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April 23, 2021

Ms. Kenzie Billings
Oregon Department of Environmental Quality
700 NE Multnomah Street, Suite 600
Portland, Oregon 97232

Re: Stimson Lumber Company Forest Grove Complex – CAO Response Letter

Dear Ms. Billings:

Thank you for your responses to the Stimson Lumber Company (Stimson) Cleaner Air Oregon emissions inventory for the Forest Grove Complex (the facility), which were provided on January 28, 2021 (the request). Maul Foster & Alongi, Inc. (MFA) is submitting the following response document on behalf of Stimson to address items identified in the request for additional information.

Cover letter:
PTE Emissions Calculations

1) What considerations went into the estimated percentage breakdown of Douglas Fir and Hemlock processed at the facility? For the PTE emissions calculations, the mixture of species is based upon historical deliveries. In 2019, the facility received approximately 81.8 percent Douglas Fir and 18.2 percent Hemlock. Stimson believes this to be the most realistic speciation profile on an annual basis, with limited variation between the two species. As a result, this speciation will be used for PTE emissions estimates.

Action item: Stimson to provide clarification, including consideration of Tillamook throughput. Stimson has decided that it does not make economic sense at this time to dry wood from the Tillamook sawmill. As a result, the speciation profile identified above will be the most representative for the foreseeable future.

2) Two vs. three boilers clarification. The current configuration utilizes three boilers that exhaust through two common stacks. As a result of the unique nature of this configuration, some reporting platforms have forced the reference to the two stacks as "boilers", thus, confusing the equipment setup.

Action item: Stimson to clarify which boilers will remain operational onsite. Although typically only two of the three boilers operate at any given time, all three boilers have the

potential to be operational. As a result, PTE emissions have been estimated using the exhaust from the combined boilers.

3) What considerations went into the estimated percentage breakdown of ESP vs scrubber exhaust from boilers? After a review of historical production information, it was determined that the percentage of exhaust that goes through the scrubber from the boilers is different than what is in the current emissions inventory. The scrubber is only used during periods when the fuel dryer is operational (on average 22.8 percent annually), and during these periods, approximately 22.4 percent of the exhaust is routed through the wet scrubber. Alternatively, the exhaust is exclusively exhausted through the ESP when the fuel dryer is not operational. The revised exhaust apportionment and calculation methodology is provided in Attachment A.

Action item: Stimson to provide clarification/supporting calculations (show calcs). Please see Attachment A.

4) What data was used to determine the daily maximum production rates presented in the AQ405CAO? PTE production rates were prepared using historical maximum operating hours of operation, maximum hourly equipment throughputs, and proposed maximum future production rates.

Action item: Stimson to provide clarification/supporting data. Please see the references in the emissions calculations provided in attachment A.

Action item: Patty (DEQ) to provide updated PSEL sheet Provided, with questions. Patty provided the updated PSEL spreadsheet via email on March 9, 2021.

AQ405CAO review:
Tab 2. Emission Units & Activities

TEU clarifications

- BLR_ESP and BLR_SCR routed to dry ESP and wet scrubber.
- FORMER

Action item: Stimson to look into split of point and fugitive emissions from TEU FORMER. The current configuration of the forming line uses a vacuum pump (upside down hood) underneath the line, which actively pulls air through the pump and out an exhaust vent on the

side of the building. As the vacuum pump uses a mechanical fan to actively pull air from the forming line, it's expected that the majority, if not all, of any fugitive emissions form the forming line would propagate through the vacuum pump and vent out the exhaust stack.

Emission factors for the forming line derived from a 2007 source test performed on the vacuum pump exhaust stack were compared with NCASI emission factors for the same type of process. It was found that the emission factors between the 2007 source test and NCASI were similar, with most being higher and one pollutant slightly lower. As a result, we believe that allocating all forming line emissions to the vacuum stack is a reasonable estimate. MFA and Stimson are proposing to assume all emissions from the forming line exhaust through the vacuum pump and out through an exhaust stack on the side of the hardboard manufacturing building and that this will reasonably account for any potential fugitive emissions.

TEU ID and control device nomenclature: CAO and TV permitting consistencies.

Action item: Stimson to draft cross reference of TV EUs and CAO TEUs or provide continuous labeling based on what facility uses to reference EUs. Moving forward, MFA and Stimson will use the Title V permit emission unit IDs for any applicable toxic emission unit IDs.

Activity levels

Boilers (annual): cover letter presents Mlb-steam/year levels, AQ405CAO presents heat input.

Action item: Stimson to provide supporting information. Information on process throughputs for the boilers are provided in the emission inventory in attachment A.

Fuel dryer (daily): historical permit applications show max 6 ODT/hr processing rate. Is there a max hours/day operational limit at the facility? Currently, there is no permitted maximum daily operating limit for the fuel dryer.

Action item: Stimson to look into relationship between 6 ODT/hr processing rate and 71.04 ODT/day requested PTE in AQ405CAO The DEQ permit device form for the fuel dryer (circa 1995 permit document) is provided as attachment B to this letter. As shown in item 15 of the device form, the fuel dryer is rated for a maximum hourly throughput of "6 units/hour." Unfortunately, the device form does not specify the moisture content of the

maximum hourly throughput. Item 13 in the device form identifies that the range of material moisture content entering the dryer is between 50 and 70 percent and the dried material is between 30 and 50 percent. Stimson reviewed historical throughput information and identified that the highest achievable one-hour throughput rate is 6 units at 1 oven-dried ton (ODT) per unit. This results in a maximum production rate of 6 ODT per hour. Stimson proposes to use 6 ODT per hour as the basis for the PTE daily and annual production rates.

The revised maximum PTE daily and annual production rates for the fuel dryer are provided in attachment A.

Tab 3. Pollutant Emissions

Emission factors

References must be original reference (e.g., NCASI, AP-42, Webfire)

TV vs. CAO emission factors. The original references for the emission factors are provided in the emissions inventory in Appendix A. Emission factors for some of the TEUs (e.g., wood-fired boiler with ESP control, fuel dryer, etc.) were provided by DEQ in 2018. These emissions factors are appropriately identified in the reference's sections of the emissions inventory.

Water9 data

Action item: Stimson to provide Patty and Kenzie (DEQ) Water9 data. The WATER9 input and output data used for the emissions calculations is provided as attachment C to this letter.

Potential changes to CAO activity levels:

Action item: Stimson to provide update on potential revisions to facility requested PTE.

Based on a review of historical information and future forecasts, Stimson is proposing to revise the originally provided annual PTE production rates for various processes at the facility. Revised proposed maximum PTE production rates for all equipment are provided in Appendix A.

Please contact me, Andrew Rogers, at 503-407-6406 if you have any questions about the responses provided above.

Sincerely,

Maul Foster & Alongi, Inc.

Andrew Rogers
Project Meteorologist

Attachments: Attachment A – Revised Emissions Inventory
Attachment B – Historical Fuel Dryer Device Form
Attachment C – WATER9 Model Data

cc:
Steven Petrin, Stimson Lumber Company
James Skuzeski, Stimson Lumber Company

ATTACHMENT A

REVISED EMISSIONS INVENTORY

Table 1
Input Process Rates and Parameters
Stimson Lumber Company Forest Grove Complex - Gaston, Oregon

Source	Source ID	Process Units							
		2019 Actual Production			Requested PTE Daily			Requested PTE Year		
Hogged Fuel Fired Boilers										
Steam Production	--	236,000	(Mlb-steam/yr)	(1)	2,066	(Mlb-steam/day)	(a)	464,025	(Mlb-steam/yr)	(1)
Wood Fuel Usage	--	481,440	(MMBtu/yr)	(b)	4,215	(MMBtu/day)	(b)	946,611	(MMBtu/yr)	(b)
Total Boiler Throughput Controlled by Dry ESP	H-BLR	475,817	(MMBtu/yr)	(c)	3,271	(MMBtu/day)	(d)	898,266	(MMBtu/yr)	(e)
Total Boiler Throughput Controlled by Scrubber	S-400	5,623	(MMBtu/yr)	(f)	944	(MMBtu/day)	(g)	48,345	(MMBtu/yr)	(h)
Lumber Kilns										
Total Kiln Throughput	--	105,000	(Mbdft/yr)	(3)	960	(Mbdft/day)	(i)	180,000	(Mbdft/yr)	(3)
Kiln - Douglas Fir	LBR-DK_DF	85,210	(Mbdft/yr)	(j)	960	(Mbdft/day)	(11)	146,075	(Mbdft/yr)	(k)
Kiln - Hemlock	LBR-DK_HL	19,790	(Mbdft/yr)	(l)	960	(Mbdft/day)	(11)	33,925	(Mbdft/yr)	(m)
Hardboard										
Press	H-PVUV	65,275	(Msf 1/8-in/yr)	(3)	587	(Msf 1/8-in/day)	(3)	105,000	(Msf 1/8-in/yr)	(3)
Refiner	H-RF12	21,827	(ODT/yr)	(o)	175	(ODT/day)	(n)	35,040	(ODT/yr)	(p)
Forming Line	FORMER	21,827	(ODT/yr)	(o)	175	(ODT/day)	(n)	35,040	(ODT/yr)	(p)
Fuel Dryer	H-140	3,672	(ODT/yr)	(q)	144	(ODT/day)	(r)	12,000	(ODT/yr)	(s)
Material Balance										
Paintline - Basecoat 631-W020-1601	PL_BASE	232	(gal/yr)	(3)	2.28	(gal/day)	(t)	456	(gal/yr)	(15)
Paintline - High Gloss Topcoat (621-C020-232)	PL_TOP	50.0	(gal/yr)	(3)	0.49	(gal/day)	(t)	98.3	(gal/yr)	(15)
Lumber Surface - Mycostat P51	MB_P51	3,300	(gal/yr)	(3)	9.82	(gal/day)	(u)	5,308	(gal/yr)	(18)
Wastewater Treatment Plant										
Wastewater Processed	WWTP	61.9	(Mgal/yr)	(3)	0.34	(Mgal/day)	(3)	124	(Mgal/yr)	(v)

Notes:

(a) Requested PTE daily (MMBtu/day) = (maximum combined hourly steam output [Mlb-steam/hr]) x (maximum potential daily hours of operation [hrs/day])
Maximum combined hourly steam output (Mlbs-steam/hr) = 86.1 (2)
Maximum potential daily hours of operation (hr/day) = 24.0 (3)

(b) Wood fuel usage (MMBtu) = (steam production [Mlb-steam]) x (fuel heat input to steam output ratio [MMBtu/Mlbs-steam])
Fuel heat input to steam output ratio = 2.04 (4)

(c) 2019 Total boiler throughput controlled by dry ESP (MMBtu/yr) = (combined boiler throughput [MMBtu/yr]) x (percentage of throughout controlled by ESP [%]/100)
Percentage of combined boiler throughput controlled by ESP (%) = 98.8 (5)

(d) PTE Total boiler throughput controlled by dry ESP (MMBtu/day) = (combined boiler throughput [MMBtu/day]) x (percentage of throughout controlled by ESP [%]/100)
Percentage of combined boiler throughput controlled by ESP (%) = 77.6 (6)

(e) PTE Total boiler throughput controlled by dry ESP (MMBtu/yr) = (combined boiler throughput [MMBtu/yr]) x (percentage of throughout controlled by ESP [%]/100)
Percentage of combined boiler throughput controlled by ESP (%) = 94.9 (7)

(f) 2019 Total boiler throughput controlled by scrubber (MMBtu/yr) = (combined boiler throughput [MMBtu/yr]) x (percentage of throughout controlled by ESP [%]/100)
Percentage of combined boiler throughput controlled by scrubber (%) = 1.17 (8)

(g) PTE Total boiler throughput controlled by scrubber (MMBtu/day) = (combined boiler throughput [MMBtu/day]) x (percentage of throughout controlled by scrubber [%]/100)
Percentage of combined boiler throughput controlled by ESP (%) = 22.4 (9)

(h) PTE Total boiler throughput controlled by dry ESP (MMBtu/yr) = (combined boiler throughput [MMBtu/yr]) x (percentage of throughout controlled by ESP [%]/100)
Percentage of combined boiler throughput controlled by scrubber (%) = 5.11 (10)

(i) Requested PTE daily kiln throughput (Mbdft/day) = (PTE hourly total kiln throughput [Mbdt/hr]) x (maximum potential daily hours of operation [hr/day])
PTE hourly total kiln throughput (Mbdt/hr) = 40.0 (3)
Maximum potential daily hours of operation (hr/day) = 24.0

(j) 2019 Kiln throughput (Douglas fir) (Mbdft/yr) = (total kiln throughput [Mbdt/yr]) x (2019 percentage of Douglas fir throughput [%]/100)
2019 percentage of Douglas fir throughput (%) = 81.2 (12)

(k) Kiln throughput (Douglas fir) (Mbdft/yr) = (total kiln throughput [Mbdt/yr]) x (average annual percentage of Douglas fir throughput [%]/100)
Average annual percentage of Douglas fir throughput (%) = 81.2 (12)

(l) 2019 Kiln throughput (hemlock) (Mbdft/yr) = (total kiln throughput [Mbdt/yr]) x (2019 percentage of hemlock throughput [%]/100)
2019 percentage of hemlock throughput (%) = 18.8 (12)

(m) Kiln throughput (hemlock) (Mbdft/yr) = (total kiln throughput [Mbdt/yr]) x (average annual percentage of hemlock throughput [%]/100)
Average annual percentage of hemlock throughput (%) = 18.8 (12)

(n) Requested PTE daily (units/day) = (requested PTE year [units/yr]) / (hardboard annual hours of operation [hrs/yr]) x (maximum daily hours of operation [hrs/day])
Hardboard annual hours of operation (hrs/yr) = 4,800 (3)
Maximum daily hours of operation (hrs/day) = 24.0 (3)

(o) 2019 annual throughput (ODT/yr) = (2019 annual hours of operation [hrs/yr]) x (hourly throughput [ODT/hr])
2019 annual hours of operation (hrs/yr) = 2,990 (3)
hourly throughput (ODT/hr)= 7.3 (13)

(p) PTE annual throughput (ODT/yr) = (PTE annual hours of operation [hrs/yr]) x (hourly throughput [ODT/hr])
PTE annual hours of operation (hrs/yr) = 4,800 (3)
hourly throughput (ODT/hr)= 7.3 (13)

(q) 2019 fuel dryer annual throughput (ODT/yr) = (2019 annual hours of operation [hrs/yr]) x (fuel dryer hourly throughput [ODT/hr])
2019 annual hours of operation (hrs/yr) = 612 (3)
Fuel dryer hourly throughput (ODT/hr)= 6.00 (3)

