City of Vancouver – Westside Water Treatment Plant

Title V Basis Statement
SW97-1-R2A

August 27, 2020

Southwest Clean Air Agency
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PLANT SITE:	City of Vancouver Westside Water Reclamation Facility 2323 W Mill Plain Boulevard Vancouver, WA 98660
PERMIT ENGINEER:	John St.Clair, Air Quality Engineer II
REVIEWED BY:	Paul T. Mairose, Chief Engineer Uri Papish, Executive Director

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I. GENERAL INFORMATION and CERTIFICATION

Company Name	City of Vancouver
Plant/Facility Name	Westside Wastewater Treatment Plant
Facility Address	2323 W Mill Plain Boulevard Vancouver, WA 98660
Mailing Address	PO Box 1995 Vancouver, WA 98668-1995
Parent Company/Address	City of Vancouver PO Box 1995 Vancouver, WA 98668-1995
Unified Business Identification	065-001-364
Standard Industrial Classification	4952
North American Industrial Classification System	221320

Basis for Title V Applicability

The Westside Wastewater Treatment Plant (WSWTP) is a municipal wastewater treatment facility operated by the City of Vancouver; the City also operates the Marine Park Wastewater Treatment Plant and an industrial pretreatment lagoon. WSWTP includes a fluidized bed incinerator (FBI), a sewage sludge incineration (SSI) unit, which burns sludge generated from the two treatment facilities. Section 129(e) of the Federal Clean Air Act obligates a facility subject to a New Source Performance standard (NSPS) applicable to a solid waste incinerator to operate under aTitle V Air Operating Permit (AOP) within 36 months of the promulgation of the NSPS. On March 21, 2011, 40 CFR 60 Subpart MMMM (§60.5000 *et seq.*) "Emission Guidelines and Compliance Times for Existing Sewage Sludge Incineration Units" was promulgated by the EPA and a Title V permit application was due by March 21, 2014. WSWTP submitted their application on February 26, 2014. This Subpart directs the State or EPA to promulgate a state or federal model rule that applies to SSIs. Because Washington State did not exercise its option for a state model rule, WSWTP is required to comply with the EPA federal model rule under 40 CFR 62 Subpart III. SWCAA has not yet been delegated authority to implement the federal rule, therefore, none of the requirements are included in the AOP. The following are the potential-to-emit (PTE) totals for the regulated pollutants at the WSWTP facility:

Pollutant	PTE (tpy)
NO_x	40.48
CO	26.44
VOC	72.45

Pollutant	PTE (tpy)
SO_2	15.75
PM	7.98
PM_{10}	7.96
$PM_{2.5}$	7.95
lead	0.23
HAP (combined)	1.71
CO_2e	51,001

WSWTP is not a major source, but it is required under §129 of the FCAA to obtain a Title V AOP. Under EPA source definitions, WSWTP is an area source. Since the facility is not a major source, it is also not subject to CAM.

Current Permitting Action

The action is taken as an administrative amendment under WAC 173-401-720 to incorporate the terms of the minor New Source Review action under Air Discharge Permit (ADP) 18-3302, to correct typographical errors, and identify more frequent monitoring or reporting requirements.

In order to meet a "substantially equivalent" permitting process under WAC 173-401-720(1)(e), SWCAA provided a 45-day public comment period to the public, Affected States, and EPA on ADP 18-3302 beginning on September 4, 2018 and again on April 23, 2020 to incorporate additional minor changes. The final ADP 18-3302 was issued on June 18, 2020. An administrative amendment request by WSWTP was received by SWCAA on November 11, 2018 under WAC 173-401-720 to incorporate the terms of ADP 18-3302, to correct typographical errors, and identify more frequent monitoring or reporting requirements. The expiration date on the AOP will not change because of this final action; ADP 18-3302 does not expire under WA State regulations.

AOP SW97-1-R2A (Administrative Amendment)

1. Preliminary draft of ADP 18-3302 Issued:	September 4, 2018
2. Preliminary draft of ADP 18-3302 Issued (revised):	April 28, 2020
3. Public comment period ended:	June 12, 2020
4. Final draft of ADP 18-3302 Issued:	June 18, 2020
5. Request for Administrative Amendment:	November 1, 2018
6. Final Permit Issued:	August 27, 2020
7. Permit Expiration:	January 25, 2021

Attainment Area

WSWTP is located within the Portland-Vancouver ozone and CO maintenance area. The maintenance area was re-designated to attainment for CO in October 1996 and for ozone in April 1997. The area is in attainment for all other pollutants.

Facility Description

The City of Vancouver owns two wastewater treatment facilities and one industrial pretreatment lagoon in Vancouver, Washington near the Columbia River. The facilities are referred to as the Marine Park Wastewater Treatment Plant (MPWTP) and the Westside Wastewater Treatment Plant (WSWTP). In 2016, the City of Vancouver entered into a contract with Jacobs, Inc. to operate

these facilities. This permitting action is only for the WSWTP and the lagoon. The MPWTP operates under its own ADP.

The WSWTP provides treatment for municipal wastewater and has on-site sludge incineration capabilities. The facility's hydraulic capacity is 28.26 million gal/day (MGD), calculated as a maximum monthly flow. For 2017, the facility's average annual flow was 10.3 MGD. The facility performs primary treatment in primary clarifiers, secondary treatment by activated sludge and secondary clarifiers, and disinfection by ultraviolet radiation. Residual primary solids are degritted, thickened and stored. Excess organic matter, called Waste Activated Sludge (WAS), is transferred ("wasted") to the WAS tank or to the gravity belt thickeners, with the option of conditioning in an aeration basin. The WAS and solids are mixed, thickened with gravity belt thickeners, and dewatered with a centrifuge. The facility operates a sewage sludge incinerator (SSI) as its primary means of solids disposal. Foul odors from various plant processes are collected and treated in a packed tower scrubber for hydrogen sulfide gas removal.

II. EMISSION UNIT DESCRIPTIONS

EU No.	Generating Equipment or Activity	No. of Units	Control Equipment	No. of Ctrls
01	Fluidized Bed Incinerator, US Filter/Zimpro	1	Venturi scrubber, Tray Scrubber, Mist Eliminator, and Mercury Control Module	4
02	Sand Silo	1	Bin Vent Filter	1
03	Air Treatment System, Packed Tower Scrubber	1	Packed Tower Wet Scrubber and Mist Eliminator	1
04	Wastewater Treatment Fugitives	1	None	N/A
05	Emergency Generator Engine #1, 1005 bhp Caterpillar Model 3508	1	Ultra-low Sulfur Fuel Oil	1
06	Emergency Generator Engine #2, 1005 bhp Caterpillar Model 3508	1	Ultra-low Sulfur Fuel Oil	1
07	Emergency Generator Engine #3, 1095 bhp Caterpillar Model 3508	1	Ultra-low Sulfur Fuel Oil	1
08	Emergency Pump Engine #1, 2100 bhp, Caterpillar model C-15	1	Ultralow Sulfur Fuel Oil	1
09	Emergency Pump Engine #2, 2100 bhp, Caterpillar model C-15	1	Ultralow Sulfur Fuel Oil	1
10	Industrial Pre-treatment Lagoon	1	Aerators	N/A

EU-01: Fluidized Bed Furnace

The FBI is a custom designed unit engineered by U.S. Filter/Zimpro (Fig. 1). The unit is configured as a vertically oriented shell in which a bed of hot sand, approximately 60" thick, is mixed with sludge and simultaneously fluidized by injected air at pressures from 20–35 kPa. The combustor bed is 5 ft high with a 16-ft inside diameter. The preheat burner is rated at 8.0 MMBtu/hr and is fueled on natural gas or fuel oil. The unit is designed to combust up to 16,100 lb/hr (31.5 gpm) of wet sludge at 26–28% solids content, which contains a mixture of primary solids, waste activated sludge, and scum. The sludge is mixed with about 7,300 scfm of combustion air which exits the combustor at 1,550 °F and produces about 1,000 lb/hr of ash.

Uncontrolled byproducts of combustion are estimated at 40% excess air. Design value for exhaust from the bed is estimated at 15,500 acfm (at 200 °F, 3.0% H_2O, and 7.0% O_2) with plume suppression. Exhaust gases from the FBI are used to preheat the fluidizing air to 1,000 °F while cooling the exhaust air to 1,150 °F using a shell and tube heat exchanger from American Schack and is routed to a second heat exchanger where plume suppression air is used to further cool the exhaust

gases. Hot plume suppression air is designed to be injected at 3,580 dscfm into the stack to heat the exhaust gases (post air pollution controls) to increase plume rise and eliminate the condensate plume (plume suppression). Exhaust from the second heat exchanger is routed to a pre-cooler with a water flow rate of 53 gpm, which is then routed to an Emtrol (s/n 40172W20-1604-2) damper type variable throat Venturi scrubber. The scrubber is designed to operate at a minimum pressure drop of 40 iwc at 140 gpm of scrubber water. Discharge from the Venturi scrubber is routed to an Emtrol tray scrubber equipped with four trays and a mist eliminator.

