a and C.3 for Hogged Fuel Boiler: Ecology provided clarification on the Compliance Assurance Monitoring requirements in 40 CFR Part 64, as it relates to the scrubber operating parameters.
- Condition C.1b, Hogged Fuel Boiler: Ecology added a more stringent requirement for soot blowing and grate cleaning, per WAC 173-400-040(2)(a)(ii). This requirement will become effective on the effective date of EPA's removal of WAC 173-400-107 from the SIP.
- Condition C.2b, Corrective Action at Hogged Fuel Boiler: This condition previously stated that the failure to take corrective action may result in violation of the underlying requirements. The determination of violation is based on the evaluation of available data to demonstrate compliance. In this renewal, Ecology clarified that a failure to take corrective action is a violation, unless compliance can be demonstrated by the applicable reference method.
- Conditions C.5-C.14, Hogged Fuel Boiler: These conditions are Boiler MACT requirements (40 CFR Part 63, Subpart DDDDD). The Boiler MACT added new limits for PM, CO, HCl, and mercury as surrogates for various HAPs. Ecology also added the Boiler MACT requirements for performance tests, fuel analysis, operating limits, and startup and shutdown work practices.

- Condition D.1, Oxygen Blow Tank Vent: Ecology added the requirement to submit the VOC Method 25A Modified Test Results within 60 days of testing. This is a gap-filling measure to ensure that source test results are reported to Ecology and EPA in a timely manner.
- Condition E.1 for Nuisance Tower: Ecology provided clarification of the CAM requirements under 40 CFR Part 64, as it relates to the scrubber operating parameter.
- Condition E.2, Corrective Action at Nuisance Tower: This condition previously stated that the failure to take corrective action may result in violation of the underlying requirements. The determination of violation is based on the evaluation of available data to demonstrate compliance. In this renewal, Ecology clarified that a failure to take corrective action is a violation, unless compliance can be demonstrated by the applicable reference method.
- Condition F.1 for Mill Wide Emissions of Sulfur Dioxide: This condition has been reworded for clarity. Ecology included named sources subject to this limit, as noted in the Support Document. Ecology also clarified that this limit applies to any additional emission units/sources with an estimated output of more than one ton SO<sub>2</sub> per year.
- Condition G.1, Sulfite Pulping Group (MACT D): Ecology added the requirement for electronic submittal of the source test results to CEDRI, per 40 CFR 63.455.
- Section H, General MACT I Requirements: Ecology removed SSM requirements in condition H.1b, H2.a, and H2.b. Ecology also updated the general requirements for operations in H.1a, recordkeeping in H3.a and H3.b, and reporting in H4.a.
- Facility-Wide General Requirement #21: Ecology clarified that monitoring is required for periods when the emission units are in operation. No monitoring is required during periods when the unit is shutdown.
- Facility-Wide General Requirement #22: Requirements regarding Unavoidable Excess Emissions have been moved from #22 to #19 and #20, which were previously reserved. The language was also updated to reflect the September 16, 2018 rules updates to WAC 173-400-108 and -109. The rules were updated to remove the inferences to startup shutdown, and malfunction exemptions.
- Facility-Wide General Requirement #31, CEMS Data Recovery: Previously, this condition allowed up to 10% monthly data loss due to CEMS malfunction. This permit renewal will have more stringent requirements of no more than 5% monthly data loss and no more than 10% daily data loss, per on WAC 173-400-105. This condition also include addition performance specifications and reporting for the CEMS.
- Facility-Wide General Requirement #39, Compliance Certification: Previously, this condition incorrectly stated that compliance certification is not required for Insignificant Emission Units (IEUs) or activities if testing, monitoring, and recordkeeping are not

required. Ecology clarified that that Permittee may certify continuous compliance for IEUs or activities if there were no observed, documented, or known instances of noncompliance.

- Facility-Wide General Requirements #40: This requirement was formerly reserved. Ecology added in submittal requirements for source test results, to reflect the May 24, 2019 update of WAC 173-410. Ecology is requiring an electronic submittal via EPA's CEDRI or other approved reporting method.
- Appendix C, Forms and Algorithms: For reporting of mill wide SO<sub>2</sub> emissions (Condition F1), Ecology added a line for including SARA Title 304 Releases on the same form as other emissions.