(r) Requested fuel dryer PTE daily (ODT/day) = (fuel dryer hourly throughput [ODT/hr]) x (maximum daily hours of operation [hrs/day])
Maximum daily hours of operation (hrs/day) = 24.0 (3)
Fuel dryer hourly throughput (ODT/hr)= 6.00 (3)

(s) PTE fuel dryer annual throughput (ODT/yr) = (PTE annual hours of operation [hrs/yr]) x (fuel dryer hourly throughput [ODT/hr])
PTE annual hours of operation (hrs/yr) = 2,000 (3)
Fuel dryer hourly throughput (ODT/hr)= 6.00 (3)

(t) Requested PTE daily usage (gal/day) = (requested PTE annual usage [gal/yr]) / (annual days of operation [day/yr])
Annual days of operation (day/yr) = 200 (14)

(u) Requested PTE daily (gal/day) = (maximum monthly PTE [gal/month]) / (minimum days of operation per month [day/month])
Maximum monthly PTE (gal/month) = 275 (16)
Minimum days of operation per month (day/month) = 28.0 (3)

(v) PTE annual wastewater processed (Mgal/yr) = (PTE daily wastewater processed [Mgal/day]) x (days per year of WWTP operation)
Days per year of WWTP operation (days) = 365 (17)

References:

(1) Information provided by Stimson Lumber Company. Representative of total steam produced by three identical wood fuel fired boilers.
(2) Stimson Lumber Company - Title V Permit 34-2066 2021 Title V Permit Renewal PSEL spreadsheet provided by DEQ. Representative of maximum hourly steam production for all three boilers between annual source tests.
(3) Information provided by Stimson Lumber Company.
(4) Representative of maximum average fuel heat input to steam output ratio (FHISOR) calcualted for the 2021 Title V permit renewal.
(5) Information provided by Stimson Lumber Company. Represents the total annual cumulative percentage of exhaust that was routed through the ESP during the 2019 calendar year. Boiler exhaust is exclusively routed through the ESP during periods when the dryer was not in operation (92.7% of the year), and approximately 77.6% of the time when the dryer was operational.
(6) Information provided by Stimson Lumber Company. Represents the total percentage of boiler exhaust that is controlled by the ESP during periods when the fuel dryer is operating. Value averaged between 2015 to 2020.
(7) Information provided by Stimson Lumber Company. Represents the total annual cumulative percentage of exhaust that is routed through the ESP on average throughout the year. Boiler exhaust is exclusively routed through the ESP during periods when the dryer is not in operation (77.2% per year on average), and 77.6% of the time when the dryer is operational.
(8) Information provided by Stimson Lumber Company. Represents the total annual cumulative percentage of exhaust that is routed through the wet scrubber on average throughout the year. The dryer operates approximately 7.3% of the time during facilty operating hours throughout the year and approximately 22.4% of the exhaust is routed through the scrubber on average when the dryer is operational.
(9) Information provided by Stimson Lumber Company. Represents the total percentage of boiler exhaust that is controlled by the wet scrubber during periods when the fuel dryer is operating. Value averaged between 2015 to 2020.
(10) Information provided by Stimson Lumber Company. Represents the total annual cumulative percentage of exhaust that is routed through the wet scrubber on average throughout the year. The dryer operates approximately 22.8% of the time during facilty operating hours throughout the year and approximately 22.4% of the exhaust is routed through the scrubber on average when the dryer is operational.
(11) Assumes maximum daily throughput of wood species is equal to overall maximum daily throughput.
(12) Information provided by Stimson Lumber Company. Represents the distribution of species for the 2019 calendar year. The 2019 calendar year is assumed to be representative of typical annual speciation each year.
(13) Source Test Evaluation Report prepared by Horizon Engineering, Inc. dated July 9, 10 & 12, 2007. Hourly throughput for refiners and former are based on source test production data.
(14) Representative of requested PTE annual operating time of hardboard plant.
(15) PTE usage determined by applying ratio of 2019 and PTE hardboard production rates to 2019 usage.
(16) Conservatively assumes maximum product usage for a month regardless of total days in month.
(17) Information provided by Stimson Lumber Company. Assumes maximum annual capacity of wastewater treatment plant.
(18) PTE usage determined by applying ratio of 2019 and PTE kiln production rates to 2019 usage.

Table 2
Boilers (Hog Fuel) ESP Control - TAC Emission Estimates
Stimson Lumber Company Forest Grove Complex - Gaston, Oregon

Toxic Air Contaminant	CAS	HAP? (Yes/No)	ODEQ Sequence Number	Emission Factor [1] (lb/MMBtu)	2019 Emission Estimates		PTE Emission Estimates	
					Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)
Metals								
Antimony	7440-36-0	Yes	32	3.02E-07	9.88E-04	0.14	9.88E-04	0.27
Arsenic	7440-38-2	Yes	35	1.88E-06	6.15E-03	0.89	6.15E-03	1.69
Barium	7440-39-3	No	43	2.10E-04	0.69	99.9	0.69	189
Beryllium	7440-41-7	Yes	52	3.01E-08	9.85E-05	0.014	9.85E-05	0.027
Cadmium	7440-43-9	Yes	77	3.66E-07	1.20E-03	0.17	1.20E-03	0.33
Chromium VI	18540-29-9	Yes	119	2.72E-07	8.90E-04	0.13	8.90E-04	0.24
Cobalt	7440-48-4	Yes	123	2.35E-06	7.69E-03	1.12	7.69E-03	2.11
Copper and compounds	7440-50-8	No	125	4.99E-06	0.016	2.37	0.016	4.48
Lead	7439-92-1	Yes	278	5.21E-06	0.017	2.48	0.017	4.68
Manganese	7439-96-5	Yes	281	9.13E-05	0.30	43.4	0.30	82.0
Mercury	7439-97-6	Yes	284	1.06E-06	3.47E-03	0.50	3.47E-03	0.95
Molybdenum trioxide	1313-27-5	No	317	3.14E-06	0.010	1.49	0.010	2.82
Nickel	7440-02-0	Yes	321	2.80E-06	9.16E-03	1.33	9.16E-03	2.52
Selenium	7782-49-2	Yes	528	1.62E-06	5.30E-03	0.77	5.30E-03	1.46
Silver	7440-22-4	No	531	9.85E-07	3.22E-03	0.47	3.22E-03	0.88
Vanadium (fume or dust)	7440-62-2	No	594	5.94E-07	1.94E-03	0.28	1.94E-03	0.53
Zinc	7440-66-6	No	606	1.30E-04	0.43	61.9	0.43	117
Organic Compounds								
1,2-Dichloropropane	78-87-5	Yes	173	1.68E-05	0.055	7.99	0.055	15.1
Acetaldehyde	75-07-0	Yes	1	2.83E-04	0.93	135	0.93	254
Acetophenone	98-86-2	Yes	5	1.84E-06	6.02E-03	0.88	6.02E-03	1.65
Acrolein	107-02-8	Yes	6	2.60E-04	0.85	124	0.85	234
Benzene	71-43-2	Yes	44	9.80E-04	3.21	466	3.21	880
Carbon tetrachloride	56-23-5	Yes	84	2.01E-05	0.066	9.56	0.066	18.1
Chlorine	7782-50-5	Yes	96	1.22E-03	3.99	580	3.99	1,096
Chlorobenzene	108-90-7	Yes	102	1.66E-05	0.054	7.90	0.054	14.9
Chloroform	67-66-3	Yes	107	2.01E-05	0.066	9.56	0.066	18.1
Crotonaldehyde	4170-30-3	No	132	4.49E-05	0.15	21.4	0.15	40.3
Dibutyl phthalate	84-74-2	Yes	161	3.33E-05	0.11	15.8	0.11	29.9
Diethylphthalate	84-66-2	No	186	2.18E-05	0.071	10.4	0.071	19.6
Ethyl benzene	100-41-4	Yes	221	3.95E-04	1.29	188	1.29	355
Formaldehyde	50-00-0	Yes	240	1.02E-03	3.34	485	3.34	916
Hexane	110-54-3	Yes	262	2.88E-04	0.94	137	0.94	259
Isopropyl alcohol	67-63-0	No	274	3.64E-03	11.9	1,732	11.9	3,270
Methanol	67-56-1	Yes	288	7.32E-04	2.39	348	2.39	658
Methyl bromide	74-83-9	Yes	64	1.14E-05	0.037	5.42	0.037	10.2
Methyl chloride	74-87-3	Yes	108	3.78E-05	0.12	18.0	0.12	34.0
Methyl chloroform	71-55-6	Yes	572	5.78E-05	0.19	27.5	0.19	51.9
Methylene chloride	75-09-2	Yes	170	5.47E-04	1.79	260	1.79	491
Methyl ethyl ketone	78-93-3	No	68	1.56E-05	0.051	7.42	0.051	14.0
Phenol	108-95-2	Yes	383	1.60E-04	0.52	76.1	0.52	144
Phosphorus	7723-14-0	Yes	392	3.10E-04	1.01	148	1.01	278
Propionaldehyde	123-38-6	Yes	510	2.52E-04	0.82	120	0.82	226
Styrene	100-42-5	Yes	536	4.77E-04	1.56	227	1.56	428
Toluene	108-88-3	Yes	555	2.11E-05	0.069	10.0	0.069	19.0
m-Xylene	108-38-3	Yes	603	3.54E-06	0.012	1.68	0.012	3.18
p-Xylene	106-42-3	Yes	605	3.54E-06	0.012	1.68	0.012	3.18
o-Xylene	95-47-6	Yes	604	1.13E-05	0.037	5.38	0.037	10.2
Inorganic Compounds								
Hydrogen fluoride	7664-39-3	Yes	267	2.35E-04	0.77	112	0.77	211
Hydrochloric acid	7647-01-0	Yes	265	4.36E-03	14.3	2,075	14.3	3,916
PAHs								
Acenaphthene	83-32-9	Yes	458	8.53E-07	2.79E-03	0.41	2.79E-03	0.77
Acenaphthylene	208-96-8	Yes	459	4.69E-06	0.015	2.23	0.015	4.21
Anthracene	120-12-7	Yes	460	2.68E-06	8.77E-03	1.28	8.77E-03	2.41
Benz[a]anthracene	56-55-3	Yes	462	8.13E-08	2.66E-04	0.039	2.66E-04	0.073
Benzo[a]pyrene	50-32-8	Yes	463	2.73E-06	8.93E-03	1.30	8.93E-03	2.45
Benzo[b]fluoranthene	205-99-2	Yes	464	1.42E-07	4.65E-04	0.068	4.65E-04	0.13
Benzo[e]pyrene	192-97-2	Yes	466	2.11E-07	6.90E-04	0.10	6.90E-04	0.19
Benzo[g,h,i]perylene	191-24-2	Yes	467	1.51E-07	4.94E-04	0.072	4.94E-04	0.14
Benzo[j]fluoranthene	205-82-3	Yes	468	1.56E-07	5.10E-04	0.074	5.10E-04	0.14
Benzo[k]fluoranthene	207-08-9	Yes	469	5.18E-08	1.69E-04	0.025	1.69E-04	0.047
Chrysene	218-01-9	Yes	471	7.90E-08	2.58E-04	0.038	2.58E-04	0.071
Dibenzo[a,h]anthracene	53-70-3	Yes	476	9.56E-09	3.13E-05	4.55E-03	3.13E-05	8.59E-03
Fluoranthene	206-44-0	Yes	482	1.67E-06	5.46E-03	0.79	5.46E-03	1.50
Fluorene	86-73-7	Yes	483	3.01E-06	9.85E-03	1.43	9.85E-03	2.70
Indeno[1,2,3-cd]pyrene	193-39-5	Yes	484	1.02E-07	3.34E-04	0.049	3.34E-04	0.092
2-Methyl naphthalene	91-57-6	Yes	485	1.40E-06	4.58E-03	0.67	4.58E-03	1.26
Naphthalene	91-20-3	Yes	320	9.96E-05	0.33	47.4	0.33	89.5
Perylene	198-55-0	Yes	486	3.20E-08	1.05E-04	0.015	1.05E-04	0.029
Phenanthrene	85-01-8	Yes	487	6.46E-06	0.021	3.07	0.021	5.80
Pyrene	129-00-0	Yes	488	3.54E-06	0.012	1.68	0.012	3.18
Dioxans & Furans								
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	Yes	440	6.33E-13	2.07E-09	3.01E-07	2.07E-09	5.69E-07
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	No	441	1.38E-12	4.51E-09	6.57E-07	4.51E-09	1.24E-06
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	No	442	9.22E-13	3.02E-09	4.39E-07	3.02E-09	8.28E-07
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	No	443	2.20E-12	7.20E-09	1.05E-06	7.20E-09	1.98E-06
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	No	444	2.28E-12	7.46E-09	1.08E-06	7.46E-09	2.05E-06
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	No	445	9.89E-12	3.24E-08	4.71E-06	3.24E-08	8.88E-06
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	No	446	2.50E-11	8.18E-08	1.19E-05	8.18E-08	2.25E-05
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	No	447	8.30E-12	2.72E-08	3.95E-06	2.72E-08	7.46E-06
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	No	448	4.09E-12	1.34E-08	1.95E-06	1.34E-08	3.67E-06
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	No	449	5.67E-12	1.85E-08	2.70E-06	1.85E-08	5.09E-06
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	No	450	3.64E-12	1.19E-08	1.73E-06	1.19E-08	3.27E-06
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	No	451	3.17E-12	1.04E-08	1.51E-06	1.04E-08	2.85E-06
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	No	452	6.62E-13	2.17E-09	3.15E-07	2.17E-09	5.95E-07
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	No	453	2.69E-12	8.80E-09	1.28E-06	8.80E-09	2.42E-06
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	No	454	5.82E-12	1.90E-08	2.77E-06	1.90E-08	5.23E-06
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	No	455	9.33E-13	3.05E-09	4.44E-07	3.05E-09	8.38E-07
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	No	456	5.15E-12	1.68E-08	2.45E-06	1.68E-08	4.63E-06
Total TAC Emissions Estimate					**52.6**	**7,652**	**52.6**	**14,445**
Total HAP Emissions Estimate					**39.3**	**5,714**	**39.3**	**10,787**

Notes:

(a) Daily emissions estimate (lb/day) = (emission factor [lb/MMBtu]) x (maximum daily heat input [MMBtu/day])
Maximum daily heat input (MMBtu/day) = 3,271 (2)

(b) Annual emissions estimate (lb/yr) = (emission factor [lb/MMBtu]) x (annual heat input [MMBtu/yr])
2019 annual heat input (MMBtu/yr) = 475,817 (2)
PTE annual heat input (MMBtu/yr) = 898,266 (2)

References:

(1) Emission factors provided by the Oregon Department of Environmental Quality. Represents DEQ approved emission factors for wood-fired boiler, fabric filter/ESP control.

(2) See Table 1, Input Process Rates and Parameters.