The EnviroCare Mercury Control Module (MCM) is located upstream of the plume suppression air entry. It consists of 12 modules, arranged in layers of four, that contain sheets of vertically oriented sorbent material. Also installed as part of the MCM is a small (5 hp) blower and piping designed to convey 200 ft^3 of hot air from the plume suppression duct and into an air distribution manifold at the bottom (flue gas entry) of the MCM vessel. The hot air is expected to increase the temperature of entering flue gas from 70 °F up to 80 °F, reducing the relative humidity of the flue gas stream from 100% to 90%, and thereby preventing moisture from condensing on the sorbent sheets (condensed moisture blocks active sorption sheet sites from adsorbing mercury). The pressure drop across the entire scrubber system, including the MCM, is expected to be at a minimum of 45 iwc. A mist eliminator is located upstream of the MCM. The mist eliminator consists of four prefabricated sections about 8" in depth and is designed to entrain water droplets to prevent them

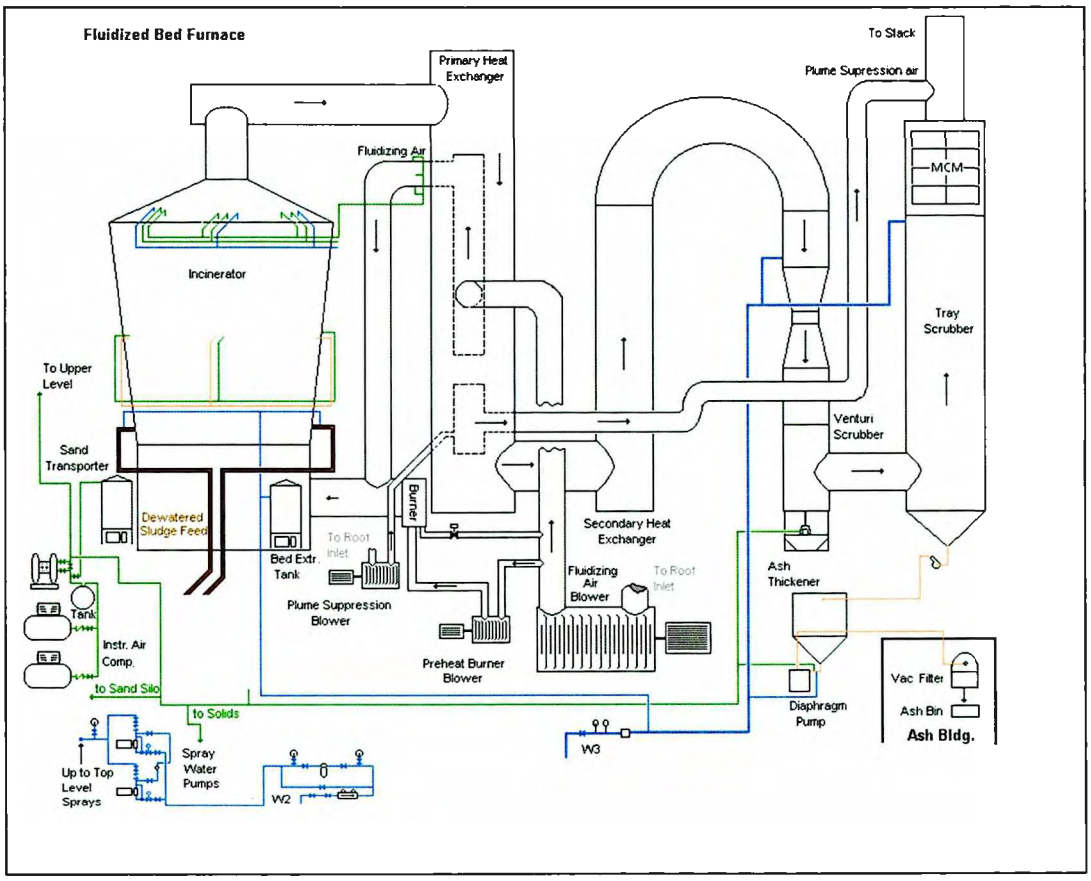

Fig. 1: Schematic showing the components of the FBI and its air pollution control equipment.

from impacting the MCM. Existing water spray lances will periodically wash the mist eliminator, dropping the water back into the tray scrubber.

A continuous emission monitoring system (CEMS) for carbon monoxide (CO) and O_2 has been installed upstream of the introduction of the plume suppression air. Exhaust from the FBI and control system is discharged vertically.

Normal Operation

The normal operation of the FBI consists of several operating modes, which occur over the course of a week. The modes follow this pattern and are described below:

Normal operation (on a weekly basis)

HEAT-TO-BURN → START-UP → BURN EVENT → HEAT TO BOTTLE → BOTTLE

Heat-to-Burn Mode

At the beginning of the workweek, the FBI "bottle" is breached during which the FBI is readied for introduction of the stored sludge. During this operating mode, the incinerator is heated using fuel oil to 1,400 °F; a temperature greater than 1,330 °F is needed for good combustion of the sludge. Below 1,400 °F, CO levels will often be high and erratic. Depending upon how much temperature loss occurred over the weekend, this mode may last from 2–4 hours, up to 7 hours. During this process the FBI blower, the Venturi scrubber, the tray scrubber, and the MCM are all operational, but not at maximum operating levels. Sludge is not being introduced into the FBI.

Start-up Mode

Once the FBI is up to temperature, sludge is fed into the FBI, supplemental fuel oil is added as necessary to keep the energy content of the fuel mixture consistent. Fuel oil flow may be tapered off at any time once the energy content of the sludge becomes sufficient to be self-sustaining, however, fuel oil may be added in the case of wet or low-energy content sludge. The start-up period is defined as the two-hour period which begins with the first operation of the sludge feed pump and ends when two clock hours of sludge feed have elapsed. This operating mode begins with the feed of the sewage sludge from the pumps to the FBI for continued operations within the operating constraints; a clock hour of operation is the period of sixty (60) consecutive minutes starting at minute zero of the hour.

Burn Event Mode

Within 10–30 minutes of starting up, freeboard temperatures will typically exceed 1,400 °F and the CO level will become low and stable. During Burn Event Mode, the FBI is being fired almost exclusively on sludge combusting within the sand bed at temperatures that range from 1,300–1,500 °F. Air, sludge, and supplemental fuel are used to maintain bed temperatures. Operators work toward burning sludge without the use of supplemental fuel to minimize emissions and provide an economical operation. The FBI is operated most frequently in the Burn Event Mode.

Heat to Bottle Mode
At the end of each calendar week, sludge flow to the FBI is stopped and is routed to storage over the weekend. With no sludge being fed to the FBI, fuel oil is burned during the Heat to Bottle Mode to increase the temperature of the FBI to a maximum of about 1,560 °F. Once a temperature maximum is reached, no additional fuel is supplied to the FBI. Over the next few days, the internal FBI temperature will decrease, but will not cool to the extent that large quantities of fuel oil will be needed to initiate the Heat-to-Burn Mode.

Bottle Mode
Bottling the incinerator is necessary to prevent the loss of heat between burn events. Bottling usually occurs over weekends. No pollutants are emitted during bottling since there is no fuel being combusted.

Annual Maintenance
At least once annually, the FBI goes into a Cold Shutdown Mode. In this mode, the temperature is decreased at a controlled rate using natural gas until the interior temperature is at ambient; this process takes about 3–4 days. Once the FBI is at ambient temperature, maintenance and repair activities can be performed on the internal components of the FBI. Once all maintenance and repair activities are completed, the FBI is operated in Cold Start-Up Mode, where it is fired on natural gas to increase the temperature, again at a controlled rate, up to about 1,400 °F to prepare to operate the FBI in Heat-to-Burn Mode. During annual maintenance, the FBI operates through the following modes:

Annual Maintenance Operation (once per year)
COLD SHUTDOWN → COLD START-UP → HEAT-TO-BURN

Other Operations
The FBI can also be operated under the following four maintenance modes, which typically do not have significant emissions:

- differential pressure test;
- sand addition;
- CEMS calibration/blow back; and
- sand extraction.