## 11.0 COMPLIANCE ASSURANCE MONITORING (CAM) ANALYSES

According to EPA's *Technical Guidance Document: Compliance Assurance Monitoring, Revised Draft August 1998*, "Compliance Assurance Monitoring (CAM) is intended to provide a reasonable assurance of compliance with applicable requirements under the Clean Air Act (CAA) for large emission units that rely on pollution control device equipment to achieve compliance". (EPA 8/98)

Tables 5-9 below contain compliance assurance monitoring (CAM) applicability evaluations for each of the Permittee's emission units. Ecology reviewed CAM for each pollutant emitted from the respective units. Pollutants with no limits or standards are not subject to CAM (per 40 CFR 64.2(a)(1)). State-only limits or standards are not subject to CAM because they are not federally enforceable. Limits and standards may include emission rates, emission concentrations, work practices, process parameters, control device parameters, or operation and maintenance requirements. Record keeping, report submittals, and the use of good air pollution control practices are not considered limits or standards.

For these CAM evaluations, control devices are as defined in 40 CFR 64.1. Control devices do not include the use of low-polluting fuels or feedstocks, seal/lid/roof that prevent release of pollutants, or the use of combustion or other process design features or characteristics.

Exemptions from CAM are described in 40 CFR 64.2. 40 CFR 64.2(b)(1)(vi) exempts Part 70 and 71 emission limits or standards that are required to use continuous compliance determination methods to demonstrate compliance. Those methods must determine compliance with an emission limit or standard on a continuous basis, consistent with the averaging period established for the emission limit or standard, and provide data either in units of the standard or correlated directly with the compliance limit. Permit-specified CEMS or COMS are eligible for this exemption if the data are used to demonstrate compliance. If the CEMS or COMS data are used as indicators of compliance, this exemption does not apply. Gap-filling requirements for continuous compliance determination may not be adequate to qualify for this exemption.

**Table 5 Recovery Boilers Common Stack (AP-10) CAM Rule Applicability**

<b>Pollutant</b>	<b>Applicable emission limit of standard</b>	<b>Federally enforceable?</b>	<b>Use control device to comply with limit or standard?</b>	<b>Pre-controlled emission (tpy)*</b>	<b>Major source threshold (tpy)</b>	<b>Pre-controlled emissions <math>\geq</math> major source threshold (tpy)?</b>	<b>CAM applicable?</b>	<b>CAM exemption: Limit proposed after 11/15/90</b>	<b>CAM exemption: permit specifies continuous compliance determination method</b>	<b>CAM required?</b>
PM	0.10 gr/dscf @8% O <sub>2</sub>	YES	NO	2600	100	YES	NO	-	-	NO
PM (as opacity)	Average $\leq$ 35% for any 6 consecutive minutes in any one-hour period	YES	NO	2600	100	YES	NO	-	-	NO
SO <sub>2</sub>	800 ppm hourly average	YES	YES	1930	100	YES	YES	NO	YES	NO
TRS	17.5 ppm daily average	NO	-	80	100	-	NO	-	-	NO

\*For emissions with a control device, pre-controlled emissions is estimated using post-control device data and assumed efficiency of the control device.

**Table 6 Hogged Fuel Dryer (HD-14) CAM Rule Applicability**

<b>Pollutant</b>	<b>Applicable emission limit of standard</b>	<b>Federally enforceable?</b>	<b>Use control device to comply with limit or standard?</b>	<b>Pre-controlled emission (tpy)*</b>	<b>Major source threshold (tpy)</b>	<b>Pre-controlled emissions <math>\geq</math> major source threshold (tpy)?</b>	<b>CAM applicable?</b>	<b>CAM exemption: Limit proposed after 11/15/90</b>	<b>CAM exemption: permit specifies continuous compliance determination method</b>	<b>CAM required?</b>
PM	0.10 gr/dscf	YES	YES	136	100	YES	YES	NO	NO	<b>YES</b>
PM	10 lbs/hr	YES	YES	136	100	YES	YES	YES	NO	NO
PM (as opacity)	20% ave for 3 consec. min in any hour	YES	YES	136	100	YES	YES	NO	NO	<b>YES</b>
SO <sub>2</sub>	1000 ppm	YES	NO	< 100	100	NO	NO	-	-	NO

\*For emissions with a control device, pre-controlled emissions is estimated using post-control device data and assumed efficiency of the control device.