Table 3
Boilers (Hog Fuel) Wet Scrubber Control - TAC Emissions Estimates
Stimson Lumber Company Forest Grove Complex - Gaston, Oregon

Toxic Air Contaminant	CAS	HAP? (Yes/No)	ODEQ Sequence Number	Emission Factor [1] (lb/MMBtu)	2019 Emission Estimates		PTE Emission Estimates	
					Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)
Metals								
Antimony	7440-36-0	Yes	32	2.00E-06	1.89E-03	0.011	1.89E-03	0.097
Arsenic	7440-38-2	Yes	35	1.11E-05	0.010	0.062	0.010	0.54
Barium	7440-39-3	No	43	3.61E-05	0.034	0.20	0.034	1.75
Beryllium	7440-41-7	Yes	52	5.52E-08	5.21E-05	3.10E-04	5.21E-05	2.67E-03
Cadmium	7440-43-9	Yes	77	3.20E-06	3.02E-03	0.018	3.02E-03	0.15
Chromium VI	18540-29-9	Yes	119	2.35E-07	2.22E-04	1.32E-03	2.22E-04	0.011
Cobalt	7440-48-4	Yes	123	1.95E-06	1.84E-03	0.011	1.84E-03	0.094
Copper and compounds	7440-50-8	No	125	1.82E-05	0.017	0.10	0.017	0.88
Lead	7439-92-1	Yes	278	3.62E-05	0.034	0.20	0.034	1.75
Manganese	7439-96-5	Yes	281	2.50E-04	0.24	1.41	0.24	12.1
Mercury	7439-97-6	Yes	284	9.61E-07	9.07E-04	5.40E-03	9.07E-04	0.046
Molybdenum trioxide	1313-27-5	No	317	3.14E-06	2.96E-03	0.018	2.96E-03	0.15
Nickel	7440-02-0	Yes	321	7.34E-06	6.93E-03	0.041	6.93E-03	0.35
Selenium	7782-49-2	Yes	528	1.71E-06	1.61E-03	9.62E-03	1.61E-03	0.083
Silver	7440-22-4	No	531	9.85E-07	9.30E-04	5.54E-03	9.30E-04	0.048
Vanadium (fume or dust)	7440-62-2	No	594	5.94E-07	5.61E-04	3.34E-03	5.61E-04	0.029
Zinc	7440-66-6	No	606	6.58E-04	0.62	3.70	0.62	31.8
Organic Compounds								
1,2-Dichloropropane	78-87-5	Yes	173	1.68E-05	0.016	0.094	0.016	0.81
Acetaldehyde	75-07-0	Yes	1	2.83E-04	0.27	1.59	0.27	13.7
Acetophenone	98-86-2	Yes	5	1.84E-06	1.74E-03	0.010	1.74E-03	0.089
Acrolein	107-02-8	Yes	6	2.60E-04	0.25	1.46	0.25	12.6
Benzene	71-43-2	Yes	44	9.80E-04	0.93	5.51	0.93	47.4
Carbon tetrachloride	56-23-5	Yes	84	2.01E-05	0.019	0.11	0.019	0.97
Chlorine	7782-50-5	Yes	96	1.22E-03	1.15	6.86	1.15	59.0
Chlorobenzene	108-90-7	Yes	102	1.66E-05	0.016	0.093	0.016	0.80
Chloroform	67-66-3	Yes	107	2.01E-05	0.019	0.11	0.019	0.97
Crotonaldehyde	4170-30-3	No	132	4.49E-05	0.042	0.25	0.042	2.17
Dibutyl phthalate	84-74-2	Yes	161	3.33E-05	0.031	0.19	0.031	1.61
Diethylphthalate	84-66-2	No	186	2.18E-05	0.021	0.12	0.021	1.05
Ethyl benzene	100-41-4	Yes	221	3.95E-04	0.37	2.22	0.37	19.1
Formaldehyde	50-00-0	Yes	240	1.02E-03	0.96	5.74	0.96	49.3
Hexane	110-54-3	Yes	262	2.88E-04	0.27	1.62	0.27	13.9
Isopropyl alcohol	67-63-0	No	274	3.64E-03	3.44	20.5	3.44	176
Methanol	67-56-1	Yes	288	7.32E-04	0.69	4.12	0.69	35.4
Methyl bromide	74-83-9	Yes	64	1.14E-05	0.011	0.064	0.011	0.55
Methyl chloride	74-87-3	Yes	108	3.78E-05	0.036	0.21	0.036	1.83
Methyl chloroform	71-55-6	Yes	572	5.78E-05	0.055	0.33	0.055	2.79
Methylene chloride	75-09-2	Yes	170	5.47E-04	0.52	3.08	0.52	26.4
Methyl ethyl ketone	78-93-3	No	68	1.56E-05	0.015	0.088	0.015	0.75
Phenol	108-95-2	Yes	383	1.60E-04	0.15	0.90	0.15	7.74
Phosphorus	7723-14-0	Yes	392	9.85E-05	0.093	0.55	0.093	4.76
Propionaldehyde	123-38-6	Yes	510	2.52E-04	0.24	1.42	0.24	12.2
Styrene	100-42-5	Yes	536	4.77E-04	0.45	2.68	0.45	23.1
Toluene	108-88-3	Yes	555	2.11E-05	0.020	0.12	0.020	1.02
m-Xylene	108-38-3	Yes	603	3.54E-06	3.34E-03	0.020	3.34E-03	0.17
p-Xylene	106-42-3	Yes	605	3.54E-06	3.34E-03	0.020	3.34E-03	0.17
o-Xylene	95-47-6	Yes	604	1.13E-05	0.011	0.064	0.011	0.55
Inorganic Compounds								
Hydrogen fluoride	7664-39-3	Yes	267	1.69E-05	0.016	0.095	0.016	0.82
Hydrochloric acid	7647-01-0	Yes	265	2.66E-04	0.25	1.50	0.25	12.9
PAHs								
Acenaphthene	83-32-9	Yes	458	8.53E-07	8.05E-04	4.80E-03	8.05E-04	0.041
Acenaphthylene	208-96-8	Yes	459	4.69E-06	4.43E-03	0.026	4.43E-03	0.23
Anthracene	120-12-7	Yes	460	2.68E-06	2.53E-03	0.015	2.53E-03	0.13
Benz[a]anthracene	56-55-3	Yes	462	8.13E-08	7.68E-05	4.57E-04	7.68E-05	3.93E-03
Benzo[a]pyrene	50-32-8	Yes	463	2.73E-06	2.58E-03	0.015	2.58E-03	0.13
Benzo[b]fluoranthene	205-99-2	Yes	464	1.42E-07	1.34E-04	7.98E-04	1.34E-04	6.87E-03
Benzo[e]pyrene	192-97-2	Yes	466	2.11E-07	1.99E-04	1.19E-03	1.99E-04	0.010
Benzo[g,h,i]perylene	191-24-2	Yes	467	1.51E-07	1.43E-04	8.49E-04	1.43E-04	7.30E-03
Benzo[j]fluoranthene	205-82-3	Yes	468	1.56E-07	1.47E-04	8.77E-04	1.47E-04	7.54E-03
Benzo[k]fluoranthene	207-08-9	Yes	469	5.18E-08	4.89E-05	2.91E-04	4.89E-05	2.50E-03
Chrysene	218-01-9	Yes	471	7.90E-08	7.46E-05	4.44E-04	7.46E-05	3.82E-03
Dibenzo[a,h]anthracene	53-70-3	Yes	476	9.56E-09	9.03E-06	5.38E-05	9.03E-06	4.62E-04
Fluoranthene	206-44-0	Yes	482	1.67E-06	1.58E-03	9.39E-03	1.58E-03	0.081
Fluorene	86-73-7	Yes	483	3.01E-06	2.84E-03	0.017	2.84E-03	0.15
Indeno[1,2,3-cd]pyrene	193-39-5	Yes	484	1.02E-07	9.63E-05	5.74E-04	9.63E-05	4.93E-03
2-Methyl naphthalene	91-57-6	Yes	485	1.40E-06	1.32E-03	7.87E-03	1.32E-03	0.068
Naphthalene	91-20-3	Yes	320	9.96E-05	0.094	0.56	0.094	4.82
Perylene	198-55-0	Yes	486	3.20E-08	3.02E-05	1.80E-04	3.02E-05	1.55E-03
Phenanthrene	85-01-8	Yes	487	6.46E-06	6.10E-03	0.036	6.10E-03	0.31
Pyrene	129-00-0	Yes	488	3.54E-06	3.34E-03	0.020	3.34E-03	0.17
Dioxans & Furans								
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	Yes	440	6.33E-13	5.98E-10	3.56E-09	5.98E-10	3.06E-08
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	No	441	1.38E-12	1.30E-09	7.76E-09	1.30E-09	6.67E-08
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	No	442	9.22E-13	8.71E-10	5.18E-09	8.71E-10	4.46E-08
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	No	443	2.20E-12	2.08E-09	1.24E-08	2.08E-09	1.06E-07
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	No	444	2.28E-12	2.15E-09	1.28E-08	2.15E-09	1.10E-07
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	No	445	9.89E-12	9.34E-09	5.56E-08	9.34E-09	4.78E-07
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	No	446	2.50E-11	2.36E-08	1.41E-07	2.36E-08	1.21E-06
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	No	447	8.30E-12	7.84E-09	4.67E-08	7.84E-09	4.01E-07
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	No	448	4.09E-12	3.86E-09	2.30E-08	3.86E-09	1.98E-07
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	No	449	5.67E-12	5.35E-09	3.19E-08	5.35E-09	2.74E-07
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	No	450	3.64E-12	3.44E-09	2.05E-08	3.44E-09	1.76E-07
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	No	451	3.17E-12	2.99E-09	1.78E-08	2.99E-09	1.53E-07
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	No	452	6.62E-13	6.25E-10	3.72E-09	6.25E-10	3.20E-08
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	No	453	2.69E-12	2.54E-09	1.51E-08	2.54E-09	1.30E-07
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	No	454	5.82E-12	5.50E-09	3.27E-08	5.50E-09	2.81E-07
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	No	455	9.33E-13	8.81E-10	5.25E-09	8.81E-10	4.51E-08
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	No	456	5.15E-12	4.86E-09	2.90E-08	4.86E-09	2.49E-07
Total TAC Emissions Estimate					**11.5**	**68.2**	**11.5**	**587**
Total HAP Emissions Estimate					**7.26**	**43.3**	**7.26**	**372**

Notes:

(a) Daily emissions estimate (lb/day) = (emission factor [lb/MMBtu]) x (maximum daily heat input [MMBtu/day])
Maximum daily heat input (MMBtu/day) = 944 (2)

(b) Annual emissions estimate (lb/yr) = (emission factor [lb/MMBtu]) x (annual heat input [MMBtu/yr])
2019 annual heat input (MMBtu/yr) = 5,623 (2)
PTE annual heat input (MMBtu/yr) = 48,345 (2)

References:

(1) Emission factors provided by the Oregon Department of Environmental Quality. Represents DEQ approved emission factors for wood-fired boiler, wet scrubber control.

(2) See Table 1, Input Process Rates and Parameters.

Table 4
Fuel Dryer TAC Emission Estimates
Stimson Lumber Company Forest Grove Complex - Gaston, Oregon

Toxic Air Contaminant	CAS	HAP? (Yes/No)	ODEQ Sequence Number	Emission Factor [1] (lb/ODT)	2019 Emission Estimates		PTE Emission Estimates	
					Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)
Metals								
Arsenic	7440-38-2	Yes	35	1.2E-06	1.8E-04	4.5E-03	1.8E-04	0.015
Cadmium	7440-43-9	Yes	77	3.1E-06	4.5E-04	0.011	4.5E-04	0.038
Chromium VI	18540-29-9	Yes	119	3.4E-05	4.9E-03	0.12	4.9E-03	0.40
Lead	7439-92-1	Yes	278	1.9E-05	2.8E-03	0.071	2.8E-03	0.23
Cumene	98-82-8	Yes	275	3.7E-05	5.3E-03	0.13	5.3E-03	0.44
Manganese	7439-96-5	Yes	281	1.0E-03	0.15	3.75	0.15	12.2
Nickel	7440-02-0	Yes	321	2.6E-05	3.7E-03	0.095	3.7E-03	0.31
Organic Compounds								
Acetaldehyde	75-07-0	Yes	1	0.075	10.8	277	10.8	904
Acetophenone	98-86-2	Yes	5	3.1E-05	4.4E-03	0.11	4.4E-03	0.37
Acrolein	107-02-8	Yes	6	0.019	2.71	69.0	2.71	226
Benzene	71-43-2	Yes	44	2.6E-03	0.38	9.62	0.38	31.4
Crotonaldehyde	4170-30-3	No	132	5.5E-03	0.78	20.0	0.78	65.4
Formaldehyde	50-00-0	Yes	240	0.17	23.8	606	23.8	1,980
Methanol	67-56-1	Yes	288	0.10	14.8	378	14.8	1,236
Methyl ethyl ketone	78-93-3	No	68	3.7E-03	0.53	13.5	0.53	44.3
Methyl isobutyl ketone	108-10-1	Yes	300	3.7E-03	0.53	13.5	0.53	44.3
Phenol	108-95-2	Yes	383	0.023	3.36	85.6	3.36	280
Propionaldehyde	123-38-6	Yes	510	9.9E-03	1.42	36.2	1.42	118
Styrene	100-42-5	Yes	536	1.2E-04	0.017	0.43	0.017	1.39
Toluene	108-88-3	Yes	555	4.3E-03	0.62	15.8	0.62	51.5
Biphenyl	92-52-4	Yes	55	1.6E-05	2.2E-03	0.057	2.2E-03	0.19
Vinyl acetate	108-05-4	Yes	596	2.9E-05	4.2E-03	0.11	4.2E-03	0.35
PAHs								
Acenaphthene	83-32-9	Yes	458	5.7E-05	8.2E-03	0.21	8.2E-03	0.68
Acenaphthylene	208-96-8	Yes	459	1.8E-04	0.026	0.65	0.026	2.14
Anthracene	120-12-7	Yes	460	3.5E-05	5.0E-03	0.13	5.0E-03	0.42
Benz[a]anthracene	56-55-3	Yes	462	8.1E-06	1.2E-03	0.030	1.2E-03	0.097
Benzo[a]pyrene	50-32-8	Yes	463	9.9E-06	1.4E-03	0.036	1.4E-03	0.12
Benzo[b]fluoranthene	205-99-2	Yes	464	3.5E-05	5.0E-03	0.13	5.0E-03	0.42
Benzo[g,h,i]perylene	191-24-2	Yes	467	5.2E-05	7.5E-03	0.19	7.5E-03	0.62
Benzo[k]fluoranthene	207-08-9	Yes	469	8.9E-06	1.3E-03	0.033	1.3E-03	0.11
Butyl benzyl phthalate	85-68-7	No	74	4.3E-05	6.1E-03	0.16	6.1E-03	0.51
Chrysene	218-01-9	Yes	471	1.4E-05	2.0E-03	0.051	2.0E-03	0.17
Fluoranthene	206-44-0	Yes	482	2.4E-04	0.034	0.86	0.034	2.82
Fluorene	86-73-7	Yes	483	1.2E-04	0.017	0.44	0.017	1.45
Indeno[1,2,3-cd]pyrene	193-39-5	Yes	484	4.4E-05	6.3E-03	0.16	6.3E-03	0.53
1,2,4-Trichlorobenzene	120-82-1	Yes	571	6.4E-05	9.3E-03	0.24	9.3E-03	0.77
Naphthalene	91-20-3	Yes	320	3.8E-03	0.54	13.8	0.54	45.1
Phenanthrene	85-01-8	Yes	487	5.9E-04	0.085	2.16	0.085	7.04
Dioxans & Furans								
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	Yes	440	1.3E-10	1.9E-08	4.7E-07	1.9E-08	1.5E-06
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	No	441	3.3E-10	4.8E-08	1.2E-06	4.8E-08	4.0E-06
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	No	442	2.0E-10	2.9E-08	7.5E-07	2.9E-08	2.4E-06
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	No	443	2.2E-10	3.2E-08	8.1E-07	3.2E-08	2.6E-06
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	No	444	4.2E-10	6.0E-08	1.5E-06	6.0E-08	5.0E-06
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	No	445	9.4E-10	1.4E-07	3.5E-06	1.4E-07	1.1E-05
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9	No	446	7.0E-10	1.0E-07	2.6E-06	1.0E-07	8.4E-06
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	No	448	7.5E-10	1.1E-07	2.7E-06	1.1E-07	9.0E-06
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	No	449	1.3E-09	1.9E-07	4.7E-06	1.9E-07	1.5E-05
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	No	450	1.3E-09	1.9E-07	4.9E-06	1.9E-07	1.6E-05
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	No	451	5.8E-10	8.4E-08	2.1E-06	8.4E-08	7.0E-06
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	No	452	5.1E-11	7.3E-09	1.9E-07	7.3E-09	6.1E-07
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	No	453	8.9E-10	1.3E-07	3.3E-06	1.3E-07	1.1E-05
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	No	454	1.4E-09	2.0E-07	5.0E-06	2.0E-07	1.6E-05
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	No	455	2.0E-10	2.8E-08	7.2E-07	2.8E-08	2.3E-06
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	No	456	3.8E-10	5.4E-08	1.4E-06	5.4E-08	4.5E-06
Total TAC Emissions Estimate					**60.7**	**1,548**	**60.7**	**5,059**
Total HAP Emissions Estimate					**59.4**	**1,514**	**59.4**	**4,949**