EU-02: Sand Silo
The sand silo is used to store make-up sand for the FBI (Fig. 2). A passive bin vent filter is on the silo's exhaust. C.P. Environmental Filters, Inc. manufactured this shaker-type bag filter used to control particulate emissions from the transfer of sand from trucks to the silo. The filter is designed to control 500 acfm and has a filtration area of 295 ft². Emissions from transfer are estimated at less than 50 lb/yr of PM. The sand contains less than 1% of 70 mesh or smaller material and the filter's efficiency is greater than 99%.

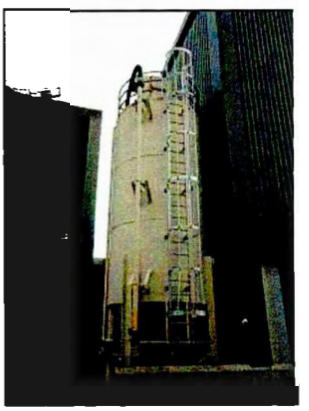

Fig. 2: The sand silo is located along the FBI building western edge.

EU-03: Air Treatment System

Odors from the influent pump station, primary processes, sludge handling processes, and sludge storage are captured by the ATS and routed to a packed tower scrubber (Fig. 3). The scrubber system consists of a scrubber tower, media with support grating, mist eliminator, internal piping, liquid distributors, and all necessary accessories. The system was engineered by HDR, Inc.

Fig. 3: The odor control scrubber.

The packed tower scrubber treats odorous air evacuated from the raw sewage pump station headworks (3,550 acfm), the grit handling building (2,800 acfm), primary clarifier scum boxes, primary effluent launders, feed wells, and flow distribution box (12,650 acfm capacity), sludge storage tank and ash handling building (1,000 acfm), and gravity thickeners (12 air changes/hr). Air from these sources can combine to as much as 33,900 acfm (maximum design capacity) of foul air. The scrubber achieves removal of odorous compounds by providing a large air/water interface for absorption into the liquid phase. The maximum water flowrate for this unit is 450 gpm and a maximum pressure drop of 4 iwc. The recirculation flow is continuously analyzed for oxidation reduction potential (ORP) and pH. ORP is a measure of the tendency of a chemical species to acquire electrons and thereby be reduced. Sodium hypochlorite (NaOCl) and sodium hydroxide (NaOH) are used to maintain optimum levels of ORP and pH. The addition of these chemicals is automated but can be done manually as well. Within a pH range of 9–12, the water chemistry favors the bisulfide ion (HS^-) in solution over hydrogen sulfide (H_2S); above pH 12, the reaction begins to favor precipitation of elemental sulfur. In general, the reaction is:

$$H_2S + 4\,NaOCl + NaOH \longrightarrow Na_2SO_4 + 4\,NaCl + 2\,H_2O$$

The packed tower scrubber is also equipped with a mist eliminator and the manufacturer states that the scrubber has 99.9% control efficiency.

EU-04: Wastewater Treatment Fugitives

As part of previous permitting actions performed for the WSWTP, fugitive emissions from the facility were determined using modeled results at the facility. Using these factors represents a reasonable approach for calculating fugitive emissions from the facility.

EU-05, EU-06, and EU-07: Emergency Generator Engines #1, #2, and #3

These generator engines were installed as backup power to the influent pump station, plant lighting, and drives for the primary and secondary clarifiers. The engines are subject to 40 CFR 63 Subpart ZZZZ.

EU-08 and EU-09: Emergency Pump Engines #1 and #2

These fuel oil-fired pumps provide backup pumping in the event of failure or required maintenance of the influent pumps housed in the influent pump station. The engines are mounted on a pad with the pump and are capable of pumping 11,900 gal/min into the treatment plant process. Each pump provides up to 17.1 MGD pump service in cases of failure of the plant's influent pumps, whether

by utility electrical power failure combined with on-site emergency generator power failure, or mechanical failures such as air-locked pumps.

EU-10: Industrial Pretreatment Lagoon

The Industrial Pretreatment Lagoon, a roughing lagoon, was built in 1979 to pretreat food-processing wastewater prior to sending it to the WSWTP for final treatment. The Lagoon is designed to treat 3.2–4.7 MGD long term peak flow (dry to wet weather flow, respectively) from various food processing and industrial facilities in the area. The wastewater has a design capacity of about 31,000 lb/day BOD_5 and 20,000 lb/day total suspended solids (monthly average). It consists of two three-acre aeration cells followed by one 14-acre settling cell. The lagoon occupies 20 acres of a 23-acre site and has a total volume of about 88 million gallons. Other structures located on the premises include two 5,900-gal aqueous ammonia tanks, one 4,200-gal phosphoric acid tank, and a blower building.

At least once every one to two years, the solids that have settled to the bottom of the lagoon are collected through an automatic pump system. The solids are piped to agricultural land nearby and sprayed on land where waterfowl forage is grown as part of a larger wetlands reclamation project. The solids are registered with the Washington Department of Agriculture as an organic fertilizer.

III. EXPLANATION OF INSIGNIFICANT EMISSION UNIT DETERMINATIONS

Each emission unit listed as insignificant in the permit application has been reviewed by SWCAA to confirm its status. Identification of an emission unit as insignificant does not exclude the unit or activities from requirements under the Permit. Emission units were determined to be insignificant by SWCAA as follows:

IEU1. Categorically Exempt Insignificant Emission Units.
The following activities have been determined to be present at the WSWTP, but are categorically exempt under WAC 173-401-532:

- Lubricating oil storage tanks [WAC 173-401-532(3)];
- Storage tanks, reservoirs and pumping and handling equipment of any size, limited to soaps, lubricants, hydraulic fluid, vegetable oil, grease, animal fat, aqueous salt solutions or other materials and processes using appropriate lids and covers where there is no generation of objectionable odor or airborne particulate matter [WAC 173-401-532(4)];
- Pressurized storage of oxygen, nitrogen, carbon dioxide, air, or inert gases [WAC 173-401-532(5)];
- Vents from continuous emissions monitors and other analyzers [WAC 173-401-532(8)];
- Internal combustion engines for propelling or powering a vehicle [WAC 173-401-532(10)];
- Plant upkeep including routine housekeeping, preparation for and painting of structures or equipment, re-tarring roofs, applying insulation to buildings in accordance with applicable environmental and health and safety requirements and paving or stripping parking lots [WAC 173-401-532(33)];
- Cleaning and sweeping of streets and paved surfaces [WAC 173-401-532(35)];
- Steam cleaning operations [WAC 173-401-532(39)];
- Portable drums and totes [WAC 173-401-532(42)];
- Lawn and landscaping activities [WAC 173-401-532(43)];
- Comfort air conditioning or air-cooling systems, not used to remove air contaminants from specific equipment [WAC 173-401-532(46)];
- Natural and forced air vents and stacks for bathroom/toilet facilities [WAC 173-401-532(48)];
- Office activities [WAC 173-401-532(49)];
- Personal care activities [WAC 173-401-532(50)];
- Sampling connections used exclusively to withdraw materials for laboratory analyses and testing [WAC 173-401-532(51)];
- Firefighting and similar safety equipment and equipment used to train firefighters excluding fire drill pits [WAC 173-401-532(52)];
- Fuel and exhaust emissions from vehicles in parking lots [WAC 173-401-532(54)];
- Carving, cutting, routing, turning, drilling, machining, sawing, surface grinding, sanding, planing, buffing, shot blasting, shot peening, sintering, or polishing: Ceramics, glass, leather, metals, plastics, rubber, concrete, paper stock or wood provided that: [WAC 173-401-532(55)];
- Sample gathering, preparation and management [WAC 173-401-532(73)];

- Repair and maintenance activities, not involving installation of an emission unit and not increasing potential emissions of a regulated air pollutant [WAC 173-401-532(74)];
- Handling equipment and associated activities for glass and aluminum which is destined
- Batteries and battery charging [WAC 173-401-532(77)];
- Solid waste (as defined in the Washington Administrative Code) containers [WAC 173-401-532(79)];
- Totally enclosed conveyors [WAC 173-401-532(86)];
- Air compressors, pneumatically operated equipment, systems, and hand tools [WAC 173-401-532(88)];
- Vacuum systems exhausts [WAC 173-401-532(108)];
- Sludge dewatering and handling [WAC 173-401-532(114)];
- Polymer tanks and storage devices and associated pumping and handling equipment used for solids dewatering and flocculation [WAC 173-401-532(117)];
- Non-PCB oil filled circuit breakers, oil filled transformers and other equipment that is analogous to, but not considered to be, a tank [WAC 173-401-532(118)];
- Electric or steam-heated drying ovens and autoclaves [WAC 173-401-532(119)]; and
- Sewer manholes, junction boxes, sumps and lift stations associated with wastewater treatment systems [WAC 173-401-532(120)].