**Table 7 Hogg Fuel Boiler (PH-42) CAM Rule Applicability**

Pollutant	Applicable emission limit of standard	Federally enforceable?	Use control device to comply with limit or standard ?	Pre-controlled emission (tpy)*	Major source threshold (tpy)	Pre-controlled emissions $\geq$ major source threshold (tpy)?	CAM applicable?	CAM exemption: Limit proposed after 11/15/90	CAM exemption: permit specifies continuous compliance determination method	CAM required?
PM	0.1 gr/dscf @ 7% O <sub>2</sub>	YES	YES	721	100	YES	YES	NO	No	YES
PM (as opacity)	20% ave for 3 consec. min in any hour	YES	YES	721	100	YES	YES	NO	No	YES
PM	0.44 lb/MMBtu	YES	YES	721	100	YES	YES	YES	NO	NO
SO <sub>2</sub>	1000 ppm @ 7% O <sub>2</sub>	YES	NO	73	100	YES	NO	-	-	NO
HAPs (CO as surrogate)	3500 ppmvd @ 3% O <sub>2</sub>	YES	NO	625	100	YES	NO	-	-	NO
HAPs (HCl as surrogate)	0.022 lb/MMBtu	YES	NO	3.64	10	NO	NO	-	-	NO
Hg	5.7E-06 lb/MMBtu	YES	NO	0.62	10	NO	NO	-	-	NO

\*For emissions with a control device, pre-controlled emissions is estimated using post-control device data and assumed efficiency of the control device.

**Table 8 Oxygen Tank Blow Vent (BP-6) CAM Rule Applicability**

<b>Pollutant</b>	<b>Applicable emission limit of standard</b>	<b>Federally enforceable?</b>	<b>Use control device to comply with limit or standard?</b>	<b>Pre-controlled emission (tpy)*</b>	<b>Major source threshold (tpy)</b>	<b>Pre-controlled emissions ≥ major source threshold (tpy)?</b>	<b>CAM applicable?</b>	<b>CAM exemption: Limit proposed after 11/15/90</b>	<b>CAM exemption: permit specifies continuous compliance determination method</b>	<b>CAM required?</b>
VOCs	34 tpy as carbon basis	YES	NO	4.9	100	NO	NO	NO	NO	NO

**Table 9 Nuisance Tower (DB-26) CAM Rule Applicability**

<b>Pollutant</b>	<b>Applicable emission limit of standard</b>	<b>Federally enforceable?</b>	<b>Use control device to comply with limit or standard?</b>	<b>Pre-controlled emission (tpy)*</b>	<b>Major source threshold (tpy)</b>	<b>Pre-controlled emissions ≥ major source threshold (tpy)?</b>	<b>CAM applicable?</b>	<b>CAM exemption: Limit proposed after 11/15/90</b>	<b>CAM exemption: permit specifies continuous compliance determination method</b>	<b>CAM required?</b>
SO <sub>2</sub>	0.2 lbs/min on a 15-minute per average per ADUT from one digester dump	YES	YES	1092	100	YES	YES	NO	NO	YES

\*Pre-controlled emissions is estimated using post-control device data and assumed efficiency of the control device.

### CAM Applicability/Monitoring Details

As shown in the tables above, there are three pollutant specific emission units (PSEUs) that are subject to CAM. These are: 1) Particulate/opacity emissions at the Hogged Fuel Dryer; 2) Particulate/opacity emission at the Hogged Fuel Boiler; and 3) SO<sub>2</sub> emissions from the Nuisance Tower. For each of these PSEUs, 40 CFR 64.6 requires that the permit specify the following monitoring requirements:

- 1) The approved monitoring approach (including indicators to be monitored, the means or device for measuring the indicator, and the performance requirements for the monitoring device),
- 2) How an exceedance or excursion is defined for response and reporting purposes,
- 3) The obligation to conduct the required monitoring, and
- 4) Minimum data availability for valid data collection, if appropriate.

The following sections discuss the specific information included in the permit for each of the PSEU's to meet the aforementioned monitoring requirements. Each of the PSEU's use certain parameters to measure the performance of the control device. The use of such parameters as a measure of control device performance is consistent with both US. EPA's Region 10's interpretation of the applicability of periodic monitoring and with the intent of the Compliance Assurance Monitoring Rule (40 CFR Part 64), that a reasonable assurance of compliance can be demonstrated through a control device performance indicator. With respect to the rolling average annual or other long term limits, the monitoring ensures that the pollution control devices are operated in a manner that ensures that the source tests used to calculate the emissions are representative of the actual emissions.