Notes:

(a) Daily emissions estimate (lb/day) = (emission factor [lb/MMBtu]) x (maximum daily heat input [MMBtu/day])
Maximum daily heat input (MMBtu/day) = 144 (2)

(b) Annual emissions estimate (lb/yr) = (emission factor [lb/MMBtu]) x (annual heat input [MMBtu/yr])
2018 annual heat input (MMBtu/yr) = 3,672 (2)
PTE annual heat input (MMBtu/yr) = 12,000 (2)

References:

(1) Emission factors provided by the Oregon Department of Environmental Quality.
(2) See Table 1, Input Process Rates and Parameters.

Table 5
Kilns (Douglas Fir) TAC Emission Estimates
Stimson Lumber Company Forest Grove Complex - Gaston, Oregon

Toxic Air Contaminant	CAS	HAP? (Yes/No)	ODEQ Sequence Number	Emission Factor [1] (lb/Mbdft)	2019 Emission Estimates		PTE Emission Estimates	
					Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)
Acetaldehyde	75-07-0	Yes	1	0.051	49.0	4,346	49.0	7,450
Acrolein	107-02-8	Yes	6	7.0E-04	0.67	59.6	0.67	102
Formaldehyde	50-00-0	Yes	240	1.3E-03	1.25	111	1.25	190
Methanol	67-56-1	Yes	288	0.039	37.4	3,315	37.4	5,684
Propionaldehyde	123-38-6	Yes	510	5.0E-04	0.48	42.6	0.48	73.0
Total TAC Emissions Estimate					**88.7**	**7,874**	**88.7**	**13,499**
Total HAP Emissions Estimate					**88.7**	**7,874**	**88.7**	**13,499**

Notes:

(a) Daily emissions estimate (lb/day) = (maximum emission factor of Douglas Fir [lb/Mbdft]) x (maximum daily throughput [Mbdft/day])

Maximum daily throughput (Mbdft/day) = 960 (2)

(b) Annual emissions estimate (lb/yr) = (maximum emission factor of Douglas Fir [lb/Mbdft]) x (annual throughput [Mbdft/yr])

2019 annual throughput (Mbdft/yr) = 85,210 (2)

PTE annual throughput (Mbdft/yr) = 146,075 (2)

References:

(1) Oregon Department of Environmental Quality (January 2015), "2015 Compilation of VOC and HAP Emission Factors for Lumber Drying Kilns - ODEQ and EPA R10." Representative of Douglas Fir, less than 200 F, 2013 emission factors. Emission Factors previously approved by DEQ.

(2) See Table 1, Input Process Rates and Parameters.

Table 6
Kilns (Hemlock) TAC Emission Estimates
Stimson Lumber Company Forest Grove Complex - Gaston, Oregon

Toxic Air Contaminant	CAS	HAP? (Yes/No)	ODEQ Sequence Number	Emission Factor [1] (lb/Mbdft)	2019 Emission Estimates		PTE Emission Estimates	
					Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)
Acetaldehyde	75-07-0	Yes	1	0.12	115	2,375	115	4,071
Acrolein	107-02-8	Yes	6	1.5E-03	1.44	29.7	1.44	50.9
Formaldehyde	50-00-0	Yes	240	1.3E-03	1.25	25.7	1.25	44.1
Methanol	67-56-1	Yes	288	0.081	77.6	1,601	77.6	2,744
Propionaldehyde	123-38-6	Yes	510	1.2E-03	1.15	23.7	1.15	40.7
Total TAC Emissions Estimate					**197**	**4,055**	**197**	**6,951**
Total HAP Emissions Estimate					**197**	**4,055**	**197**	**6,951**

Notes:

(a) Daily emissions estimate (lb/day) = (maximum emission factor of Hemlock [lb/Mbdft]) x (maximum daily throughput [Mbdft/day])

Maximum daily throughput (Mbdft/day) = 960 (2)

(b) Annual emissions estimate (lb/yr) = (maximum emission factor of Hemlock [lb/Mbdft]) x (annual throughput [Mbdft/yr])

2019 annual throughput (Mbdft/yr) = 19,790 (2)

PTE annual throughput (Mbdft/yr) = 33,925 (2)

References:

(1) Oregon Department of Environmental Quality (January 2015), "2015 Compilation of VOC and HAP Emission Factors for Lumber Drying Kilns - ODEQ and EPA R10." Representative of Western Hemlock, less than 200 F, 2013 emission factors. Emission Factors previously approved by DEQ.

(2) See Table 1, Input Process Rates and Parameters.

Table 7
Press TAC Emissions Estimates
Stimson Lumber Company Forest Grove Complex - Gaston, Oregon

Toxic Air Contaminant	CAS	HAP? (Yes/No)	ODEQ Sequence Number	Emission Factor [1] (lb/Mbdft)	2019 Emission Estimates		PTE Emission Estimates	
					Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)
Formaldehyde	50-00-0	Yes	240	3.4E-03	1.99	222	1.99	357
Methanol	67-56-1	Yes	288	0.15	88.0	9,791	88.0	15,750
Total TAC Emissions Estimate					**90.0**	**10,013**	**90.0**	**16,107**
Total HAP Emissions Estimate					**90.0**	**10,013**	**90.0**	**16,107**

Notes:

(a) Daily emissions estimate (lb/day) = (emission factor [lb/Mbdft]) x (maximum daily production [Mbdft/day])

Maximum daily production (Mbdft/day) = 586.8 (2)

(b) Annual emissions estimate (lb/yr) = (emission factor [lb/Mbdft]) x (annual production [Mbdft/yr])

2019 annual production (Mbdft/yr) = 65,275 (2)

PTE annual production (Mbdft/yr) = 105,000 (2)

References:

(1) AP-42 Chapter 10 (October 2002), Table 10.6.4-6, "Emission Factors for Hardboard Presses - Organics." Representative of scrubber control. Emission Factors previously approved by DEQ.

(2) See Table 1, Input Process Rates and Parameters.

Table 8
Refiner TAC Emission Estimates
Stimson Lumber Company Forest Grove Complex - Gaston, Oregon

Toxic Air Contaminant	CAS	HAP? (Yes/No)	ODEQ Sequence Number	Emission Factor [1] (lb/ODT)	2019 Emission Estimates		PTE Emission Estimates	
					Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)
Acetaldehyde	75-07-0	Yes	1	0.037	6.46	805	6.46	1,293
Acrolein	107-02-8	Yes	6	5.5E-03	0.96	119	0.96	192
Formaldehyde	50-00-0	Yes	240	6.3E-03	1.11	138	1.11	221
Methanol	67-56-1	Yes	288	0.020	3.47	432	3.47	694
Methyl ethyl ketone (MEK)	78-93-3	No	68	2.5E-04	0.044	5.46	0.044	8.76
Methyl isobutyl ketone	108-10-1	Yes	300	2.6E-04	0.045	5.63	0.045	9.04
Propionaldehyde	123-38-6	Yes	510	8.8E-04	0.15	19.1	0.15	30.7
Styrene	100-42-5	Yes	536	1.8E-04	0.032	3.97	0.032	6.38
Total TAC Emissions Estimate					**12.3**	**1,529**	**12.3**	**2,455**
Total HAP Emissions Estimate					**12.2**	**1,524**	**12.2**	**2,446**

Notes:

(a) Daily emissions estimate (lb/day) = (emission factor [lb/ODT]) x (maximum daily throughput [ODT/day])

Maximum daily throughput (ODT/day) = 175 (2)

(b) Annual emissions estimate (lb/yr) = (emission factor [lb/ODT]) x (annual throughput [ODT/yr])

2019 annual throughput (ODT/yr) = 21,827 (2)

PTE annual throughput (ODT/yr) = 35,040 (2)

References:

(1) Emission factors provided by DEQ and were derived from Source Test Evaluation Report (2007). DEQ notes "2007 source test performed on the rotary valve outlet and mix chest. The mix chest average was taken from the 2nd and 3rd runs as the 1st run was not operating properly for the entire run."

(2) See Table 1, Input Process Rates and Parameters.

Table 9
Forming Line TAC Emission Estimates
Stimson Lumber Company Forest Grove Complex - Gaston, Oregon

Toxic Air Contaminant	CAS	HAP? (Yes/No)	ODEQ Sequence Number	Emission Factor [1] (lb/ODT)	2019 Emission Estimates		PTE Emission Estimates	
					Daily [a] (lb/day)	Annual [b] (lb/yr)	Daily [a] (lb/day)	Annual [b] (lb/yr)
Acetaldehyde	75-07-0	Yes	1	7.3E-03 [3]	1.27	158	1.27	254
Acrolein	107-02-8	Yes	6	6.4E-04 [3]	0.11	14.0	0.11	22.5
Formaldehyde	50-00-0	Yes	240	2.9E-03 [3]	0.50	62.9	0.50	101
Methanol	67-56-1	Yes	288	0.016 [3]	2.87	358	2.87	575
Methyl Ethyl Ketone	78-93-3	No	68	4.5E-04 [4]	0.079	9.82	0.079	15.8
Methyl Isobutyl Ketone	108-10-1	Yes	300	2.3E-04 [4]	0.040	5.00	0.040	8.02
Toluene	108-88-3	Yes	555	4.5E-04 [4]	0.079	9.89	0.079	15.9
Total TAC Emissions Estimate					**4.96**	**618**	**4.96**	**992**
Total HAP Emissions Estimate					**4.88**	**608**	**4.88**	**976**

Notes:

(a) Daily emissions estimate (lb/day) = (emission factor [lb/ODT]) x (maximum daily throughput [ODT/day])

Maximum daily throughput (ODT/day) = 175 (2)

(b) Annual emissions estimate (lb/yr) = (emission factor [lb/ODT]) x (annual throughput [ODT/yr])

2019 annual throughput (ODT/yr) = 21,827 (2)

PTE annual throughput (ODT/yr) = 35,040 (2)

References:

(1) Emission factors provided by DEQ as part of revised air toxics submittal.

(2) See Table 1, Input Process Rates and Parameters.

(3) Source Test Evaluation Report prepared by Horizon Engineering LLC. for Stimson Lumber Company dated July 12, 2007. Source test conducted on forming line vacuum pump.

(4) Emission factor provided by DEQ.

Table 10
Wastewater Treatment Plant TAC Emission Estimates
Stimson Lumber Company Forest Grove Complex - Gaston, Oregon

Toxic Emission Unit	WATER9 Model Output [1] (Mg/yr)		Wastewater Treatment Plant Total Emissions Estimate			
			2019		PTE	
	2019	PTE	(lb/day) [a]	(lb/yr) [b]	(lb/day) [c]	(lb/yr) [d]
Formaldehyde (50-00-0)						
Surge Pond	3.61E-02	7.16E-02	2.18E-01	79.6	4.32E-01	157.9
Aeration Basin	7.93E-08	3.05E-05	4.79E-07	1.75E-04	1.84E-04	6.73E-02
Secondary Clarifier	9.60E-12	2.05E-09	5.80E-11	2.12E-08	1.24E-08	4.52E-06
Sludge Pit	1.09E-14	2.47E-12	6.58E-14	2.40E-11	1.49E-11	5.45E-09
Sludge Pond	1.38E-12	5.87E-10	8.35E-12	3.05E-09	3.54E-09	1.29E-06
East Pond	3.40E-15	1.44E-12	2.05E-14	7.49E-12	8.71E-12	3.18E-09
Reuse Pond	1.08E-10	3.98E-08	6.50E-10	2.37E-07	2.40E-07	8.78E-05
Total Formaldehyde			**0.22**	**79.6**	**0.43**	**158**
Acetone (67-64-1)						
Surge Pond	1.81E-03	3.61E-03	1.09E-02	3.99	2.18E-02	7.96
Aeration Basin	9.38E-09	1.87E-08	5.67E-08	2.07E-05	1.13E-07	4.12E-05
Secondary Clarifier	3.86E-25	4.08E-25	2.33E-24	8.51E-22	2.46E-24	8.99E-22
Sludge Pit	1.16E-14	2.29E-14	6.98E-14	2.55E-11	1.38E-13	5.04E-11
Sludge Pond	1.02E-13	2.05E-13	6.17E-13	2.25E-10	1.24E-12	4.52E-10
East Pond	2.12E-16	4.25E-16	1.28E-15	4.66E-13	2.57E-15	9.38E-13
Reuse Pond	6.45E-12	1.30E-11	3.89E-11	1.42E-08	7.83E-11	2.86E-08
Total Acetone			**0.011**	**3.99**	**0.022**	**7.96**
Total TACS			**0.23**	**83.6**	**0.45**	**166**
Total HAPS			**0.22**	**79.6**	**0.43**	**158**

Notes:

(a) 2019 daily emission estimate (lb/day) = (2019 wastewater treatment plan total emissions estimate [lb/yr] / (2019 annual days of operation)
2019 annual days of operation (day/yr) = 365 (2)

(b) 2019 annual emission estimate (lb/yr) = (2019 WATER9 model output [Mg/yr]) x (1,000,000 g/Mg) / 453.59 [g/lb])

(c) PTE daily emission estimate (lb/day) = (PTE wastewater treatment plan total emissions estimate [lb/yr] / (PTE annual days of operation)
2019 annual days of operation (day/yr) = 365 (2)

(d) PTE annual emission estimate (lb/yr) = (PTE WATER9 model output [Mg/yr]) x (1,000,000 g/Mg) / 453.59 [g/lb])

References:

(1) Annual emissions were estimated using the WATER9 wastewater treatment model.