IEU2. Units and Activities Defined as Insignificant on the Basis of Size or Production Rate.
The following units and activities have been determined to be present at the WSWTP, but are categorically exempt under WAC 173-401-533:

- Operation, loading and unloading of VOC storage tanks (including gasoline storage tanks), 10,000-gal capacity or less and vapor pressure not greater than 80 mm Hg at 21°C (69.8°F): One 10,000-gal fuel oil tank for FBI;
- Welding using not more than one ton per day of welding rod [WAC 173-401-533(2)(i)];
- Surface coating, using less than two gallons per day [WAC 173-401-533(2)(q)];
- Space heaters and hot water heaters using natural gas, propane or kerosene and generating less than five million Btu/hr [WAC 173-401-533(2)(r)];
- Tanks, vessels, and pumping equipment, with lids or other appropriate closure for storage or dispensing of aqueous solutions of inorganic salts [WAC 173-401-533(2)(s)]:
  - One 6,000-gal sodium hydroxide solution storage tank;
  - Two 9,400-gal sodium hypochlorite solution storage tanks;
  - One 6,500-gal urea ammonium nitrate storage tank (industrial pretreatment lagoon); and
  - One 4,200-gal phosphoric acid tank (industrial pretreatment lagoon); and
- Cleaning and stripping activities and equipment, using solutions having less than one percent VOCs by weight [WAC 173-401-533(2)(z)].

IEU3. Insignificant Emission Units based on Emission Thresholds
An emission unit or activity shall be considered insignificant if actual emissions of all regulated air pollutants from a unit or activity are less than the emission thresholds established in WAC 173-401-530(4):

- One 12,000-gal fuel oil tank for emergency generators. Assuming a worst-case of all generators operating at 570 hr/yr each, emissions were determined using EPA TANKS 4.09d

emission modeling. Maximum emissions were estimated at 6.7 lb/yr VOC. Actual emissions would be less than the calculated maximum, which is below the 2 tpy threshold listed in WAC 173-401-530(4)(d); and

- One 4,200-gal phosphoric acid tank with a concentration typically at 52%. Assuming the tank is kept half full with a throughput of about 25 gal/yr, emissions were determined using EPA TANKS 4.09d emission modeling. Maximum emissions were estimated at 13.2 lb/yr, which is well below the small quantity emission rate (SQER) listed in WAC 173-460 (8/21/1998).

IV. EXPLANATION OF SELECTED PERMIT PROVISIONS AND GENERAL TERMS AND CONDITIONS

P12. Unavoidable Excess Emissions

SWCAA 400-107 establishes criteria and procedures for determining when excess emissions are considered unavoidable. Emissions that meet the requirements to be classified as unavoidable are still considered excess emissions and are reportable but are excused and not subject to penalty. Notification of excess emissions is required as soon as possible and shall occur by the next business day following the excess emissions event. Excess emissions due to startup or shutdown conditions are considered unavoidable if the Permittee adequately demonstrates the excess emissions could not have been prevented through careful planning and design. Upset excess emissions are considered unavoidable if the Permittee adequately demonstrates the upset event was not caused by poor or inadequate design, operation, maintenance, or other reasonably preventable condition, and the Permittee takes appropriate corrective action that minimizes emissions during the event, taking into account the total emissions impact of that corrective action.

G2. Chemical Accident Prevention

Part 68 requires risk management plans be developed for the substances and thresholds listed in 40 CFR 68.130. Ammonia is a listed substance. The Permittee no longer uses ammonia on site. The chemical at the Industrial lagoon is urea-ammonia nitrate. The Permittee uses no other substance listed in 40 CFR 68.130, therefore this standard does currently not apply to this facility.

G14. Portable Sources

SWCAA 400-110(6) establishes procedures for approving the operation of portable sources of air emissions that locate temporarily at project sites. These requirements are general statewide standards and apply to all portable sources of air contaminants. Common equipment subject to these conditions include emergency generators, engine-powered pumps, rock crushers, concrete batch plants, and hot mix asphalt plants that operate for a short time period at a site to fulfill the needs of a specific contract. Portable sources exempt from registration under SWCAA 400-101 are exempt from SWCAA 400-110 and not subject to the portable source requirements. Among those categories listed in SWCAA 400-101 that are exempt are operations with potential to emit less than 1 tpy of all criteria pollutants other than $PM_{2.5}$, and less than 0.5 tpy of $PM_{2.5}$.

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V. EXPLANATION OF OPERATING TERMS AND CONDITIONS

The Title V Permit contains three sets of requirements: Permit Provisions, General Terms and Conditions, and Operating Terms and Conditions, listed in Sections IV, V, and VI, respectively. Permit Provisions apply to all sources as specified in the Federal, State, or Local regulations and are required to be established in any Title V Permit. General Terms and Conditions have a similar origin but may apply non-specifically to the facility or an activity or may be applicable when triggered. In most cases, these terms are also applied to all Title V sources and are included in all Title V permits. Operating Terms and Conditions typically are facility specific or generally apply to a facility type, classification, or activity.

Req-01 to Req-07 and Req-09: General Standards for Maximum Emissions

SWCAA 400-040 establishes maximum emission standards for various air contaminants, including fallout, fugitive emissions, fugitive dust, visible emissions, PM, SO_2, and unreasonable odors. These requirements apply to all emission units at the source, both EU and IEU. However, in most cases, there are more stringent emission limits for visible emissions, SO_2, and PM established in ADP 18-3302. Pursuant to WAC 173-401-530(2)(c), the permit does not contain any testing, monitoring, recordkeeping, or reporting requirements for IEUs except those specifically identified by the underlying requirements.

Req-01 establishes a maximum visible emissions limit for all emission units at 20% opacity. Most emission units that emit visible emissions have limits establishes in minor permit actions that are much less than 20% opacity. Visible emissions are measured using SWCAA Method 9, which is similar to EPA Method 9, except the data reduction methods are different.

Under Req-02, Req-03, Req-05, Req-06, and Req-09, the definitions of fallout, fugitive dust, fugitive emissions, and emissions detrimental to human health may overlap, but may also be separate emissions. Fallout is particulate matter that is deposited in measurable quantities outside the boundaries of the facility. Fugitive dust may be considered fallout if there is sufficient quantity but is more often associated with dust blown by the wind. Fugitive emissions include fugitive dust but would also include emissions that could not reasonable pass through a stack or vent, such as leaks in pipes or tanks. Emissions detrimental to human health could include any of the above, if the material was determined to have health impacts.

Req-04 addresses odor impacts on neighboring properties. While some odors are expected from this facility, historical complaints have been low. The facility scavenges foul air from multiple sources and treats the air in the odor control scrubber, which uses a caustic scrubber liquor. In circumstances where maintenance or repair is being performed on the scrubber, WSWTP occasionally utilizes an industrial odor eliminator (such as Ecosorb® or equivalent), which is injected into the ductwork upstream of the scrubber. When in bypass mode, the treated air is discharged through the same stack, but bypasses the scrubber. This occurs about 1–2 days per year.

From a fuel-based standpoint, burning natural gas and fuel oil in any unit cannot exceed the 1,000 ppm SO_2 limit in Req-07 as demonstrated below:

Natural Gas, FBI

$$\frac{\left(\frac{0.0506\ lb}{ft^3} \times \frac{ft^3}{1.020\times10^{-3}\ MMBtu} \times \frac{26\ ppm\ S}{10^6\ ppm} \times \frac{64.07\ lb/lb\text{-}mol\ SO_2}{32.07\ lb/lb\text{-}mol\ S}\right)}{\left(\frac{8710\ ft^3}{MMBtu} \times \left[\frac{20.9\%\ O_2}{20.9\%\ O_2 - 3\%\ O_2}\right] \times \frac{lb\text{-}mol}{385.3\ ft^3} \times \frac{28.9\ lb\ air}{lb\text{-}mol}\right)} = 3.41\ ppm\ SO_2 \qquad \text{Eq. 1}$$

Fuel Oil (15 ppm sulfur), FBI and Emergency Engines

$$\frac{\left(\frac{7.206\ lb}{gal} \times \frac{gal}{0.138\ MMBtu} \times \frac{15\ ppm\ S}{10^6\ ppm} \times \frac{64.07\ lb/lb\text{-}mol\ SO_2}{32.07\ lb/lb\text{-}mol\ S}\right)}{\left(\frac{9190\ ft^3}{MMBtu} \times \left[\frac{20.9\%\ O_2}{20.9\%\ O_2 - 7\%\ O_2}\right] \times \frac{lb\text{-}mol}{385.3\ ft^3} \times \frac{28.9\ lb\ air}{lb\text{-}mol}\right)} = 1.52\ ppm\ SO_2 \qquad \text{Eq. 2}$$