For each parameter, the permit specifies the operating condition or conditions that will trigger the requirement for corrective action to restore operation of the control device to its normal or usual manner of operation as expeditiously as practicable. If corrective action is not taken, it may be considered a violation of the underlying requirements. In addition, if Ecology determines that acceptable corrective actions were not implemented, development of a quality improvement plan may be required.

The following sections also include additional information for any PSEU that is not subject to CAM due to fact that the pre-control emissions for the PSEU do not exceed the major source thresholds.

#### *Hogged Fuel Dryer PM/Opacity*

CAM at this PSEU is addressed under Ecology's approved Order DE 03AQIS-5813, which is incorporated into this permit. Particulate and opacity at the hogged fuel dryer are controlled by a baghouse. The approved monitoring approach uses bag leakage as the

indicator, which is monitored by the bag leak detection system. The leak detection system must be in accordance with EPA's 1997 guidance document EPA-454/R-98-015.

The leak detection system must be manufacturer-certified to detect leaks as low as 0.0044 gr/acf. Performance criteria also includes calibration, maintenance, and operations in accordance with manufacturer's written specifications.

Exceedance is defined as: 1) leak detection alarm engaged for more than 5 percent of operating time within a six-month block period; or 2) corrective action not initiated within 1 hour of leak detection alarm. Corrective actions are specified in the leak detection system SSM Plan. The Permittee must record each alarm, the alarm duration, time of corrective action, and description of corrective action.

The permit specifies the requirement to continuously monitor for bag leakage using the leak detection system. Reasonable assurance of compliance is demonstrated during the initial compliance test, source test at each permit term, and 2017-2018 Method 9 readings by done by both the Permittee (see in **Appendix B, Figure 3**) and Ecology during site inspections.

#### *Hogged Fuel Boiler PM/Opacity*

CAM at this PSEU is addressed by Ecology's approval Order No. DE 95AQ-I034, which is incorporated into this permit. Particulate emissions and opacity of the Hogged Fuel Boiler discharge plume are controlled by a venturi scrubber. Because the scrubber uses water to control the emissions, a COMS would not be an appropriate monitoring approach due to interference of water droplets. As an alternative, Ecology has approved the monitoring of scrubber recirculation flow rates and pressure drop ( $\Delta P$ ). These are performance indicators, based on the engineering principles of scrubbers.

The Order and the permit requires the Permittee to continuously monitor the flow rate and pressure drop at the scrubber. Exceedance is defined as one or both the following: 1) when the scrubber flow rate drops below 605 gpm; and/or 2) pressure drop across the scrubber is below 10 inch of water. The requirement to initiate corrective actions is an existing requirement under WAC 173-410-040(4) as good operation and maintenance. Reasonable assurance of compliance is supported by good engineering judgement and demonstrated by quarterly source tests and Method 9 readings by the Permittee. Cosmo conducted 66 Method 9 readings during the last two years of the permit cycle, from 2017 to 2018. The flow rate and pressure drop monitoring indicated compliance and detected non-compliance, as was the case of an opacity violation in September 27, 2019 (see Method 9 results in **Appendix B, Figure 4**).

#### *Oxygen Blow Tank Vent VOCs*

According to 2017 and 2018 AIE data, the combined bleach plant VOCs emissions without controls were 4.9 and 5.0 tpy respectively, compared to the major source threshold of 100 tpy. These emissions rates were based on Cosmo's calculations using site-specific emission factors. The oxygen blow tank vent is a part of the combined bleach plant emissions,

therefore its potential to emit is no more than 4.9 tpy and below the major source threshold of 100 tpy. Therefore, CAM does not apply to this PSEU.

Nuisance Tower SO<sub>2</sub>

CAM at this PSEU is addressed by Ecology's April 5, 1999 approval of Cosmo's proposed monitoring plan. The Permittee uses a wet scrubber to control SO<sub>2</sub> emissions. Scrubber flow was approved as the performance indicator, based on the engineering principles for wet scrubbers. The permit requires the Permittee to monitor scrubber flow continuously. Exceedance is defined as 15-minute average scrubber flow rate drop below 150 gpm. If the exceedance occurs, the Permittee must also take corrective actions, including no dumping of digester or vent during an acid fill, except for safety reasons only. Reasonable assurance of compliance has been demonstrated during the July 10, 1984 study and monthly source tests by the Permittee.