(2) See Table 1, Input Process Rates and Parameters.

Table 11
Paintline - Basecoat TAC Emissions Estimates
Stimson Lumber Company Forest Grove Complex - Gaston, Oregon

Product	Vendor	Air Toxic [1]	CAS	HAP? (Yes/No)	ODEQ Sequence Number	% Weight Pollutant [1]	Product Density [a] (lb/gallon)	2019 Emission Estimates		PTE Emissions Estimate	
								Daily [b] (lb/day)	Annual [c] (lb/yr)	Daily [b] (lb/day)	Annual [c] (lb/yr)
Paintline - Basecoat 631-W020-1601	Akzo Nobel	Ethylene glycol monobutyl ether	111-76-2	Yes	228	3.00	11.43	0.78	79.6	0.78	156.5
		Ammonia	7664-41-7	No	25	3.80E-03		9.91E-04	0.10	9.91E-04	0.20
		Butyl acrylate	141-32-2	No	70	1.22E-02		3.18E-03	0.32	3.18E-03	0.64
		Formaldehyde	50-00-0	Yes	240	2.70E-03		7.04E-04	0.07	7.04E-04	0.14
		Methanol	67-56-1	Yes	288	1.82E-02		4.75E-03	0.48	4.75E-03	0.95
		Silica, crystalline (respirable)	7631-86-9	No	530	2.82E-01		7.35E-02	7.47	7.35E-02	14.7
		Vinyl acetate	108-05-4	Yes	596	1.22E-02		3.18E-03	0.32	3.18E-03	0.64
Total Emissions Estimate								**0.87**	**88.3**	**0.87**	**174**
Total HAP Emissions Estimate								**0.79**	**80.4**	**0.79**	**158**

Notes:

(a) Product density (lb/gal) = (prodcut density [g/cm^3]) x (density of water [lb/gal])

Product density (g/cm^{3}l) = 1.37 (1)

Density of water (lb/gal) = 8.345 (2)

(b) Daily emissions estimate (lb/day) = (maximum daily product usage [gal/day]) x (product density [lb/gal]) x (percent weight pollutant [%] / 100)

Maximum daily product usage (gal/day) = 2.28 (3)

(c) Annual emissions estimate (lbs/yr) = (product usage [gal/yr]) x (product density [lb/gal]) x (weight percent [%] / 100)

2019 annual product usage (gal/yr) = 232 (3)

PTE annual product usage (gal/yr) = 456 (3)

References:

(1) Information from Safety Data Sheet provided by Stimson Lumber Company.

(2) Density of water at 4 degrees Celsius.

(3) See Table 1, Input Process Rates and Parameters.

Table 12
Paintline - High Gloss Topcoat TAC Emissions Estimates
Stimson Lumber Company Forest Grove Complex - Gaston, Oregon

Product	Vendor	Air Toxic [1]	CAS	HAP? (Yes/No)	ODEQ Sequence Number	% Weight Pollutant [1]	Product Density [a] (lb/gallon)	2019 Emission Estimates		PTE Emissions Estimate	
								Daily [b] (lb/day)	Annual [c] (lb/yr)	Daily [b] (lb/day)	Annual [c] (lb/yr)
Paintline - High Gloss Topcoat (621-C020-232)	Akzo Nobel	Ethylene glycol monobutyl ether	111-76-2	Yes	228	3.00	11.43	0.169	17	0.169	34
Total Emissions Estimate						.		**0.17**	**17.1**	**0.17**	**33.7**

Notes:

(a) Product density (lb/gal) = (product density [g/cm^3]) x (density of water [lb/gal])

Product density (g/cm^{3}l) = 1.37 (1)

Density of water (lb/gal) = 8.345 (2)

(b) Daily emissions estimate (lb/day) = (maximum daily product usage [gal/day]) x (product density [lb/gal]) x (percent weight pollutant [%] / 100)

Maximum daily product usage (gal/day) = 0.49 (3)

(c) Annual emissions estimate (lb/yr) = (product usage [gal/yr]) x (product density [lb/gal]) x (weight percent [%] / 100)

2019 annual product usage (gal/yr) = 50 (3)

PTE annual product usage (gal/yr) = 98 (3)

References:

(1) Information from Safety Data Sheet provided by Stimson Lumber Company.

(2) Density of water at 4 degrees Celsius.

(3) See Table 1, Input Process Rates and Parameters.

Table 13
Lumber Surface - Mycostat P51 TAC Emissions Estimates
Stimson Lumber Company Forest Grove Complex - Gaston, Oregon

Product	Vendor	Air Toxic [1]	CAS	HAP? (Yes/No)	ODEQ Sequence Number	% Weight Pollutant [1]	Product Density [a] (lb/gallon)	2019 Emission Estimates		PTE Emissions Estimate	
								Daily [b] (lb/day)	Annual [c] (lb/yr)	Daily [b] (lb/day)	Annual [c] (lb/yr)
Lumber Surface - Mycostat P51	Lonza	Dipropylene glycol monomethyl ether	34590-94-8	No	210	5.00	7.51	3.69	1,239	3.69	1,993
Total Emissions Estimate								**3.69**	**1,239**	**3.69**	**1,993**

Notes:

(a) Product density (lb/gal) = (product density [g/cm^3]) x (density of water [lb/gal])

Product density (g/cm^{3}l) = 0.9 (1)

Density of water (lb/gal) = 8.345 (2)

(b) Daily emissions estimate (lb/day) = (maximum daily product usage [gal/day]) x (product density [lb/gal]) x (percent weight pollutant [%] / 100)

Maximum daily product usage (gal/day) = 9.82 (3)

(c) Annual emissions estimate (lb/yr) = (product usage [gal/yr]) x (product density [lb/gal]) x (weight percent [%] / 100)

2019 annual product usage (gal/yr) = 3,300 (3)

PTE annual product usage (gal/yr) = 5,308 (3)

References:

(1) Information from Safety Data Sheet provided by Stimson Lumber Company.

(2) Density of water at 4 degrees Celsius.

(3) See Table 1, Input Process Rates and Parameters.

Table 14
2019 TAC Emission Estimates Summary
Stimson Lumber Company Forest Grove Complex - Gaston, Oregon