The sulfur content in sludge varies considerably. Measurements taken by WSWTP show an average 100–700 mg/kg sulfate (SO_4^{2-}) and 200–500 mg/kg sulfide. At the maximum recorded total sulfur of about 21,000 mg/kg (i.e. ppmw), on a mass balance basis, the SO_2 emission would not exceed 1,000 ppm, assuming a worst-case SO_2 scrubber control efficiency of 90% for each scrubber (99% control overall); the MCM is assumed to have 0% control efficiency for SO_2, in this case:

$$\frac{\left(\frac{21000\ ppm\ SO_4^{2-}}{10^6\ ppm} \times \frac{64.07\ lb/lb\text{-}mol\ SO_2}{96.06\ lb/lb\text{-}mol\ SO_4^{2-}} \times \frac{50.4\ ton}{24\ hr} \times \frac{2000\ lb}{ton} \times [1 - 99\%]\right)}{\left(\frac{12000\ dscf}{min} \times \frac{60\ min}{hr} \times \frac{lb\text{-}mol}{385.3\ ft3} \times \frac{28.9\ lb\ air}{lb\text{-}mol}\right)} = 10.9\ \text{ppm}\ SO_2 \qquad \text{Eq. 3}$$

The SO_2 source testing of the FBI, performed every sixty (60) months in accordance with M04, is sufficient to demonstrate compliance with the standard.

Req-08: Concealment and Masking

No specific monitoring was specified for these requirements because there are no specific monitoring requirements that can be used to encompass the whole range of potential concealment and masking scenarios. The facility is required to certify compliance with all terms and conditions of the permit, including these prohibited items, at least annually. WSWTP must make a reasonable inquiry to determine if concealment or masking has occurred during the reporting period to certify compliance.

Although the facility does employ plume suppression air (see discussion about Req-26), all compliance determinations with respect to emission rates are performed upstream of the suppression air. The elimination of the steam plume also causes compliance with the opacity limit to be more easily verified.

The addition of industrial odor control chemicals is not considered by SWCAA to be masking because it is a reactive product that neutralizes (rather than obscures) the odor and it is considered a reasonable precaution for odor.

Req-10: Requirements for Combustion Units

SWCAA 400-050 establishes maximum emission standards for combustion and incineration units. The particulate matter limit cited in Req-10 is a general requirement that applies to all combustion units, therefore, these requirements apply to all combustion emission units at the source, both EU and IEU. Pursuant to WAC 173-401-530(2)(c), the permit does not contain any testing, monitoring, recordkeeping, or reporting requirements for IEUs except those specifically identified by the underlying requirements.

WSWTP burns three fuels: natural gas, #2 fuel oil, and sludge. Natural gas is primarily used for affecting a cold start of the FBI with smaller quantities used for space heating and hot water. SWCAA assumes that all the natural gas monitored at WSWTP is burned in the FBI, which is a conservative approach. For demonstration purposes, emission calculations assume no control by the scrubbers in the FBI.

The calculation assumes a heat content of 1,020 Btu/ft^3, the PM (total) emission factor from AP-42 Section 1.4 (July 1998), a 3% O_2 content in the exhaust, and a fuel factor of 8710 dscf/MMBtu from EPA Method 19:

$$\frac{7.6\ lb}{10^6\ scf} \times \frac{7000\ gr}{lb} \times \frac{scf}{1020\ Btu} \times \frac{10^6\ Btu}{MMBtu} \times \frac{MMBtu}{8710\ dscf} \times \frac{20.9\%\ O_2}{20.9\%\ O_2 - 3.0\%\ O_2} = 0.0070\ gr/dscf\ PM \qquad \text{Eq. 4}$$

Fuel oil is used in the FBI as a supplemental fuel source during Start-up Mode or during normal mode as necessary; fuel oil sulfur content is limited to 15 ppmw. Although fuel oil is typically combusted with sludge, conservatively, it could be assumed that the fuel oil is burned as a sole fuel. As with natural gas, for demonstration purposes, emission calculations from fuel oil combustion in the FBI assume no control by the scrubbers. The calculation assumes a heat content of 138,000 Btu/gal, an emission factor of 3.3 lb/1000 gal from AP-42 Section 1.4 (July 1998), 3% O_2 in the exhaust, and a fuel factor of 9190 dscf/MMBtu from EPA Method 19:

$$\frac{3.3\ lb}{1000\ gal} \times \frac{7000\ gr}{lb} \times \frac{gal}{0.138\ MMBtu} \times \frac{MMBtu}{9190\ dscf} \times \frac{20.9\%}{20.9\% - 3.0\%} = 0.021\ gr/dscf\ PM \qquad \text{Eq. 5}$$

Source tests are required at least once every five (5) years when the FBI is burning sludge only. The following source tests have been performed:

Date	Result
July 16, 2019	0.0057 gr/dscf
December 17, 2014	0.0030 gr/dscf
November 3, 2004	0.0095 gr/dscf

Fuel oil is also used in the emergency generator engines. Emergency engine usage is limited to maintenance and readiness checks; actual emergency use is not restricted. Out of all the emergency engines, Emergency Generator Engine #3 has a manufacturer's PM_{10} emission rate of 0.25 lb/gal at 53 gal/hr fuel rate and represents a worst-case scenario. The calculation assumes a heat content

of 138,000 Btu/gal, the manufacturer's PM emission factor, 3% O_2 in the exhaust, and a fuel factor of 9190 dscf/MMBtu from EPA Method 19:

$$\frac{0.25\ lb}{gal} \times \frac{hr}{53\ gal} \times \frac{7000\ gr}{lb} \times \frac{gal}{0.138\ MMBtu} \times \frac{MMBtu}{9190\ dscf} \times \frac{20.9\%\ O_2}{20.9\%\ O_2 - 3.0\%\ O_2}$$
$$= 0.030\ gr/dscf\ PM \qquad \text{Eq. 6}$$

In all these scenarios, compliance with the combustion PM limit can be demonstrated.

Req-11: Requirement for General Process Units

SWCAA 400-060 establishes maximum emission standards for general process units. The particulate matter limit cited in Req-10 is a general requirement that applies to all process units; therefore, these requirements apply to all combustion emission units at the source, both EU and IEU. Pursuant to WAC 173-401-530(2)(c), the permit does not contain any testing, monitoring, record-keeping, or reporting requirements for IEUs except those specifically identified by the underlying requirements.

Many EUs have emission limits established that are more stringent than that specified in SWCAA 400-060.

Req-12: Facilitywide Emission Limits

These limits represent a maximum potential-to-emit for the facility including all identified EUs and processes. The limits typically are the summation of individual EU limits but may vary depending upon alternate operating scenarios.

Emission calculations must be performed for the individual emission units as specified in the applicable sections below.

Req-13 through Req-22: FBI Emission Limits

The City of Vancouver submitted a BACT analysis for the FBI with the 1996 Application for ADP 97-2035. The RACT/BACT/LAER Clearinghouse and several of the other large wastewater treatment facilities in WA State were reviewed for comparable technologies.

The short-term emission limits for PM, SO_2, VOC and NO_x under Req-13 through Req-24 for the FBI were originally established in ADP 97-1980, based upon source tests of the multiple hearth furnace (which was decommissioned in 1999), vendor emission guarantees for the FBI, and upon a search of the EPA RACT/BACT/LAER clearinghouse. These limits were carried forward into ADP 97-2035 and ADP 13-3041, which also included short-term limits for CO (100 ppm in ADP 13-3041) and PM, front and back half (0.015 gr/dscf) and annual limits; these limits were incorporated into ADP 18-3302.

SWCAA 400-050(2) limits incinerator emissions of "total carbonyls" to 100 ppm. The only test on record was performed in July 1974 on the MHI and showed a range of 1.48 to 3.49 ppm total

carbonyls. Since carbonyls are VOCs, the short-term VOC limit (as CH_4) of 50 ppm is more stringent. Therefore, the limit as written under ADP 18-3302 Condition 13 is streamlined with 40 CFR SWCAA 400-050(2) as 50 ppm VOC (as CH_4) and is subject to permit shield.