### Appendix A - Site Information



Figure 1 Cosmo Specialty Fibers Site View

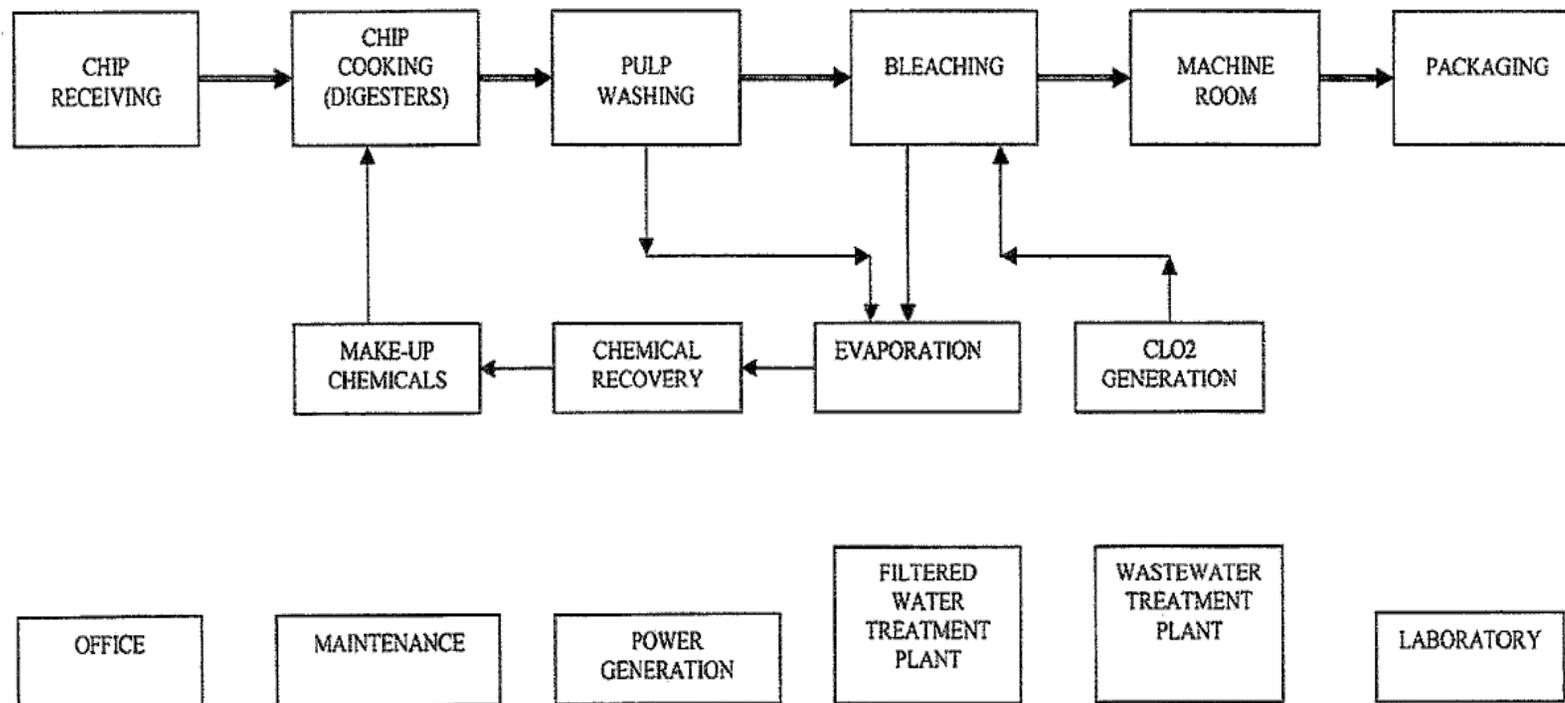