Toxic Air Contaminant	CAS	HAP? (Yes/No)	ODEQ Sequence Number	Emission Estimate																																					
				Hogged Fuel-Fired Boiler (ESP Control)		Hogged Fuel-Fired Boiler (Scrubber Control)		Fuel Dryer		Lumber Kiln (Douglas Fir)		Lumber Kiln (Hemlock)		Press		Refiner		Former		WW - Surge Pond		WW - Aeration Basin		WW - Secondary Clarifier		WW - Sludge Pit Conveyor		WW - Sludge Pond		WW - Reuse Pond		WW - East Pond		Paintline - Basecoat		Paintline - Topcoat		LSP - Mycostat P51		Facility Total	
				Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Metals																																									
Antimony and compounds	7440-36-0	Yes	32	9.9E-04	0.14	1.9E-03	0.011	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.9E-03	0.15
Arsenic and compounds	7440-38-2	Yes	35	6.1E-03	0.89	0.010	0.062	1.8E-04	4.5E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.017	0.96
Barium and compounds	7440-39-3	No	43	0.69	99.9	0.034	0.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.72	100
Beryllium and compounds	7440-41-7	Yes	52	9.8E-05	0.014	5.2E-05	3.1E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.5E-04	0.015
Cadmium and compounds	7440-43-9	Yes	77	1.2E-03	0.17	3.0E-03	0.018	4.5E-04	0.011	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.7E-03	0.20
Chromium VI, chromate and dichromate particu	18540-29-9	Yes	119	8.9E-04	0.13	2.2E-04	1.3E-03	4.9E-03	0.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.0E-03	0.25
Cobalt and compounds	7440-48-4	Yes	123	7.7E-03	1.12	1.8E-03	0.011	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.5E-03	1.13
Copper and compounds	7440-50-8	No	125	0.016	2.37	0.017	0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.034	2.48
Lead and compounds	7439-92-1	Yes	278	0.017	2.48	0.034	0.20	2.8E-03	0.071	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.054	2.75
Manganese and compounds	7439-96-5	Yes	281	0.30	43.4	0.24	1.41	0.15	3.75	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.68	48.6
Mercury and compounds	7439-97-6	Yes	284	3.5E-03	0.50	9.1E-04	5.4E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.4E-03	0.51
Molybdenum trioxide	1313-27-5	No	317	0.010	1.49	3.0E-03	0.018	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.013	1.51
Nickel and compounds	7440-02-0	Yes	321	9.2E-03	1.33	6.9E-03	0.041	3.7E-03	0.095	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.020	1.47
Selenium and compounds	7782-49-2	Yes	528	5.3E-03	0.77	1.6E-03	9.6E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.9E-03	0.78
Phosphorus and compounds	7723-14-0	Yes	392	1.01	148	0.093	0.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.11	148
Silver and compounds	7440-22-4	No	531	3.2E-03	0.47	9.3E-04	5.5E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.2E-03	0.47
Vanadium (fume or dust)	7440-62-2	No	594	1.9E-03	0.28	5.6E-04	3.3E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.5E-03	0.29
Zinc and compounds	7440-66-6	No	606	0.43	61.9	0.62	3.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.05	65.6
Organic Compounds																																									
1,2-Dichloropropane (Propylene dichloride)	78-87-5	Yes	173	0.055	7.99	0.016	0.094	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.071	8.09
1,2,4-Trichlorobenzene	120-82-1	Yes	571	--	--	--	--	9.3E-03	0.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.3E-03	0.24
Acetaldehyde	75-07-0	Yes	1	0.93	135	0.27	1.59	10.8	277	49.0	4,346	115	2,375	--	--	6.46	805	1.27	158	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	184	8,097
Acetone	67-64-1	No	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.011	3.99	5.7E-08	2.1E-05	2.3E-24	8.5E-22	7.0E-14	2.5E-11	6.2E-13	2.3E-10	3.9E-11	1.4E-08	1.3E-15	4.7E-13	--	--	--	--	--	--	0.011	3.99
Acetophenone	98-86-2	Yes	5	6.0E-03	0.88	1.7E-03	0.010	4.4E-03	0.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.012	1.00
Acrolein	107-02-8	Yes	6	0.85	124	0.25	1.46	2.71	69.0	0.67	59.6	1.44	29.7	--	--	0.96	119	0.11	14.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.99	417
Ammonia	7664-41-7	No	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.9E-04	0.10	--	--	--	--	9.9E-04	0.10
Benzene	71-43-2	Yes	44	3.21	466	0.93	5.51	0.38	9.62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.51	481
Carbon tetrachloride	56-23-5	Yes	84	0.066	9.56	0.019	0.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.085	9.68
Chlorine	7782-50-5	Yes	96	3.99	580	1.15	6.86	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.14	587
Chlorobenzene	108-90-7	Yes	102	0.054	7.90	0.016	0.093	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.070	7.99
Chloroform	67-66-3	Yes	107	0.066	9.56	0.019	0.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.085	9.68
Crotonaldehyde	4170-30-3	No	132	0.15	21.4	0.042	0.25	0.78	20.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.97	41.6
Methyl isobutyl ketone (MIBK, Hexone)	108-10-1	Yes	300	--	--	--	--	0.53	13.5	--	--	--	--	--	--	0.045	5.63	0.040	5.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.62	24.2
Isopropylbenzene (Cumene)	98-82-8	Yes	275	--	--	--	--	5.3E-03	0.13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.3E-03	0.13
Dibutyl phthalate	84-74-2	Yes	161	0.11	15.8	0.031	0.19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.14	16.0
Diethylphthalate	84-66-2	No	186	0.071	10.4	0.021	0.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.092	10.5
Ethyl benzene	100-41-4	Yes	221	1.29	188	0.37	2.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.67	190
Formaldehyde	50-00-0	Yes	240	3.34	485	0.96	5.74	23.8	606	1.25	111	1.25	25.7	1.99	222	1.11	138	0.50	62.9	0.22	79.6	4.8E-07	1.7E-04	5.8E-11	2.1E-08	6.6E-14	2.4E-11	8.3E-12	3.0E-09	6.5E-10	2.4E-07	2.1E-14	7.5E-12	7.0E-04	0.072	--	--	--	--	34.4	1,736
Hexane	110-54-3	Yes	262	0.94	137	0.27	1.62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.21	139
Isopropyl alcohol	67-63-0	No	274	11.9	1,732	3.44	20.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	15.3	1,752
Methanol	67-56-1	Yes	288	2.39	348	0.69	4.12	14.8	378	37.4	3,315	77.6	1,601	88.0	9,791	3.47	432	2.87	358	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.7E-03	0.48	--	--	--	--	227	16,229
Bromomethane (Methyl bromide)	74-83-9	Yes	64	0.037	5.42	0.011	0.064	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.048	5.49
Chloromethane (Methyl chloride)	74-87-3	Yes	108	0.12	18.0	0.036	0.21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.16	18.2
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	Yes	572	0.19	27.5	0.055	0.33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.24	27.8
Dichloromethane (Methylene chloride)	75-09-2	Yes	170	1.79	260	0.52	3.08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.31	263
2-Butanone (Methyl ethyl ketone)	78-93-3	No	68	0.051	7.42	0.015	0.088	0.53	13.5	--	--	--	--	--	--	0.044	5.46	0.079	9.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.72	36.3
Phenol	108-95-2	Yes	383	0.52	76.1	0.15	0.90	3.36	85.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.03	163
Propionaldehyde	123-38-6	Yes	510	0.82	120	0.24	1.42	1.42	36.2	0.48	42.6	1.15	23.7	--	--	0.15	19.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.27	243
Styrene	100-42-5	Yes	536	1.56	227	0.45	2.68	0.017	0.43	--	--	--	--	--	--	0.032	3.97	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.06	234
Toluene	108-88-3	Yes	555	0.069	10.0	0.020	0.12	0.62	15.8	--	--	--	--	--	--	--	--	0.079	9.89	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.79	35.8
m-Xylene	108-38-3	Yes	603	0.012	1.68	3.3E-03	0.020	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.015	1.70
o-Xylene	106-42-3	Yes	605	0.012	1.68	3.3E-03	0.020	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.015	1.70
p-Xylene	95-47-6	Yes	604	0.037	5.38	0.011	0.064	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.048	5.44
Butyl benzyl phthalate	85-68-7	No	74	--	--	--	--	6.1E-03	0.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.1E-03	0.16
Ethylene glycol monobutyl ether	111-76-2	Yes	228	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.78	79.6	0.17	17.1	--	--	0.95	96.7
Butyl acrylate	141-32-2	No	70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.2E-03	0.32	--	--	--	--	3.2E-03	0.32
Dipropylene glycol monomethyl ether	34590-94-8	No	210	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.69	1,239	3.69	1,239
Diethylene glycol monobutyl ether	112-34-5	Yes	183	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	0
Vinyl acetate	108-05-4	Yes	596	--	--	--	--	4.2E-03	0.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.2E-03	0.32	--	--	--	--	7.4E-03	0.43
Inorganic Compounds																																									
Hydrogen fluoride	7664-39-3	Yes	267	0.77	112	0.016	0.095	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.78	112
Silica, crystalline (respirable)	7631-86-9	No	530	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.073	7.47	--	--	--	--	0.073	7.47
Hydrochloric acid	7647-01-0	Yes	265	14.3	2,075	0.25	1.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	14.5	2,076
PAHs																																									
Acenaphthene	83-32-9	Yes	458	2.8E-03	0.41	8.1E-04	4.8E-03	8.2E-03	0.21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.012	0.62
Acenaphthylene	208-96-8	Yes	459	0.015	2.23	4.4E-03	0.026	0.026	0.65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.045	2.91
Anthracene	120-12-7	Yes	460	8.8E-03	1.28	2.5E-03	0.015	5.0E-03	0.13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.016	1.42
Benz[a]anthracene	56-55-3	Yes	462	2.7E-04	0.039	7.7E-05	4.6E-04	1.2E-03	0.030	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.5E-03	0.069
Benzo[a]pyrene	50-32-8	Yes	463	8.9E-03	1.30	2.6E-03	0.015	1.4E-03	0.036	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.013	1.35
Benzo[b]fluoranthene	205-99-2	Yes	464	4.6E-04	0.068	1.3E-04	8.0E-04	5.0E-03	0.55 re C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.6E-03	0.62
Benzo[e]pyrene	192-97-2	Yes	466	6.9E-04	0.10	2.0E-04	1.2E-03	--	21.0 lb/sc	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8.9E-04	21.1
Benzo[g,h,i]perylene	191-24-2	Yes	467	4.9E-04	0.072	1.4E-04	8.5E-04	7.5E-03	200 cf/ur	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8.1E-03	200
Benzo[j]fluoranthene	205-82-3	Yes	468	5.1E-04	0.074	1.5E-04	8.8E-04	--	4,200 55%	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.6E-04	4,200
Benzo[k]fluoranthene	207-08-9	Yes	469	1.7E-04	0.025	4.9E-05	2.9E-04	1.3E-03	1,890 0%	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.5E-03	1,890
Chrysene	218-01-9	Yes	471	2.6E-04	0.038	7.5E-05	4.4E-04	2.0E-03	0.95) 0%	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.3E-03	0.98
Dibenz[a,h]anthracene	53-70-3	Yes	476	3.1E-05	4.5E-03	9.0E-06	5.4E-05	--	6.00 units	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.0E-05	6.00
Fluoranthene	206-44-0	Yes	482	5.5E-03	0.79	1.6E-03	9.4E-03	0.034	5.67 DT/	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.041	6.47
Fluorene	86-73-7	Yes	483	9.8E-03	1.43	2.8E-03	0.017	0.017	0.44	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.030	1.89
Indeno[1,2,3-cd]pyrene	193-39-5	Yes	484	3.3E-04	0.049	9.6E-05	5.7E-04	6.3E-03	0.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.8E-03	0.21
2-Methyl naphthalene	91-57-6	Yes	485	4.6E-03	0.67	1.3E-03	7.9E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.9E-03	0.67
Naphthalene	91-20-3	Yes	320	0.33	47.4	0.094	0.56	0.54	13.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.96	61.8
Perylene	198-55-0	Yes	486	1.0E-04	0.015	3.0E-05	1.8E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.3E-04	0.015
Phenanthrene	85-01-8	Yes	487	0.021	3.07	6.1E-03	0.036	0.085	2.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.11	5.27
Pyrene	129-00-0	Yes	488	0.012	1.68	3.3E-03	0.020	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.015	1.70
Dioxans & Furans																																									
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	Yes	440	2.1E-09	3.0E-07	6.0E-10	3.6E-09	1.9E-08	4.7E-07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.1E-08	7.8E-07
Biphenyl	92-52-4	Yes	55	--	--	--	--	2.2E-03	0.057	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.2E-03	0.057
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	No	441	4.5E-09	6.6E-07	1.3E-09	7.8E-09	4.8E-08	1.2E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.4E-08	1.9E-06
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	No	442	3.0E-09	4.4E-07	8.7E-10	5.2E-09	2.9E-08	7.5E-07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.3E-08	1.2E-06
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	No	443	7.2E-09	1.0E-06	2.1E-09	1.2E-08	3.2E-08	8.1E-07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.1E-08	1.9E-06
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	No	444	7.5E-09	1.1E-06	2.2E-09	1.3E-08	6.0E-08	1.5E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7.0E-08	2.6E-06
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCD	35822-46-9	No	445	3.2E-08	4.7E-06	9.3E-09	5.6E-08	1.4E-07	3.5E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.8E-07	8.2E-06
Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	No	446	8.2E-08	1.2E-05	2.4E-08	1.4E-07	1.0E-07	2.6E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.1E-07	1.5E-05
2,3,7,8-Tetrachlorodibenzofuran (TcDF)	51207-31-9	No	447	2.7E-08	3.9E-06	7.8E-09	4.7E-08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.5E-08	4.0E-06
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	No	448	1.3E-08	1.9E-06	3.9E-09	2.3E-08	1.1E-07	2.7E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.2E-07	4.7E-06
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	No	449	1.9E-08	2.7E-06	5.4E-09	3.2E-08	1.9E-07	4.7E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.1E-07	7.5E-06
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	No	450	1.2E-08	1.7E-06	3.4E-09	2.0E-08	1.9E-07	4.9E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.1E-07	6.6E-06
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	No	451	1.0E-08	1.5E-06	3.0E-09	1.8E-08	8.4E-08	2.1E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.7E-08	3.7E-06
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	No	452	2.2E-09	3.1E-07	6.3E-10	3.7E-09	7.3E-09	1.9E-07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.0E-08	5.0E-07
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	No	453	8.8E-09	1.3E-06	2.5E-09	1.5E-08	1.3E-07	3.3E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.4E-07	4.6E-06
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	No	454	1.9E-08	2.8E-06	5.5E-09	3.3E-08	2.0E-07	5.0E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.2E-07	7.8E-06
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	No	455	3.1E-09	4.4E-07	8.8E-10	5.2E-09	2.8E-08	7.2E-07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.2E-08	1.2E-06
Octachlorodibenzofuran (OCDF)	39001-02-0	No	456	1.7E-08	2.5E-06	4.9E-09	2.9E-08	5.4E-08	1.4E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7.6E-08	3.9E-06
Total TAC Emissions Estimate				**52.6**	**7,652**	**11.5**	**68.2**	**60.7**	**7,871**	**88.7**	**7,874**	**197**	**4,055**	**90.0**	**10,013**	**12.3**	**1,529**	**4.96**	**618**	**0.23**	**83.6**	**5.4E-07**	**2.0E-04**	**5.8E-11**	**2.1E-08**	**1.4E-13**	**5.0E-11**	**9.0E-12**	**3.3E-09**	**6.9E-10**	**2.5E-07**	**2.2E-14**	**8.0E-12**	**0.87**	**88.3**	**0.17**	**17.1**	**3.69**	**1,239**	**522**	**41,108**
Total HAP Emissions Estimate				**39.3**	**5,714**	**7.26**	**43.3**	**59.4**	**7,837**	**88.7**	**7,874**	**197**	**4,055**	**90.0**	**10,013**	**12.2**	**1,524**	**4.88**	**608**	**0.22**	**79.6**	**4.8E-07**	**1.7E-04**	**5.8E-11**	**2.1E-08**	**1.4E-13**	**2.4E-11**	**8.3E-12**	**3.0E-09**	**6.5E-10**	**2.4E-07**	**2.1E-14**	**7.5E-12**	**0.79**	**80.4**	**0.17**	**17.1**	**0**	**0**	**500**	**37,846**
																				Single Highest HAP = Methanol																					**16,229**

Table 15
PTE TAC Emission Estimates Summary
Stimson Lumber Company Forest Grove Complex - Gaston, Oregon