The short-term PM_{10} limit under Req-13 is based on the requirement in ADP 18-3302, but also would assure compliance with 40 CFR 60.152(a)(1) which contains a standard for PM at 1.3 lb/ton$_{dry}$ of sludge. Under maximum operating conditions (50.4 ton$_{dry}$/day and exhaust flow of 12,000 dscfm), an equivalent limit would be:

$$\frac{\left(\frac{1.3\ lb}{ton_{dry}} \times \frac{50.4\ ton_{dry}}{24\ hr} \times \frac{7000\ gr}{lb}\right)}{\left(12000\ dscfm \times \frac{60\ min}{hr}\right)} = 0.027\ \frac{gr}{dscf} \qquad \text{Eq. 7}$$

Based on this calculation, the limit in the ADP is more stringent. The limit under 40 CFR 60.152(a)(1) is subject to permit shield. originated from 40 CFR 60.152(a)(1) with a maximum PM (filterable) rate of 1.30 lb/ton$_{dry}$. The original permitting action for the FBI, ADP 97-2035, established a maximum PM (filterable) rate of 0.40 lb/ton$_{dry}$, although the condition did not include an averaging period. Due to the requirement to source test for PM, the averaging period was effectively 1-hr, based on three source test runs. This limit was carried forward into ADP 18-3302 with a 1-hr averaging period, and since it is more stringent that the limit established in the CFR, these two requirements have been streamlined and are subject to permit shield.

Req-15 recognizes two operating modes for the FBI with different emission characteristics: Start-Up mode and Burn Event Mode. Under ADP 18-3302, two separate averaging periods were established to reflect the potential for different emission rates. The CO limit was later increased to 100 ppmvd under ADP 05-2625 and carried forward under ADP 13-3047. The monthly averaged 100 ppmv CO limit under 40 CFR 503.40(c)(2) is streamlined with the more stringent 1-hr and 2-hr averaged 100 ppmv CO limits listed under ADP 18-3302 Condition 5. The limit under 40 CFR 503.40(c)(2) is subject to permit shield.

Maximum metals emission limits in Req-16 were established in ADP 18-3302 to link the sludge sampling maximum concentrations to actual emissions. Another mercury limit of 7.1 lb/day from 40 CFR 61.52(b) is cited by reference by 40 CFR 503.43(b). This limit corresponds to 0.296 lb/hr and is streamlined with the more stringent mercury limit of 0.00168 lb/hr in ADP 18-3302 Condition 5. The limits under 40 CFR 61.52(b) and 40 CFR 503.43(b) are subject to permit shield.

Req-17 through Req-21 incorporate the compliance equations for metals listed under 40 CFR 503. Most of the variables specified are effectively constants, such as risk specific concentrations, NAAQS, and dispersion factors. Metals control efficiency will be established every nine (9) years as part of the metal source test requirement. The sludge feed rate will vary daily.

40 CFR 503 regulations are federally enforceable under the Federal Clean Water Act but are not federally enforceable under the authority of the FCAA or this Permit. Because 40 CFR 503 regulations have been incorporated by reference under SWCAA 400-070(9) and are integrated into ADP 18-3302, they are applicable requirements under the definition in WAC 173-401-200(4)(c) and are enforceable under this Permit by SWCAA only.

The visible emissions limit in Req-22 is more stringent under consideration of BACT (0%) than the limit, 20%, under 40 CFR 60.152(a)(2) and SWCAA 400-040(1). Because the SSI will eventually be subject to the SSI Federal Plan, EPA Method 9 is retained for federal compliance, as well as SWCAA Method 9 for local compliance. There is a difference in how data is reduced under EPA Method 9 and SWCAA Method 9. Under the latter, if there are thirteen (13) readings in any 1-hr period that are over the limit, then the limit has been exceeded. In contrast, under EPA Method 9, if the average of all readings taken in the 1-hr period is above the limit, then the limit would be exceeded. Therefore, the limit as written under ADP 18-3302 Condition 6 is streamlined with 40 CFR 60.152(a)(2) as 0% opacity using SWCAA Method 9 and is subject to permit shield.

Req-23 and Req-24: Sand Silo Emission Limits

Emission limits were established based on estimated maximum grain loading for baghouses and maximum operation of the silo. The visible emissions limit was established at 0% in ADP 18-3302 due to the expectation of no visible emissions from this EU during normal operations. Therefore, the limit as written under ADP 18-3302 Condition 8 is streamlined with SWCAA 400-040(1) as 0% opacity using SWCAA Method 9 and is subject to permit shield.

Req-25: Air Treatment System Emission Limits

Initial limits for the ATS were originally established in ADP 93-1513. During the initial permitting action, there was no SQER or acceptable source impact level given for bis(2-ethylhexyl) phthalate [117-81-7] in WAC 173-460, therefore no limit was established, however, there has been a requirement to periodically test for bis(2-ethylhexyl) phthalate. This compound is both a TAP and HAP with considerable health effects and a limit is justified. Under ADP 13-3041, SWCAA established a limit at 90% of the SQER and a corresponding concentration-based short-term limit for bis(2-ethylhexyl) phthalate. At these levels, no adverse ambient air quality impact is anticipated.

Also, under ADP 13-3041, the H_2S emission limit for the ATS was increased; modeling has shown that at this level, no adverse ambient impact is expected. These limits were carried forward into ADP 18-3302.

Req-26 and Req-27: Emergency Engine Emission Limits

The Emergency Generator Engines are subject to a 15% visible emissions limit and the newer Emergency Pump Engines are subject to a 5% visible emissions limit.

For purposes of establishing PTE, all engines were assumed to operate for 200 hr/yr. Emergency use is not restricted, however.

Req-28, Req-29, and Req-30: Continuous Conformity and Pollution Control Devices

These requirements establish that the facility must 1) operate the identified emission units and any air pollution control equipment in accordance with the requirements established under the permit, 2) operate sources and air pollution control equipment in a manner to minimize emissions, and 3) operate air pollution controls whenever process equipment is operating.

Req-31: FBI Plume Suppression Requirement

Under normal operation, 3,580 dscfm (16,150 lb/hr) of hot air from the preheat heat exchanger on the FBI is injected into the stack to heat the exhaust gases (post air pollution controls) to increase plume rise and eliminate the condensate plume (plume suppression); this function is by design. In 2010, WSWTP conducted a study to determine if the plume suppression air could be eliminated, however, the elimination of the plume suppression air caused the FBI to function poorly. Therefore, SWCAA requires that plume suppression air be used when the FBI is burning sludge.

Req-32: FBI Fuel Types

The FBI is limited to natural gas, #2 fuel oil, and sludge under ADP 18-3302.

Req-33: FBI Operational Hours

Under SWCAA 400-050(3)(b) incinerators can operate only during daylight hours unless permission is provided by SWCAA. This term in ADP 18-3302 constitutes that permission.

Req-34 through Req-39: FBI Operation Parameters

Specific operating parameters for the FBI were established in the various ADPs issued for the unit and are good operating practices. Some requirements originated from 40 CFR 60 Subpart O and 40 CFR 503 and were incorporated into an ADP.

Req-40 through Req-41: Mercury Control Module Requirements

Specific requirements pertaining to the MCM.

Req-42 through Req-52: 40 CFR 60 Subpart O and 40 CFR 503 Requirements

Both 40 CFR 60 Subpart O and 40 CFR 503 require the installation, maintenance, calibration, and operation of various parametric monitors. Many of these requirements have been incorporated into various ADPs.

WSWTP does not directly measure moisture in the stack but uses thermocouple information and an algorithm in the CEMS to determine moisture in the exhaust. In reviewing § 503.45(c), an "instrument continuously measures and records *information* [emphasis added] used to determine the moisture content" is required. Stack moisture is a derived value using the stack temperature, assuming saturated conditions. The thermocouple is located at the exit of scrubber upstream of the MCM and plume suppression. Antoine's equation, Teten's equation, or other similar equation is used to determine the saturation vapor pressure, which is then compared to atmospheric pressure (760 mm Hg). SWCAA has determined that the thermocouples serve the purpose of recording information used to determine moisture.

Req-53 and Req-54: Sand Silo Operating Parameters

Specific operating parameters for the Sand Silo were established in the various ADPs issued for the unit.

Req-55: ATS Scrubber Operating Parameters

Specific operating parameters for the ATS scrubber were established in the various ADPs issued for the unit.

Req-56 through Req-61: Emergency Generator Engine Operating Parameters

WSWTP is considered a non-major source (area source) and the five engines are used for emergency purposes only. The Emergency Generator Engines are subject to 40 CFR 63 Subpart ZZZZ and the Emergency Pump Engines are subject to 40 CFR 60 Subpart IIII. Some requirements are local requirements taken from ADP 18-3302.

VI. EXPLANATION OF MONITORING TERMS AND CONDITIONS

M01. Visible Emissions and Grain Loading Monitoring

Some of the visible emission limits utilizing this monitoring section to assure compliance do not directly establish any specific regime of monitoring or recordkeeping. Consequently, SWCAA has implemented monitoring and recordkeeping requirements under the "gap filling" provisions of WAC 173-401-615. No opacity or excess grain loading is expected from sources burning natural gas and although burning fuel oil is likely to exhibit some opacity, it is expected to be within applicable limits.