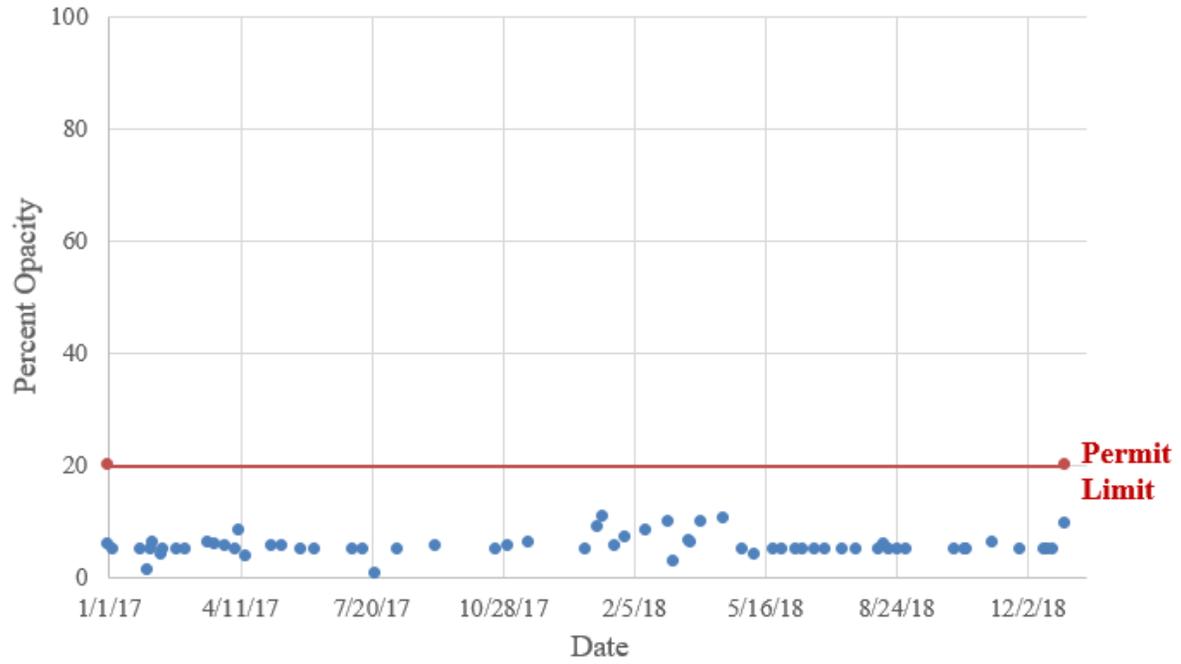
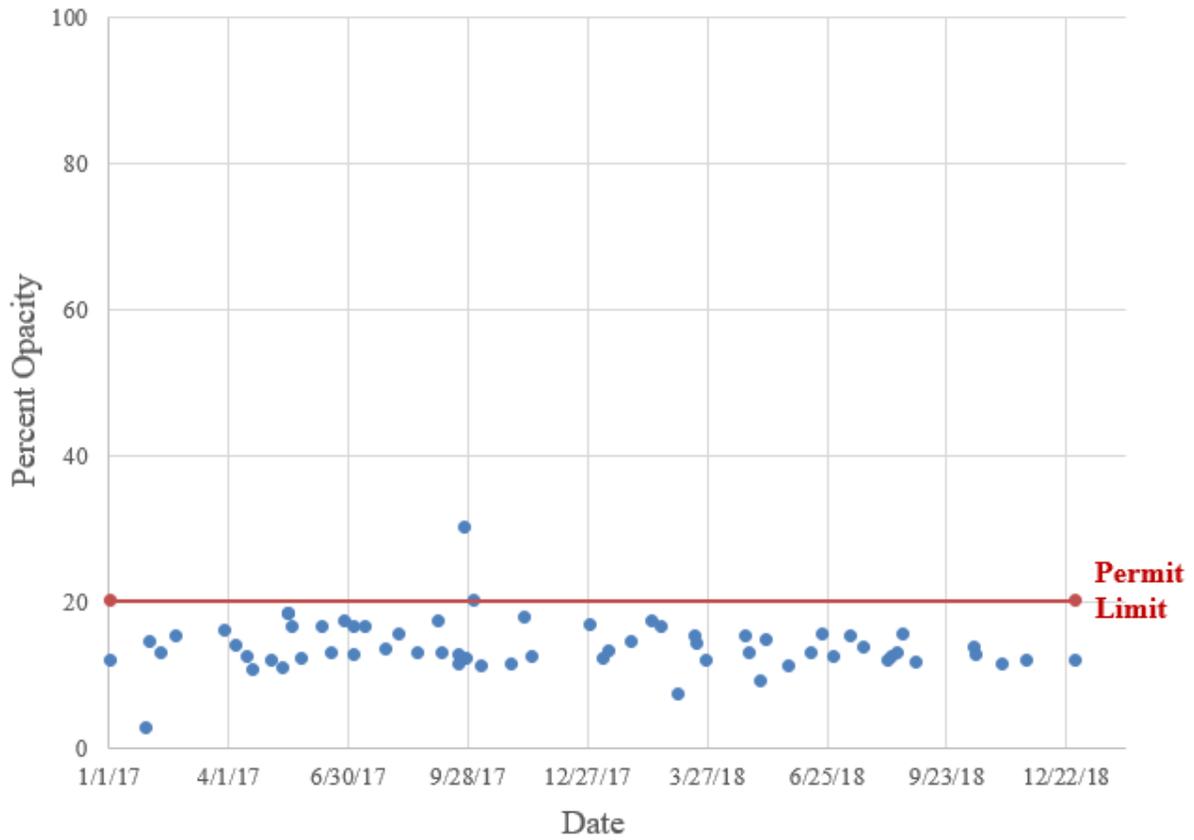