Toxic Air Contaminant	CAS	HAP? (Yes/No)	ODEQ Sequence Number	Emission Estimate																																					
				Hogged Fuel-Fired Boiler (ESP Control)		Hogged Fuel-Fired Boiler (Scrubber Control)		Fuel Dryer		Lumber Kiln (Douglas Fir)		Lumber Kiln (Hemlock)		Press		Refiner		Former		WW - Surge Pond		WW - Aeration Basin		WW - Secondary Clarifier		WW - Sludge Pit Conveyor		WW - Sludge Pond		WW - Reuse Pond		WW - East Pond		Paintline - Basecoat		Paintline - Topcoat		LSP - Mycostat P51		Facility Total	
				Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)	Daily (lb/day)	Annual (lb/yr)
Metals																																									
Antimony and compounds	7440-36-0	Yes	32	9.9E-04	0.27	1.9E-03	0.097	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.9E-03	0.37
Arsenic and compounds	7440-38-2	Yes	35	6.1E-03	1.69	0.010	0.54	1.8E-04	0.015	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.017	2.24
Barium and compounds	7440-39-3	No	43	0.69	189	0.034	1.75	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.72	190
Beryllium and compounds	7440-41-7	Yes	52	9.8E-05	0.027	5.2E-05	2.7E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.5E-04	0.030
Cadmium and compounds	7440-43-9	Yes	77	1.2E-03	0.33	3.0E-03	0.15	4.5E-04	0.038	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.7E-03	0.52
Chromium VI, chromate and dichromate partic	18540-29-9	Yes	119	8.9E-04	0.24	2.2E-04	0.011	4.9E-03	0.40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.0E-03	0.66
Cobalt and compounds	7440-48-4	Yes	123	7.7E-03	2.11	1.8E-03	0.094	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.5E-03	2.21
Copper and compounds	7440-50-8	No	125	0.016	4.48	0.017	0.88	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.034	5.36
Lead and compounds	7439-92-1	Yes	278	0.017	4.68	0.034	1.75	2.8E-03	0.23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.054	6.66
Phosphorus and compounds	7723-14-0	Yes	392	1.01	278	0.093	4.76	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.11	283
Manganese and compounds	7439-96-5	Yes	281	0.30	82.0	0.24	12.1	0.15	12.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.68	106
Mercury and compounds	7439-97-6	Yes	284	3.5E-03	0.95	9.1E-04	0.046	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.4E-03	1.00
Molybdenum trioxide	1313-27-5	No	317	0.010	2.82	3.0E-03	0.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.013	2.97
Nickel and compounds	7440-02-0	Yes	321	9.2E-03	2.52	6.9E-03	0.35	3.7E-03	0.31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.020	3.18
Selenium and compounds	7782-49-2	Yes	528	5.3E-03	1.46	1.6E-03	0.083	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.9E-03	1.54
Silver and compounds	7440-22-4	No	531	3.2E-03	0.88	9.3E-04	0.048	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.2E-03	0.93
Vanadium (fume or dust)	7440-62-2	No	594	1.9E-03	0.53	5.6E-04	0.029	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.5E-03	0.56
Zinc and compounds	7440-66-6	No	606	0.43	117	0.62	31.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.05	149
Organic Compounds																																									
Acetaldehyde	75-07-0	Yes	1	0.93	254	0.27	13.7	10.8	904	49.0	7,450	115	4,071	--	--	6.46	1,293	1.27	254	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	184	14,240
Acetone	67-64-1	No	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.022	7.96	1.1E-07	4.1E-05	2.5E-24	9.0E-22	1.4E-13	5.0E-11	1.2E-12	4.5E-10	7.8E-11	2.9E-08	2.6E-15	9.4E-13	--	--	--	--	--	--	0.022	7.96
Acetophenone	98-86-2	Yes	5	6.0E-03	1.65	1.7E-03	0.089	4.4E-03	0.37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.012	2.11
Acrolein	107-02-8	Yes	6	0.85	234	0.25	12.6	2.71	226	0.67	102	1.44	50.9	--	--	0.96	192	0.11	22.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.99	839
Ammonia	7664-41-7	No	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.9E-04	0.20	--	--	--	--	9.9E-04	0.20
Benzene	71-43-2	Yes	44	3.21	880	0.93	47.4	0.38	31.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.51	959
Carbon tetrachloride	56-23-5	Yes	84	0.066	18.1	0.019	0.97	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.085	19.0
Chlorine	7782-50-5	Yes	96	3.99	1,096	1.15	59.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.14	1,155
Butyl benzyl phthalate	85-68-7	No	74	--	--	--	--	6.1E-03	0.51	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.1E-03	0.51
Ethylene glycol monobutyl ether	111-76-2	Yes	228	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.78	156	0.17	33.7	--	--	0.95	190
Butyl acrylate	141-32-2	No	70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.2E-03	0.64	--	--	--	--	3.2E-03	0.64
Dipropylene glycol monomethyl ether	34590-94-8	No	210	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.69	1,993	3.69	1,993
Diethylene glycol monobutyl ether	112-34-5	Yes	183	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	0
Vinyl acetate	108-05-4	Yes	596	--	--	--	--	4.2E-03	0.35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.2E-03	0.64	--	--	--	--	7.4E-03	0.99
Chlorobenzene	108-90-7	Yes	102	0.054	14.9	0.016	0.80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.070	15.7
Chloroform	67-66-3	Yes	107	0.066	18.1	0.019	0.97	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.085	19.0
Crotonaldehyde	4170-30-3	No	132	0.15	40.3	0.042	2.17	0.78	65.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.97	108
Dibutyl phthalate	84-74-2	Yes	161	0.11	29.9	0.031	1.61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.14	31.5
1,2-Dichloropropane (Propylene dichloride)	78-87-5	Yes	173	0.055	15.1	0.016	0.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.071	15.9
Diethylphthalate	84-66-2	No	186	0.071	19.6	0.021	1.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.092	20.6
Ethyl benzene	100-41-4	Yes	221	1.29	355	0.37	19.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.67	374
Formaldehyde	50-00-0	Yes	240	3.34	916	0.96	49.3	23.8	1,980	1.25	190	1.25	44.1	1.99	357	1.11	221	0.50	101	0.43	158	1.8E-04	0.067	1.2E-08	4.5E-06	1.5E-11	5.5E-09	3.5E-09	1.3E-06	2.4E-07	8.8E-05	8.7E-12	3.2E-09	7.0E-04	0.14	--	--	--	--	34.6	4,017
Methyl isobutyl ketone (MIBK, Hexone)	108-10-1	Yes	300	--	--	--	--	0.53	44.3	--	--	--	--	--	--	0.045	9.04	0.040	8.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.62	61.3
Isopropylbenzene (Cumene)	98-82-8	Yes	275	--	--	--	--	5.3E-03	0.44	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.3E-03	0.44
Hexane	110-54-3	Yes	262	0.94	259	0.27	13.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.21	273
Isopropyl alcohol	67-63-0	No	274	11.9	3,270	3.44	176	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	15.3	3,446
Methanol	67-56-1	Yes	288	2.39	658	0.69	35.4	14.8	1,236	37.4	5,684	77.6	2,744	88.0	15,750	3.47	694	2.87	575	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.7E-03	0.95	--	--	--	--	227	27,376
Bromomethane (Methyl bromide)	74-83-9	Yes	64	0.037	10.2	0.011	0.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.048	10.8
Chloromethane (Methyl chloride)	74-87-3	Yes	108	0.12	34.0	0.036	1.83	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.16	35.8
1,2,4-Trichlorobenzene	120-82-1	Yes	571	--	--	--	--	9.3E-03	0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.3E-03	0.77
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	Yes	572	0.19	51.9	0.055	2.79	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.24	54.7
Dichloromethane (Methylene chloride)	75-09-2	Yes	170	1.79	491	0.52	26.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.31	518
2-Butanone (Methyl ethyl ketone)	78-93-3	No	68	0.051	14.0	0.015	0.75	0.53	44.3	--	--	--	--	--	--	0.044	8.76	0.079	15.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.72	83.6
Phenol	108-95-2	Yes	383	0.52	144	0.15	7.74	3.36	280	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.03	431
Propionaldehyde	123-38-6	Yes	510	0.82	226	0.24	12.2	1.42	118	0.48	73.0	1.15	40.7	--	--	0.15	30.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.27	501
Styrene	100-42-5	Yes	536	1.56	428	0.45	23.1	0.017	1.39	--	--	--	--	--	--	0.032	6.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.06	459
Toluene	108-88-3	Yes	555	0.069	19.0	0.020	1.02	0.62	51.5	--	--	--	--	--	--	--	--	0.079	15.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.79	87.3
m-Xylene	108-38-3	Yes	603	0.012	3.18	3.3E-03	0.17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.015	3.35
p-Xylene	106-42-3	Yes	605	0.012	3.18	3.3E-03	0.17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.015	3.35
o-Xylene	95-47-6	Yes	604	0.037	10.2	0.011	0.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.048	10.7
Inorganic Compounds																																									
Hydrogen fluoride	7664-39-3	Yes	267	0.77	211	0.016	0.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.78	212
Silica, crystalline (respirable)	7631-86-9	No	530	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.073	14.7	--	--	--	--	0.073	14.7
Hydrochloric acid	7647-01-0	Yes	265	14.3	3,916	0.25	12.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	14.5	3,929
PAHs																																									
Acenaphthene	83-32-9	Yes	458	2.8E-03	0.77	8.1E-04	0.041	8.2E-03	0.68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.012	1.49
Acenaphthylene	208-96-8	Yes	459	0.015	4.21	4.4E-03	0.23	0.026	2.14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.045	6.58
Anthracene	120-12-7	Yes	460	8.8E-03	2.41	2.5E-03	0.13	5.0E-03	0.42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.016	2.95
Benz[a]anthracene	56-55-3	Yes	462	2.7E-04	0.073	7.7E-05	3.9E-03	1.2E-03	0.097	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.5E-03	0.17
Benzo[a]pyrene	50-32-8	Yes	463	8.9E-03	2.45	2.6E-03	0.13	1.4E-03	0.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.013	2.70
Benzo[b]fluoranthene	205-99-2	Yes	464	4.6E-04	0.13	1.3E-04	6.9E-03	5.0E-03	0.55 re C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.6E-03	0.68
Benzo[e]pyrene	192-97-2	Yes	466	6.9E-04	0.19	2.0E-04	0.010	--	21.0 b/sc	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8.9E-04	21.2
Benzo[g,h,i]perylene	191-24-2	Yes	467	4.9E-04	0.14	1.4E-04	7.3E-03	7.5E-03	200 :f/ur	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8.1E-03	200
Benzo[j]fluoranthene	205-82-3	Yes	468	5.1E-04	0.14	1.5E-04	7.5E-03	--	4,200 55%	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.6E-04	4,200
Benzo[k]fluoranthene	207-08-9	Yes	469	1.7E-04	0.047	4.9E-05	2.5E-03	1.3E-03	1,890 0%	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.5E-03	1,890
Chrysene	218-01-9	Yes	471	2.6E-04	0.071	7.5E-05	3.8E-03	2.0E-03	0.95) 0%	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.3E-03	1.02
Dibenz[a,h]anthracene	53-70-3	Yes	476	3.1E-05	8.6E-03	9.0E-06	4.6E-04	--	6.00 units	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.0E-05	6.01
Fluoranthene	206-44-0	Yes	482	5.5E-03	1.50	1.6E-03	0.081	0.034	5.67 DT/	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.041	7.25
Fluorene	86-73-7	Yes	483	9.8E-03	2.70	2.8E-03	0.15	0.017	1.45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.030	4.30
Indeno[1,2,3-cd]pyrene	193-39-5	Yes	484	3.3E-04	0.092	9.6E-05	4.9E-03	6.3E-03	0.53	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.8E-03	0.62
2-Methyl naphthalene	91-57-6	Yes	485	4.6E-03	1.26	1.3E-03	0.068	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.9E-03	1.33
Naphthalene	91-20-3	Yes	320	0.33	89.5	0.094	4.82	0.54	45.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.96	139
Perylene	198-55-0	Yes	486	1.0E-04	0.029	3.0E-05	1.5E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.3E-04	0.030
Phenanthrene	85-01-8	Yes	487	0.021	5.80	6.1E-03	0.31	0.085	7.04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.11	13.2
Pyrene	129-00-0	Yes	488	0.012	3.18	3.3E-03	0.17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.015	3.35
Dioxans & Furans																																									
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	Yes	440	2.1E-09	5.7E-07	6.0E-10	3.1E-08	1.9E-08	1.5E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.1E-08	2.1E-06
Biphenyl	92-52-4	Yes	55	--	--	--	--	2.2E-03	0.19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.2E-03	0.19
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	No	441	4.5E-09	1.2E-06	1.3E-09	6.7E-08	4.8E-08	4.0E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.4E-08	5.3E-06
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	No	442	3.0E-09	8.3E-07	8.7E-10	4.5E-08	2.9E-08	2.4E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.3E-08	3.3E-06
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	No	443	7.2E-09	2.0E-06	2.1E-09	1.1E-07	3.2E-08	2.6E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.1E-08	4.7E-06
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	No	444	7.5E-09	2.0E-06	2.2E-09	1.1E-07	6.0E-08	5.0E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7.0E-08	7.2E-06
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCD	35822-46-9	No	445	3.2E-08	8.9E-06	9.3E-09	4.8E-07	1.4E-07	1.1E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.8E-07	2.1E-05
Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	No	446	8.2E-08	2.2E-05	2.4E-08	1.2E-06	1.0E-07	8.4E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.1E-07	3.2E-05
2,3,7,8-Tetrachlorodibenzofuran (TcDF)	51207-31-9	No	447	2.7E-08	7.5E-06	7.8E-09	4.0E-07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.5E-08	7.9E-06
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	No	448	1.3E-08	3.7E-06	3.9E-09	2.0E-07	1.1E-07	9.0E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.2E-07	1.3E-05
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	No	449	1.9E-08	5.1E-06	5.4E-09	2.7E-07	1.9E-07	1.5E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.1E-07	2.1E-05
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	No	450	1.2E-08	3.3E-06	3.4E-09	1.8E-07	1.9E-07	1.6E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.1E-07	1.9E-05
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	No	451	1.0E-08	2.8E-06	3.0E-09	1.5E-07	8.4E-08	7.0E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.7E-08	1.0E-05
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	No	452	2.2E-09	5.9E-07	6.3E-10	3.2E-08	7.3E-09	6.1E-07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.0E-08	1.2E-06
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	No	453	8.8E-09	2.4E-06	2.5E-09	1.3E-07	1.3E-07	1.1E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.4E-07	1.3E-05
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	No	454	1.9E-08	5.2E-06	5.5E-09	2.8E-07	2.0E-07	1.6E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.2E-07	2.2E-05
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	No	455	3.1E-09	8.4E-07	8.8E-10	4.5E-08	2.8E-08	2.3E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.2E-08	3.2E-06
Octachlorodibenzofuran (OCDF)	39001-02-0	No	456	1.7E-08	4.6E-06	4.9E-09	2.5E-07	5.4E-08	4.5E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7.6E-08	9.4E-06
Total TAC Emissions Estimate				**52.6**	**14,445**	**11.5**	**587**	**60.7**	**11,379**	**88.7**	**13,499**	**197**	**6,951**	**90.0**	**16,107**	**12.3**	**2,455**	**4.96**	**992**	**0.45**	**166**	**1.8E-04**	**0.067**	**1.2E-08**	**4.5E-06**	**1.5E-11**	**5.5E-09**	**3.5E-09**	**1.3E-06**	**2.4E-07**	**8.8E-05**	**8.7E-12**	**3.2E-09**	**0.87**	**174**	**0.17**	**33.7**	**3.69**	**1,993**	**523**	**68,781**
Total HAP Emissions Estimate				**39.3**	**10,787**	**7.26**	**372**	**59.4**	**11,269**	**88.7**	**13,499**	**197**	**6,951**	**90.0**	**16,107**	**12.2**	**2,446**	**4.88**	**976**	**0.43**	**158**	**1.8E-04**	**0.067**	**1.2E-08**	**4.5E-06**	**1.5E-11**	**5.5E-09**	**3.5E-09**	**1.3E-06**	**2.4E-07**	**8.8E-05**	**8.7E-12**	**3.2E-09**	**0.79**	**158**	**0.17**	**33.7**	**0**	**0**	**500**	**62,757**
																			Single Highest HAP = Methanol																						**27,376**

ATTACHMENT B

HISTORICAL FUEL DRYER DEVICE FORM

1. **Facility name/site identifier** Stimson Lumber Company
2. **Permit number** 34-2066 and 34-2143
3. **Device ID number** F-140
4. **Existing? [yes/no]** Yes
5. **Date installation/construction commenced** N/A
6. **Date installed** 1977
7. **Special control requirements? [yes/no; if yes, describe]** No
8. **Manufacturer** Rader
9. **Type of dryer [specify]** Rotary
10. **Resin added prior to drying [yes/no]** No
11. **Heat source [specify]** Other - hot air from boilers
12. **Range in dryer inlet temperature (°F)** 250-400 °F
13. **Range in material moisture content entering dryer (% wt. dry basis)** 50%-70%
14. **Range in material moisture content exiting dryer (% wt. dry basis)** 30%-50%
15. **Species dried**

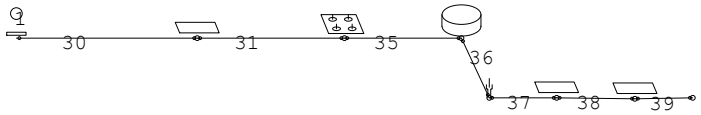
species	maximum hourly production (lbs/hour)
Douglas-fir	6 Units/Hour
Western hemlock	6 Units/Hour

NOTE: this unit is a hog fuel dryer!