For the emission units that are subject to a grain loading limit, visible emissions monitoring provides a reasonable assurance of compliance.

This term requires a periodic review of sources of opacity by the facility to verify good working order of emission units and to take corrective action if any excess opacity is observed. All emissions units subject to a grain loading must be observed for a minimum of six (6) minutes at least once per month. If there are no visible emissions, then the Permittee makes a record and no further action is required.

For those sources subject to a non-zero opacity limit, for each reading within the observation period above the visible emissions limit, the Permittee must read for an additional six (6) minutes up to one (1) hour of observations.

Example 1:
Unit is subject to a 5% opacity limit. No observations over the first block were over 5%. Record observations (six minutes total).

Example 2:
Unit is subject to a 5% opacity limit. One reading over the first block was 10%. Read for another six-minute block. No observations over the second block were over 5%. Record observations (12 minutes total).

Example 3:
Unit is subject to a 5% opacity limit. Three readings over the first block were 10%. Read for another 18 minutes (three six-minute blocks). One reading in the third block was 10%, read for a fifth six-minute block. No readings were over 5% in the last block. Record observations (30 minutes total).

Note, each observation above the limit causes another six minutes of readings, regardless of the observational value. So, if there were more than nine readings in the first six-minute block, a total of one (1) hour of readings would be required for EPA Method 9; if more than 13 readings above the standard were observed, then for SWCAA Method 9, a violation is indicated, and no further readings are required. It is possible that a violation under either SWCAA Method 9, EPA Method 9, or both may occur.

M02. Fugitive Emission and Fallout General Inspection

The requirements utilizing this monitoring section to assure compliance do not directly establish any specific regime of monitoring or recordkeeping. Consequently, SWCAA has implemented monitoring and recordkeeping requirements under the "gap filling" provisions of WAC 173-401-615. Fugitive emissions and fallout are not expected to occur from any source subject to the requirement.

This term requires a periodic review of the facility to verify good working order of emission units and to take corrective action if any fugitive emissions or fallout is observed, or in response to a complaint.

M03. Complaint Log

This monitoring requirement is used to provide a reasonable assurance of compliance with the general requirements drawn from SWCAA 400-040. These requirements do not directly establish any specific regime of monitoring or recordkeeping. Consequently, SWCAA has implemented monitoring and recordkeeping requirements under the "gap filling" provisions of WAC 173-401-615. These requirements are designed to provide prompt response to all relevant air quality complaints and record any necessary corrective action. The plant is in an industrial area that has not received substantial public air quality complaints in the past.

This is a state only and/or local only requirement because it is used to assure compliance only with state and or local only requirements.

M04. Compliance Certification

The applicable requirements cited in this monitoring section do not directly establish any specific regime of monitoring or recordkeeping, but SWCAA has established this term under WAC 173-401-615(2) to provide compliance documentation.

The equipment restrictions are aimed at fundamental operating modes (no masking, fuel type, use of control technology, etc.) that do not change significantly once established. Periodic certification that no changes have been made to equipment function or design is an appropriate means of assuring compliance for these requirements.

The general work practice requirements (such as calibration, maintenance, and operation) are primarily a function of worker training, and workplace management. Compliance with these requirements is best ensured through active facility oversight. The due diligence associated with periodic compliance certification serves to confirm compliance.

M05. Fluidized bed incinerator Parameters

A variety of operating FBI parameters are monitored and recorded to indicate good operating practice of the FBI and an indication of compliance. Many of the requirements originated from 40 CFR 60 Subpart O and were incorporated wholly or in part into the various ADPs issued to the facility.

The initial performance test on November 10, 1999 showed the FBI with a filterable PM emission rate of 0.129 lb/ton_{dry}. In all subsequent emission tests, the FBI has shown filterable PM emission rates below the 0.75 lb/ton_{dry} limit expressed under 40 CFR 60.153(d)(3), ranging from 0.063 to 0.129 lb/ton_{dry}. This would imply that the continuous monitoring requirements under 40 CFR §§60.153(a)(1), (a)(3), and (a)(4) are not applicable; however, ADP 18-3302 includes requirements for continuous monitoring.

M06. Fluidized Bed Incinerator Source Testing – Specific Criteria Pollutants, VOC, Hydrogen Chloride, and Mercury

Source testing is required every three (3) years for criteria pollutants, organics, and hydrogen chloride.

M07. Fluidized Bed Incinerator Source Testing – Arsenic, Cadmium, Chromium, Lead, and Nickel

Source testing is required every nine (9) years for metals. Under 40 CFR 503.43(e)(4) requires that the Permittee submit the calculated emission limits in Req-16 as determined after a source test. These numerical limits change whenever a source test is performed. Although the subpart requires that SWCAA be notified of this calculation within thirty (30) days of completing the test, SWCAA also requires that a complete source test report, which would include this information, be submitted within forty-five days (45) of the source test completion. Because 40 CFR 503 is incorporated by reference and not delegated, it is a local only requirement and SWCAA does not have the ability to change it directly without a change to SWCAA 400.

M08. Sludge Metals Concentration Monitoring

Under §503.46(a)(2), the monitoring frequency for metals in the sludge varies according to the maximum sludge incinerated in a 365-day period. Assuming typical operation for 255 days (5 day/week for 51 week/yr) at 2.10 ton_{dry}/hr (1.74 Mg/hr), this equates to 11,750 ton_{dry}/yr (10,660 Mg/yr); for purposes of PTE calculations, 8,760 hr/yr operation was used. The monitoring frequency, according to the chart in §503.46(a)(2), is once every 60 days. Although the intent was to monitor six (6) times per year, basing the frequency on days presents the potential to miss monitoring; therefore, SWCAA requires monitoring once every two (2) calendar months.

M09. Continuous Emission Monitoring Quality Assurance and Quality Control

Because the facility operates CEMS, quality assurance and quality control are expected to verify that the instrument is operating appropriately. SWCAA 400-105(8) requires that the facility maintain at least 95% valid data, install, and operate the CEMS in compliance with 40 CFR 60 Appendix B, audit the CEMS in compliance with 40 CFR 60 Appendix F, and supply SWCAA with periodic reports.

M10. Sand Silo Observation

This term requires a periodic review of the sand silo by the facility to verify good working order and to take corrective action if any excess opacity is observed. A minimum of six (6) minutes of observations is necessary. For each reading within the observation period above the standard, the

Permittee must read for an additional six (6) minutes up to one (1) hour of observations. The sand silo is not expected to exhibit visible emissions during normal operation.

M11. Sand Silo Operation

Operating parameters are recorded for the sand silo.

M12. ATS Scrubber Parameters

A variety of operating parameters are monitored and recorded by the facility to verify good working order of ATS and to trigger corrective action, as necessary.

M13. ATS Scrubber Source Testing

Source testing is required every five (5) years for organics.

M14. Emergency Generator Engines and Emergency Pump Engines Operating Parameters

A variety of operating parameters are monitored and recorded by the facility to verify compliance with operating limits and other requirements under 40 CFR 63 Subpart ZZZZ.

VII. EXPLANATION OF REPORTING TERMS AND CONDITIONS

R01. Deviations from Permit Conditions

A deviation or excursion from permit condition means an instance when any regulation, rule, or approval condition is not met, including, but not limited to, conditions that establish emission limitations, emission standards, control equipment requirements, work practices, parameter ranges, and those designed to assure compliance with such requirements, such as monitoring, recordkeeping, and reporting. Reporting requirements exist under 40 CFR 60 Subpart O, 40 CFR 63 Subpart ZZZZ, 40 CFR 503, WAC 173-401-615(3)(b), and ADP 18-3302. For the purposes of WAC 173-401-615(3)(b), unless otherwise defined in a specific permit term, "prompt" is defined by SWCAA to be thirty (30) days after the end of the month in which the deviation occurred or sooner. For deviations which represent a potential threat to human health or safety, "prompt" means as soon as possible, but in no case later than twelve (12) hours after the deviation is discovered.

R02. Deviations from CEMS Data Reporting

Under SWCAA 400-105(7)(f), the Permittee must report specific deviations as they relate to the operation and data collection activities of the CEMS for the FBI.

R03. Excess Emission and Upset Recordkeeping and Reporting

Excess emissions may result from a deviation or excursion from permit conditions, startups, shutdowns, malfunctions, and upsets. If the excess emissions are considered unavoidable and the Permittee reports the excess emissions within forty-eight (48) hours of discovery along with the appropriate documentation, SWCAA may waive penalties associated with the excess emissions in accordance with SWCAA 400-107(2).