Figure 2 Pulp Mill Process Diagram

### Appendix B - Emissions Data



**Figure 3 Hogged Fuel Dryer Method 9 Results**



### Appendix C - Emission Calculation Algorithm

Permit Condition D1: Volatile organic compound emission algorithm		
EPA Method 25 A Modified		mg VOCs carbon/liter
Emission factor (see General Algorithm)		lbs VOC C/ADUT
Volatile organic compounds (see General Algorithm)		lbs VOC C/yr
<b>General Algorithm:</b>		
Emission factor (lbs VOC C/ADUT) = concentration (mg VOC C/L) × 28.32 L/CF × gram/1000 mg × lb/454 gram × air flow by EPA Method 2 (CF/minute) × 60 minutes/hour × [1/ production (hour/ADUT)]		
lbs VOCs (on a carbon basis)/yr = Annual average daily production (ADUT/day) × emission factor (lbs VOCs/ADUT) × number of operating days/yr		

Permit Condition F1: Mill-wide emissions algorithm		
<b>PULPING GROUP</b>		
DB-26: Nuisance Tower Vent (EPA Method 6 modified)		lbs SO <sub>2</sub> / ADUT
BS-7: No. 1, 2, & 3 BSW vent		lbs SO <sub>2</sub> / ADUT
BS-6: No. 4 BSW & Knotter vent		lbs SO <sub>2</sub> / ADUT
<b>POWER &amp; RECOVERY (see General Algorithm)</b>		
AP-10: Recovery Boilers Combined Stack (EPA Method 6C)		lbs SO <sub>2</sub> / ADUT
<b>COMBINED IEUs CONTRIBUTION (attach Unit Specific Historical Emission Factor)</b>		
Estimated collective IEU's contribution		lbs SO <sub>2</sub> / ADUT
<b>SARA TITLE 304 RELEASE</b>		
SARA Title 304 Release		lbs SO <sub>2</sub> / ADUT
<b>COMBINED LOADING</b>		
<b>TOTAL</b>		lbs SO <sub>2</sub> / ADUT
(Sum of Pulping Group, Power & Recovery, Combined IEUs Contribution)		
<b>General Algorithm:</b>		
$\text{lbs SO}_2/\text{ADUT} = \frac{(\text{ppm SO}_2) \times (64 \text{ lbs SO}_2/\text{lb mole}) \times \text{flow (dscf/min)} \times (1,440 \text{ min/day})}{(1,000,000) \times (385.4 \text{ ft}^3/\text{lb mole @ 20}^\circ\text{C}) \times \text{Production (daily ave ADUST)}}$		