ATTACHMENT C

WATER9 MODEL DATA

East Pond Route Modeled Emissions



No.	Name	Type
30	Mill Effluent	hard piped, no headspace
31	Surge Pond	lagoon
35	Aeration Basin	aerated biotreatment
36	Secondary Clar	circular clarifier
37	Sludge Pit	open hub drain
38	Sludge Pond	lagoon
39	East Pond	lagoon

A LISTING OF INPUT SPECIFICATIONS FOR EACH UNIT

Type of unit is open hub drain		
1 Description of unit	23	default open hub d
2 Underflow T (C)		25
3 Total water added at the unit (l/s)		0
4 Area of openings at unit (cm2)		50
5 Radius of drop pipe (cm)		5
6 Drop length to conduit (cm)		61
7 Open surface=1		0
8 Subsurface entrance=1		0
9 subsurface exit =1		0
10 radius of underflow conduit (cm)		12
11 distance to next unit (cm)		500
12 slope of underflow conduit		0.015
16 velocity air at drain opening (ft/min)		84
17 municipal waste in conduit =1		0
18 Assume equilibrium in unit, =1		0
19 pH (enter 0 for no pH adjustment)		0

Type of unit is hard piped, no headspace		
1 Description of unit	30	Mill Effluent
2 Underflow T (C)		24.7
3 Total water added at the unit (l/s)		0
7 Open surface=1		0
8 Subsurface entrance=1		1
9 subsurface exit =1		1
10 radius of underflow conduit (cm)		12
11 distance to next unit (cm)		500
12 slope of underflow conduit		0.015
19 pH (enter 0 for no pH adjustment)		0

Type of unit is lagoon		
1 Description of unit	31	Surge Pond
2 Wastewater temperature (C)		24.7
3 Length of impoundment (m)		110
4 Depth of impoundment (m)		1.37
5 Width of impoundment (m)		32
6 active biomass, impoundment (g/l)		0.252
7 if there is plug flow, enter 1		1
8 time for emissions in lagoon (months)		0
9 Overall biorate (mg/g bio-hr)		19
10 sorption flag for solids settling =1		0
19 pH (enter 0 for no pH adjustment)		0

Type of unit is aerated biotreatment		
1 Description of unit	35	Aeration Basin
2 Wastewater temperature (C)		16.89
3 length of aeration unit (m)		48
4 width of aeration unit (m)		63
5 depth of aeration unit (m)		3.04
6 Area of agitation (each aerator,m2)		47

A LISTING OF INPUT SPECIFICATIONS FOR EACH UNIT

7 Total number of agitators in the unit		3
8 Power of agitation (each aerator,HP)		40
9 Impeller diameter (cm)		60
10 Impeller rotation (RPM)		1200
11 Agitator mechanical efficiency		0.83
12 aerator effectiveness, alpha		0.83
13 if there is plug flow, enter 1		1
14 Overall biorate (mg/g bio-hr)		19
15 Aeration air flow (m3/s)		0
16 active biomass, aeration (g/l)		2.614
17 If covered, then enter 1		0
18 special input		0
19 pH (enter 0 for no pH adjustment)		0

Type of unit is circular clarifier

1 Description of unit	36	Secondary Clar
2 Wastewater temperature (C)		21.39
3 secondary clarifier diameter (m)		10.5
4 secondary clarifier depth (m)		3.5
5 clarifier solids removal efficiency		0.963
6 waterfall drop height (cm)		20
7 clarifier weir/circumference		0.5
8 Center well present, =1		0
10 number of identical units in parallel		1
19 pH (enter 0 for no pH adjustment)		6.6

Type of unit is open hub drain

1 Description of unit	37	Sludge Pit
2 Underflow T (C)		21.89
3 Total water added at the unit (l/s)		0
4 Area of openings at unit (cm2)		20000
5 Radius of drop pipe (cm)		80
6 Drop length to conduit (cm)		61
7 Open surface=1		0
8 Subsurface entrance=1		0
9 subsurface exit =1		0
10 radius of underflow conduit (cm)		12
11 distance to next unit (cm)		500
12 slope of underflow conduit		0.015
16 velocity air at drain opening (ft/min)		67
17 municipal waste in conduit =1		0
18 Assume equilibrium in unit, =1		0
19 pH (enter 0 for no pH adjustment)		0

Type of unit is lagoon

1 Description of unit	38	Sludge Pond
2 Wastewater temperature (C)		21.39
3 Length of impoundment (m)		35
4 Depth of impoundment (m)		4
5 Width of impoundment (m)		40

A LISTING OF INPUT SPECIFICATIONS FOR EACH UNIT

6 active biomass, impoundment (g/l)		3.48
7 if there is plug flow, enter 1		1
8 time for emissions in lagoon (months)		0
9 Overall biorate (mg/g bio-hr)		19
10 sorption flag for solids settling =1		0
19 pH (enter 0 for no pH adjustment)		0

Type of unit is lagoon

1 Description of unit	39	East Pond
2 Wastewater temperature (C)		21.39
3 Length of impoundment (m)		140
4 Depth of impoundment (m)		4
5 Width of impoundment (m)		83
6 active biomass, impoundment (g/l)		0.0566
7 if there is plug flow, enter 1		1
8 time for emissions in lagoon (months)		0
9 Overall biorate (mg/g bio-hr)		19
10 sorption flag for solids settling =1		0
19 pH (enter 0 for no pH adjustment)		0

WASTEWATER TREATMENT SUMMARY III

Project C:\Program Files (x86)\Wastewater treatment models\IMPORT\W9_2020-EastPond-2019

COMPOUND	Air loss total (Mg/yr)	Fractions based on inlet waste fe collection	fe treatment	fbio removal
FORMALDEHYDE	.03611	.	.0085	.9915
PROPANONE (acetone)	.00181	.	.0414	.9586

ALL COMPOUND TOTAL SUMMARY

COLLECTION SYSTEM EMISSIONS	.	Mg/yr collection system air emissions
TREATMENT EMISSIONS	.04	Mg/yr treatment air emissions
TOTAL AIR EMISSIONS	.04	Mg/yr total air emissions
TOTAL LOADING	4.28	Mg/yr
TOTAL WATER FLOW	7.46	L/s

Summary of compound emissions by unit

Number	Name	Air emissions by compound Mg/year FORMALDEHYDE	PROPANONE	(acetAll
31	Surge Pond	0.036114	0.00181	0.037925
35	Aeration Basin	7.932e-08	9.383e-09	8.87e-08
36	Secondary Clar	9.601e-12	3.862e-25	9.601e-12
37	Sludge Pit	1.09e-14	1.156e-14	2.247e-14
38	Sludge Pond	1.382e-12	1.021e-13	1.484e-12
39	East Pond	3.398e-15	2.115e-16	3.61e-15
	All units Mg/yr	0.036114	0.00181	0.037925

compound concentrations in unit exit

Number	Name	Concentrations of compound (ppmw) FORMALDEHYDE	PROPANONE	(acetAll
31	Surge Pond	8.182e-04	8.453e-06	8.266e-04
35	Aeration Basin	3.683e-08	3.696e-10	8.266e-04
36	Secondary Clar	3.679e-08	3.696e-10	8.266e-04
37	Sludge Pit	3.679e-08	3.696e-10	8.266e-04
38	Sludge Pond	1.669e-12	1.676e-14	8.266e-04
39	East Pond	7.581e-17	7.612e-19	8.266e-04

WASTEWATER TREATMENT SUMMARY III

Project C:\Program Files (x86)\Wastewater treatment models\IMPORT\W9_2020-EastPond-PTE

COMPOUND	Air loss (Mg/yr)	Fractions based on inlet waste: fe collection	fe treatment	fbio removal
FORMALDEHYDE	.07163	.	.0085	.9915
PROPANONE (acetone)	.00361	.	.0414	.9586

ALL COMPOUND TOTAL SUMMARY

COLLECTION SYSTEM EMISSIONS	. Mg/yr collection system air emissions
TREATMENT EMISSIONS	.08 Mg/yr treatment air emissions
TOTAL AIR EMISSIONS	.08 Mg/yr total air emissions
TOTAL LOADING	8.53 Mg/yr
TOTAL WATER FLOW	14.88 L/s

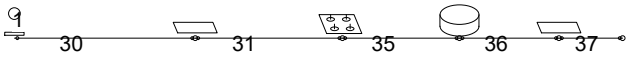
Summary of compound emissions by unit

Number	Name	Air emissions by compound Mg/year: FORMALDEHYDE	PROPANONE	(acetAll
31	Surge Pond	0.071601	0.003611	0.075212
35	Aeration Basin	3.054e-05	1.869e-08	3.056e-05
36	Secondary Clar	2.048e-09	4.076e-25	2.048e-09
37	Sludge Pit	2.474e-12	1.287e-14	2.487e-12
38	Sludge Pond	5.867e-10	2.054e-13	5.869e-10
39	East Pond	1.442e-12	4.253e-16	1.442e-12
	All units Mg/yr	0.071631	0.003611	0.075242

compound concentrations in unit exit

Number	Name	Concentrations of compound (ppmw): FORMALDEHYDE	PROPANONE	(acetAll
31	Surge Pond	0.15734	8.444e-06	0.15735
35	Aeration Basin	7.835e-06	3.726e-10	0.15735
36	Secondary Clar	7.831e-06	3.726e-10	0.15735
37	Sludge Pit	7.831e-06	3.726e-10	0.15735
38	Sludge Pond	3.55e-10	1.689e-14	0.15735
39	East Pond	1.612e-14	7.669e-19	0.15735

Reuse Pond Route Modeled Emissions



No.	Name	Type
30	Mill Effluent	hard piped, no headspace
31	Surge Pond	lagoon
35	Aeration Basin	aerated biotreatment
36	Secondary Clar	circular clarifier
37	Reuse Pond	lagoon

A LISTING OF INPUT SPECIFICATIONS FOR EACH UNIT

Type of unit is open hub drain

1 Description of unit	23	default open hub d
2 Underflow T (C)		25
3 Total water added at the unit (l/s)		0
4 Area of openings at unit (cm2)		50
5 Radius of drop pipe (cm)		5
6 Drop length to conduit (cm)		61
7 Open surface=1		0
8 Subsurface entrance=1		0
9 subsurface exit =1		0
10 radius of underflow conduit (cm)		12
11 distance to next unit (cm)		500
12 slope of underflow conduit		0.015
16 velocity air at drain opening (ft/min)		84
17 municipal waste in conduit =1		0
18 Assume equilibrium in unit, =1		0
19 pH (enter 0 for no pH adjustment)		0

Type of unit is hard piped, no headspace

1 Description of unit	30	Mill Effluent
2 Underflow T (C)		24.7
3 Total water added at the unit (l/s)		0
7 Open surface=1		0
8 Subsurface entrance=1		1
9 subsurface exit =1		1
10 radius of underflow conduit (cm)		12
11 distance to next unit (cm)		500
12 slope of underflow conduit		0.015
19 pH (enter 0 for no pH adjustment)		0

Type of unit is lagoon

1 Description of unit	31	Surge Pond
2 Wastewater temperature (C)		24.7
3 Length of impoundment (m)		110
4 Depth of impoundment (m)		1.37
5 Width of impoundment (m)		32
6 active biomass, impoundment (g/l)		0.252
7 if there is plug flow, enter 1		1
8 time for emissions in lagoon (months)		0
9 Overall biorate (mg/g bio-hr)		19
10 sorption flag for solids settling =1		0
19 pH (enter 0 for no pH adjustment)		0

Type of unit is aerated biotreatment

1 Description of unit	35	Aeration Basin
2 Wastewater temperature (C)		16.89
3 length of aeration unit (m)		48
4 width of aeration unit (m)		63
5 depth of aeration unit (m)		3.04
6 Area of agitation (each aerator,m2)		47

A LISTING OF INPUT SPECIFICATIONS FOR EACH UNIT

7 Total number of agitators in the unit		3
8 Power of agitation (each aerator,HP)		40
9 Impeller diameter (cm)		60
10 Impeller rotation (RPM)		1200
11 Agitator mechanical efficiency		0.83
12 aerator effectiveness, alpha		0.83
13 if there is plug flow, enter 1		1
14 Overall biorate (mg/g bio-hr)		19
15 Aeration air flow (m3/s)		0
16 active biomass, aeration (g/l)		2.614
17 If covered, then enter 1		0
18 special input		0
19 pH (enter 0 for no pH adjustment)		0

Type of unit is circular clarifier

1 Description of unit	36	Secondary Clar
2 Wastewater temperature (C)		21.39
3 secondary clarifier diameter (m)		10.5
4 secondary clarifier depth (m)		3.5
5 clarifier solids removal efficiency		0.963
6 waterfall drop height (cm)		20
7 clarifier weir/circumference		0.5
8 Center well present, =1		0
10 number of identical units in parallel		1
19 pH (enter 0 for no pH adjustment)		6.6

Type of unit is lagoon

1 Description of unit	37	Reuse Pond
2 Wastewater temperature (C)		17.11
3 Length of impoundment (m)		105
4 Depth of impoundment (m)		3
5 Width of impoundment (m)		30
6 active biomass, impoundment (g/l)		0.0566
7 if there is plug flow, enter 1		1
8 time for emissions in lagoon (months)		0
9 Overall biorate (mg/g bio-hr)		19
10 sorption flag for solids settling =1		0
19 pH (enter 0 for no pH adjustment)		0

WASTEWATER TREATMENT SUMMARY III

Project C:\Program Files (x86)\Wastewater treatment models\IMPORT\W9_2020-ReusePond-2019

COMPOUND	Air loss (Mg/yr)	Fractions based on inlet waste: fe collection	fe treatment	fbio removal
FORMALDEHYDE	.03611	.	.0085	.9915
PROPANONE (acetone)	.00181	.	.0414	.9586

ALL COMPOUND TOTAL SUMMARY

COLLECTION SYSTEM EMISSIONS	. Mg/yr collection system air emissions
TREATMENT EMISSIONS	.04 Mg/yr treatment air emissions
TOTAL AIR EMISSIONS	.04 Mg/yr total air emissions
TOTAL LOADING	4.28 Mg/yr
TOTAL WATER FLOW	7.46 L/s

Summary of compound emissions by unit

Number	Name	Air emissions by compound Mg/year: FORMALDEHYDE	PROPANONE	(acetAll
31	Surge Pond	0.036114	0.00181	0.037925
35	Aeration Basin	7.932e-08	9.383e-09	8.87e-08
36	Secondary Clar	9.601e-12	3.862e-25	9.601e-12
37	Reuse Pond	1.076e-10	6.445e-12	1.141e-10
	All units Mg/yr	0.036114	0.00181	0.037925

compound concentrations in unit exit

Number	Name	Concentrations of compound (ppmw): FORMALDEHYDE	PROPANONE	(acetAll
31	Surge Pond	8.182e-04	8.453e-06	8.266e-04
35	Aeration Basin	3.683e-08	3.696e-10	8.266e-04
36	Secondary Clar	3.679e-08	3.696e-10	8.266e-04
37	Reuse Pond	1.07e-09	1.676e-14	8.266e-04

WASTEWATER TREATMENT SUMMARY III

Project C:\Program Files (x86)\Wastewater treatment models\IMPORT\W9_2020-ReusePond-PTE

COMPOUND	Air loss (Mg/yr)	Fractions based on inlet waste: fe collection	fe treatment	fbio removal
FORMALDEHYDE	.07163	.	.0085	.9915
PROPANONE (acetone)	.00361	.	.0414	.9586

ALL COMPOUND TOTAL SUMMARY

COLLECTION SYSTEM EMISSIONS . Mg/yr collection system air emissions
TREATMENT EMISSIONS .08 Mg/yr treatment air emissions
TOTAL AIR EMISSIONS .08 Mg/yr total air emissions
TOTAL LOADING 8.53 Mg/yr
TOTAL WATER FLOW 14.88 L/s

Summary of compound emissions by unit

Number	Name	Air emissions by compound Mg/year: FORMALDEHYDE	PROPANONE	(acetAll
31	Surge Pond	0.071601	0.003611	0.075212
35	Aeration Basin	3.054e-05	1.869e-08	3.056e-05
36	Secondary Clar	2.048e-09	4.076e-25	2.048e-09
37	Reuse Pond	3.908e-08	1.296e-11	3.909e-08
	All units Mg/yr	0.071631	0.003611	0.075242

compound concentrations in unit exit

Number	Name	Concentrations of compound (ppmw): FORMALDEHYDE	PROPANONE	(acetAll
31	Surge Pond	0.15734	8.444e-06	0.15735
35	Aeration Basin	7.835e-06	3.726e-10	0.15735
36	Secondary Clar	7.831e-06	3.726e-10	0.15735
37	Reuse Pond	1.329e-06	6.223e-14	0.15735