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DEPARTMENT OF ENVIRONMENTAL QUALITY  
STATE AIR PROGRAM

687 W. CANFIELD AVE., STE. 100 COEUR D' ALENE, ID 83815 IDAHOFORESTGROUP.COM 208.762.6630

January 11, 2013

Bill Rogers, P.E.  
Idaho Department of Environmental Quality  
Air Quality Division  
1410 N. Hilton  
Boise, ID 83706  
Tel: (208) 373 – 0502

**RE: IFG – Chilco, Permit to Construct (PTC) Application**

Dear Bill:

Idaho Forest Group (IFG) owns and operates a sawmill and planer mill near Chilco Lake, Idaho, which is regulated under Tier I Operating Permit No. T1-050123. The Tier I renewal application for the Chilco permit was submitted on October 10, 2012 and has been deemed complete.

IFG is submitting a permit to construct (PTC) application for the Chilco mill to change some of the underlying Tier I permit conditions. Ideally, these changes would be incorporated into the renewed Tier I permit.

**Chilco Hog Fuel Boiler Carbon Monoxide**

The Chilco hog fuel boiler currently has a permit carbon monoxide (CO) limit of 0.81 lb/1000 lb steam (Permit T1-2009.0123, condition 3.3). IFG is requesting CO limit for the boiler be lowered to 0.785 lb/1000 lb steam. The most recent source test for the boiler showed a CO emission rate of 0.59 lb/1000 lb steam. IFG is confident of continued compliance with the proposed CO emission limit.

**Chilco Hog Fuel Boiler Steam Production Limit**

The boiler is currently limited to steam production of 69,630 pounds of steam per hour averaged over a 24-hour period (Permit T1-2009.0123, condition 3.7). The steam production limit was added to the permit to ensure that the annual CO emissions remained within the annual CO emission limit. An annual total steam production limit would achieve the same permitting objective, and would allow much more practical compliance tracking. IFG is requesting that the 24-hour average steam production limit be replaced with an equivalent production rate based on a rolling 12-month period. IFG proposes that the steam production limit be written as follows: the steam production rate of the hog fuel boiler shall not exceed 607,594 thousand pounds of steam over any consecutive 12-month period.

**Routing Dry Exhaust Indoors or Outdoors**

The original Chilco facility was just a sawmill. In 2004, the boiler and dry kilns were permitted and moved down from Sandpoint, Idaho. In 2005, the permit was modified to incorporate differences between the original permit and the mill, as it was built. The 2005 PTC application added a hog fuel cyclone (which has since been removed) and removed the 60,000 pph natural gas boiler that was never installed.

The 2005 PTC application included routing of the planer shavings cyclone baghouse stack and the planer chip target box vent into the interior of the planer building to maintain pressure. In retrospect, it was not a good idea to remove these sources from the permit because the interior venting may not be acceptable under some temperature conditions. This PTC application seeks to modify the Chilco permit so that routing the planer shavings cyclone baghouse stack and the planer chip target box vent into the interior of the planer building is optional rather than required.

The planer shavings cyclone baghouse exhaust and the planer chip target box exhaust are included in the facility-wide emission inventory included with this application and submitted with the Title V renewal application. Both sources were included in the dispersion modeling for the original Chilco permit application, which demonstrated ambient compliance.

**Application Materials**

The complete emissions inventory and all supporting equipment information for the sources addressed in this PTC application are on file at DEQ as part of the Tier I renewal application. This PTC permit modification package includes the following forms and information:

- Idaho Form GI, General Information, with signature of Responsible Official.
- Idaho Form CSPTC, Permit to Construct Cover Sheet.
- Facility-wide PTE Emissions Inventory, reflecting requested changes.
- Check to cover the \$1,000 permit application fee (IDAPA 58.01.01.244)

**Signature by Responsible Official**

Based on the information and belief formed after reasonable inquiry, the statements and information contained herein are true, accurate and complete, to the best of my knowledge.

Sincerely,



Kevin Esser  
Chief Financial Officer

**Enclosures**

CC Shawnee Chen, P.E.  
Idaho DEQ Air Quality Division  
1410 N. Hilton  
Boise, ID 83706  
Tel: (208) 373-0716  
Via Email: [Shawnee.Chen@deq.idaho.gov](mailto:Shawnee.Chen@deq.idaho.gov)

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DEPARTMENT OF ENVIRONMENTAL QUALITY  
STATE AQC PROGRAM

General Information Form GI

Revision 7

2/18/10



## DEQ AIR QUALITY PROGRAM

1410 N. Hilton, Boise, ID 83706

For assistance, call the

Air Permit Hotline – 1-877-5PERMIT

Please see instructions on page 2 before filling out the form.

**All information is required. If information is missing, the application will not be processed.**

## IDENTIFICATION

1. Company Name	2. Facility Name:
Idaho Forest Group LLC	IFG - Chilco
3. Brief Project Description:	PTC application to modify minor Tier I permit conditions.