**Appendix D – Streamlining Multiple Requirements**

<b>Condition</b>	<b>Requirements</b>	<b>Clarification</b>
A.2	<p><i>Order DE 95AQ-I034:</i> The opacity for recover boilers no.1, no. 2, and no. 3, shall average less than 35 percent during any six (6) consecutive minutes in any one-hour period.</p> <p><i>WAC 173-410-040(3):</i> No person shall cause or allow the emission of a plume from a recovery system or acid plant which has an average opacity greater than 35%, for more than six consecutive minutes in any sixty minute period, except as allowed by statute under RCW 70.94.331(2)I.</p> <p><i>WAC 173-410-062(5):</i> Each mill shall...establish a program approved by Ecology for continuous opacity monitoring, to demonstrate compliance with WAC 173-410-410(3) and report the results to Ecology in a format and on a schedule set by regulatory order. If equipment for continuous monitoring of opacity is not available, continuous monitoring of operating parameters may be required as an alternate until continuous opacity monitoring equipment is available.</p>	<p>Both limits are the same. The permit imposes the regulatory limit of 35 percent.</p> <p>Further, WAC 173-410-040(3) is part of the state implementation plan (SIP) and is therefore federally enforceable – with the exception defined in WAC 173-410-040(3), as not part of the SIP.</p>
B.1	<p><i>Order DE 95AQ-I034:</i> The opacity shall average less than 20 % for any consecutive three minutes period in any one hour.</p> <p><i>WAC 173-400-040(1):</i> No person shall cause or permit the emission for more than three minutes, in any one hour of an air contaminant from any emission unit, which at the emission point, or within a reasonable distance of the emission point, exceeds 20% opacity.</p>	<p>Both are the same. The permit imposes the regulatory limit of 20 percent. The limit is federally enforceable. The minimum operational parameter is to be used as an indicator of continuous operations of the pollution control equipment. It is also federally enforceable.</p>
B.3a	<p><i>Order DE 95AQ-I034:</i> Particulate shall be less than 0.1 gr/dscf uncorrected for oxygen.</p>	<p>The system is not considered as a combustion source; its purpose is to dry hogged</p>

Condition	Requirements	Clarification
	<p><i>WAC 173-410-040(2)(c)(iii):</i> The emissions of particulate from emission units other than the acid plant or the recovery system shall not exceed the following maximums: (iii) 0.23 grams/dry cubic meter at standard conditions (0.1 gr/dscf) corrected to seven percent oxygen in case of combustion units, for units not classified under (c)(i) or (ii) of this section.</p>	<p>fuel. Air brought in from outside conditions and cools the flue gases to operational levels. Thus, correction to 7 percent oxygen is not required by WAC 173-400-050(3). The particulate value could become indeterminate with the oxygen correction. The permit imposes the limit from the Order of 0.1 gr/dscf uncorrected for oxygen. The limit is federally enforceable.</p>
C.1a.	<p><i>Order DE 95AQ-I034:</i> The opacity shall average less than 20 % for any consecutive three minutes period in any one hour.</p> <p><i>WAC 173-400-040(2):</i> No person shall cause or permit the emission— for more than three minutes, in any one hour— of an air contaminant from any emission unit, which at the emission point, or within a reasonable distance of the emission point, exceeds 20% opacity.</p>	<p>Both are the same. The permit imposes the regulatory limit of 20 percent. The limit is federally enforceable.</p>
C.3.	<p><i>Order DE 95AQ-I034:</i> Particulates shall be less than 0.1 gr/dscf corrected to O<sub>2</sub>.</p> <p><i>WAC 173-410-040(2)I(iii):</i> The emission of particulates from emissions units other than the acid plant or recovery system, shall not exceed the following maximums: (iii) 0.23 grams per dry cubic meter at standard conditions (0.1 gr/dscf), corrected to seven percent oxygen in the case of combustion units, for units not classified under I (i) or (ii) of this section.</p>	<p>Both are the same. The permit imposes the regulatory limit of 0.1 gr/dscf. The limit is federally enforceable.</p>
F.1.	<p><i>Order DE 95AQ-I034:</i></p>	<p>Both are the same. The permit imposes the regulatory limit of 20</p>

<b>Condition</b>	<b>Requirements</b>	<b>Clarification</b>
	<p>The mill's emissions of sulfur dioxide shall not exceed a daily average of 20 lbs in each air-dried unbleached ton (ADUT) of pulp.</p> <p><i>WAC 173-410-040(1)(a):</i>                      The total average daily emissions from a sulfite pulping mill, or portion of a sulfite pulping mill which practices incineration of the spent sulfite liquor, shall not exceed ten grams of sulfur dioxide per kilogram (20 lbs./ton) of air dried bleached pulp produced.</p>	<p>lbs/ADUT. The limit is federally enforceable.</p>
<p>Facility Wide                      General                      Requirements                      #31</p>	<p>This condition consists of two separate statements. The first paragraph repeats the cited regulation. The second part is based on what Ecology considers an unlikely but possible scenario where recorded monitoring data is simply lost. Ecology will allow a 90% recovery rate for monitoring data if the Permittee provides an adequate explanation for the cause of the lost data. Ecology expects the Permittee to make every reasonable effort to maintain the integrity of all monitoring results.</p>	<p>An allowance specified for missing monitoring results under certain conditions are not defined as violations, thus reducing the administrative burden on the permitting authority.</p>

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## **Appendix E - Response to Comments**