R04 Quarterly Reports

Specific data elements from ADP 18-3302 are required to be reported to SWCAA on a quarterly basis.

R05. Semiannual Monitoring Reports

The Permittee is required to provide a report of all monitoring records and provide a certification of all reports on a semiannual basis. Semiannual reporting and certification of monitoring records is required by WAC 173-401-615(3).

R06. Semiannual Report

Other semiannual reporting requirements based on underlying requirements were grouped together. This report may be combined with the semiannual report required under R05.

R07. Annual Compliance Certification

The Permittee is required to report and certify compliance with all permit terms and conditions on an annual basis. Annual compliance certification is required by WAC 173-401-630(5). In addition,

each applicable annual reporting requirements required by an ADP or federal regulation is listed in this section.

R08. Emission Inventory Report

Annual reporting of emissions inventory is required under SWCAA 400-105 to be submitted to SWCAA by March 15th for the previous calendar year unless an extension is approved by SWCAA.

R09. Emission Test Reports

SWCAA 400-106 and ADP 18-3302 require submission of source test reports no later than forty-five (45) days after completing the required test.

VIII. EXPLANATION OF FUTURE REQUIREMENTS

Federal Plan Requirements for Sewage Sludge Incineration Units Constructed on or Before October 14, 2010 [40 CFR 62 Subpart LLL]

The facility operates an SSI and is subject to requirements under a Federal Plan 40 CFR 62 Subpart LLL. Although the Permittee included information in the Title V application regarding these future requirements, SWCAA has not yet received delegation, nor entered into a Memorandum of Agreement (§60.5045) with EPA to be able to implement and enforce these requirements under the Title V permit. As such EPA is the only agency able to implement and enforce these regulations currently.

IX. EXPLANATION OF OBSOLETE REQUIREMENTS

Other than the regulatory orders and permits issued by SWCAA that were superseded and listed in Section XI, no other obsolete requirements were identified.

X. RESPONSE TO COMMENTS

There were no comments to the "substantially equivalent" process used to finalize ADP 18-3302 by the Permittee, EPA, Affected States, or the public.

There is no comment period for a Title V Administrative Amendment.

XI. FACILITY HISTORY

Title V Action History

The following Title V actions have been taken by SWCAA:

Previous Actions – AOP SW97-1-R2 (Initial*)

1. Permit Application Submitted:	February 26, 2014
2. Permit Application Deemed Complete:	March 11, 2014
3. Final Permit Issued:	January 25, 2016
4. Renewal Permit Application Due:	January 25, 2020
5. Complete Permit Application Due:	July 25, 2020
6. Permit Expiration:	January 25, 2021

* During the permit term of AOP SW97-1-R1, the facility submitted an ADP application that requested an opt-out to the Title V program and reducing the facility PTE below 100 tpy for any criteria pollutant. The opt-out was issued on October 10, 1997, effectively removing the facility from the Title V program. However, in 2014, the promulgation of the SSI NSPS caused the facility to be subject to the Title V program per § 129(e) of the FCAA, regardless of the emissions potential.

Previous Actions – AOP SW97-1-R1 (Significant Modification)

1. Permit Application Submitted:	May 11, 1998
2. Permit Application Deemed Complete:	June 17, 1998
3. Final Permit Issued:	November 10, 1998
4. Renewal Permit Application Due:	March 4, 2002
5. Permit Expiration:	September 4, 2002

Previous Actions – AOP SW97-1-R0 (Initial)

1. Permit Application Submitted:	June 2, 1995
2. Permit Application Deemed Complete:	October 18, 1995
3. Final Permit Issued:	September 4, 1997
4. Renewal Permit Application Due:	March 4, 2002
5. Permit Expiration:	September 4 ,2002

Permitting/Regulatory Action History

There currently is only one active permit, ADP 18-3305. All other permits have been superseded as listed below:

Permit	Application	Date Issued	Description
13-3047	CL-1956	3/28/2013	Modified H_2S limit, changed requirement for plume suppression, and updated limits related to 40 CFR 503.

Permit	Application	Date Issued	Description
05-2625	CL-1552	9/15/2005	Changed in CO emission limit for FBI, changed sludge rate limit, approved installation of Venturi scrubber, and various permit clarifications. Facility established as natural minor based on application received on 1/17/2002 and removal of the Multiple Hearth Incinerator.
99-2204	CL-1385	10/19/1998	Modification of requirements for the Multiple Hearth Incinerator
97-1980R1	CL-1352	9/8/1998	Modification of approval conditions. Modified sludge rate limit for Multiple-hearth incinerator also made small changes to ATS requirements.
97-2035	CL-1268	10/10/1997	Expansion of wastewater treatment plant, including installation of FBI, FBI sand silo, and additional emergency generator. Also increased the facility's treatment capacity from 15 MGD to 22.4 MGD. Included opt-out provisions for limiting Multiple Hearth Incinerator operations.
97-1980	CL-1212	3/10/1997	Modification of emission limit for the Multiple Hearth Incinerator
93-1513	CL-975	11/22/1993	Installation of new equipment. Addition of a packed tower scrubber as part of the air treatment system.
87-868	—	1/14/1987	Administrative Order
86-846	CL-567	11/24/1986	Installation of new equipment. Application received for the installation of two stand-by generators
79-436	CL-353	2/6/1979	Sludge transfer tank
78-413	CL-78R	11/27/1978	Venturi for the Multiple Hearth Incinerator
76-193	—	7/20/1976	Sludge aeration system
76-162	CL-242	3/23/1976	Sludge aeration system
76-154	CL-217R2	2/27/1976	Fume scrubber for odor control
76-140	—	2/27/1976	Order on Consent
75-117	CL-217R	9/12/1975	Fume scrubber for odor control
75-103	CL-218	7/24/1975	Installation of extractor hood vent control for odor control system

Compliance History

The following compliance actions have been issued by SWCAA:

Notice	Date	Action	Notes
6162	4/5/2018	Notice to Correct	Failure to perform calibration of temperature probe
6159	8/15/2017	Notice to Correct	Failure to maintain records
6158	8/15/2017	Notice to Correct	Exceedance of 5% opacity limit of emergency engines
6153	5/26/2016	Notice to Correct	Exceedance of VOC emission limit of ATS in violation of ADP 13-3047.
5306	10/23/2014	Notice to Correct	Exceeded PM emission limit in violation of ADP 13-3047.
4266	8/1/2011	Notice to Correct	Failure to conduct metals testing every 60 days in violation of ADP 05-2627.
4262	9/23/2010	Notice to Correct	Exceeded H_2S emission limit in violation of ADP 05-2627.
3519	2/1/2005	Notice to Correct	Failure to report FBI O_2 concentrations in violation of 40 CFR 60.155(a)(2) and ADP 97-2035.
2605	2/21/2001	Notice of Violation with No Assessed Penalty	Exceeded CO emission limit for the fluidized bed incinerator during a startup operation.
1489	9/11/1998	Notice to Correct	Exceeded NO_x emission limit in violation of ADP 97-1980.
1480	12/12/1997	Notice of Violation with $250 Penalty	Exceeded the dry tons per day sludge processing limit in violation of Title V Permit SW97-1-R0.
1458	2/12/1996	Notice of Violation with $1,000 Penalty	Failure to record oxygen and pressure for wastewater incineration in violation of 40 CFR §§ 60.153(b)(1), 60.153(b)(2), and 60.155.
9137	12/4/1991	Notice of Violation with $250 Penalty	Exceedance of opacity limit.
5370	4/9/1985	Warning	Exceedance of opacity limit.
5423	3/13/1985	Warning	Exceedance of opacity limit.
6991	4/18/1983	Notice of Violation with $250 Penalty	Exceedance of opacity limit.
6731	8/25/1981	Warning	Exceedance of opacity limit.
7156	3/17/1981	Warning	Exceedance of opacity limit.
4679	11/12/1980	Warning	Exceedance of opacity limit.
4783	10/28/1980	Warning	Exceedance of opacity limit.
4673	10/13/1980	Notice of Violation with $250 Penalty	Odorous emission in excess of the scentometer #2 odor strength from the City of Vancouver sewage lagoon.
4671	10/7/1980	Notice of Violation with $250 Penalty	Odorous emission in excess of the scentometer #2 odor strength from the City of Vancouver sewage lagoon.

Notice	Date	Action	Notes
4670	10/6/1980	Notice of Violation with $150 Penalty	Odorous emission in excess of the scentometer #2 odor strength from the City of Vancouver sewage lagoon.
0096	10/5/1980	Notice of Violation with $150 Penalty	Odorous emission in excess of the scentometer #2 odor strength from the City of Vancouver sewage lagoon.
4447	4/2/1980	Warning	Exceedance of opacity limit.