## FACILITY INFORMATION

4. Primary Facility Permit Contact Person/Title	Larry Benda	Boiler Head
5. Telephone Number and Email Address	(208) 255-9228	lbenda@idfg.com
6. Alternate Facility Contact Person/Title	Mike Henley	Plant Manager
7. Telephone Number and Email Address	(208) 255-3220	mhenley@idfg.com
8. Address to Which the Permit Should be Sent	4447 E. Chilco Road	
9. City/County/State/Zip Code	Athol	Kootenai Idaho 83801
10. Equipment Location Address (if different than the mailing address above)		
11. City/County/State/Zip Code		
12. Is the Equipment Portable?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
13. SIC Code(s) and NAICS Code	Primary SIC: 2421	Secondary SIC: NAICS: 321113
14. Brief Business Description and Principal Product	Sawmill, dry kilns and planer mill that produce finished lumber	
15. Identify any adjacent or contiguous facility that this company owns and/or operates	None	
16. Specify the reason for the application	<input checked="" type="checkbox"/> Permit to Construct (PTC) <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>For Tier I permitted facilities only: If you are applying for a PTC then you must also specify how the PTC will be incorporated into the Tier I permit.</p> <input checked="" type="checkbox"/> Incorporate the PTC at the time of the Tier I renewal  <input type="checkbox"/> Co-process the Tier I modification and PTC  <input type="checkbox"/> Administratively amend the Tier I permit to incorporate the PTC upon your request (IDAPA 58.01.01.209.05.a, b, or c)         </div> <input type="checkbox"/> Tier I Permit <input type="checkbox"/> Tier II Permit <input type="checkbox"/> Tier II/Permit to Construct	

## CERTIFICATION

In accordance with IDAPA 58.01.01.123 (Rules for the Control of Air Pollution in Idaho), I certify based on information and belief formed after reasonable inquiry, the statements and information in the document(s) are true, accurate, and complete.

17. Responsible Official's Name/Title	Kevin Esser, CFD		
18. Responsible Official's Signature	<i>K. Esser</i>	Date	Jan 11, 2013
19. <input checked="" type="checkbox"/> Check here to indicate that you would like to review the draft permit prior to final issuance.			



**DEQ AIR QUALITY PROGRAM**

1410 N. Hilton, Boise, ID 83706

For assistance, call the

**Air Permit Hotline – 1-877-5PERMIT**

Cover Sheet for Air Permit Application – Permit to Construct **Form CSPTC**

Please see instructions on page 2 before filling out the form.

**COMPANY NAME, FACILITY NAME, AND FACILITY ID NUMBER**

1. Company Name Idaho Forest Group LLC

2. Facility Name FG - Chilco 3. Facility ID No. 055-00024

4. Brief Project Description - One sentence or less Modification of permit conditions, to be included in ongoing Tier I renewal.

**PERMIT APPLICATION TYPE**

5.  New Source  New Source at Existing Facility  PTC for a Tier I Source Processed Pursuant to IDAPA 58.01.01.209.05.c  
 Unpermitted Existing Source  Facility Emissions Cap  Modify Existing Source: Permit No.: \_\_\_\_\_ Date Issued: \_\_\_\_\_  
 Required by Enforcement Action: Case No.: \_\_\_\_\_

6.  Minor PTC  Major PTC

**FORMS INCLUDED**

Included	N/A	Forms	DEQ Verify
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Form CSPTC – Cover Sheet	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Form GI – Facility Information	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form EU0 – Emissions Units General	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form EU1– Industrial Engine Information Please specify number of EU1s attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form EU2– Nonmetallic Mineral Processing Plants Please specify number of EU2s attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form EU3– Spray Paint Booth Information Please specify number of EU3s attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form EU4– Cooling Tower Information Please specify number of EU3s attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form EU5 – Boiler Information Please specify number of EU4s attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form CBP– Concrete Batch Plant Please specify number of CBPs attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form HMAP – Hot Mix Asphalt Plant Please specify number of HMAPs attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	PERF – Portable Equipment Relocation Form	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form AO – Afterburner/Oxidizer	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form CA – Carbon Adsorber	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form CYS – Cyclone Separator	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form ESP – Electrostatic Precipitator	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form BCE– Baghouses Control Equipment	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form SCE– Scrubbers Control Equipment	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form VSCE – Venturi Scrubber Control Equipment	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form CAM – Compliance Assurance Monitoring	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Forms EI– Emissions Inventory	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	PP – Plot Plan	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Forms MI1 – MI4 – Modeling (Excel workbook, all 4 worksheets)	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form FRA – Federal Regulation Applicability	<input type="checkbox"/>

**IDAHO FOREST GROUP  
CHILCO, IDAHO  
Emission Inventory/Calculations  
PTE Inventory Reflecting PTC Changes**

<b>Fugitive Sources</b>	<b>PM10 (ton/yr)</b>	<b>PM2.5 (ton/yr)</b>	<b>SO2 (ton/yr)</b>	<b>NOx (ton/yr)</b>	<b>VOCs (ton/yr)</b>	<b>CO (ton/yr)</b>	<b>HAPS (ton/yr)</b>
<b>Log and Bark Handling, Fugitives</b>							
DEBARKER	3.22	0.97	---	---	---	---	---
BARK HOG	0.59	0.18	---	---	---	---	---
COVERED BARK CONVEYOR	0.59	0.18	---	---	---	---	---
HOGGED FUEL DROP IN FUEL HOUSE	0.94	0.28	---	---	---	---	---
HOGGED FUEL TRUCK BIN LOADOUT	0.59	0.18	---	---	---	---	---
<b>Sawmill, Fugitives</b>							
SAWMILL, INDOOR	1.17	0.12	---	---	---	---	---
SAWMILL SCREEN (CLASSIFIER), INDOOR	0.63	0.06	---	---	---	---	---
SAWMILL CHIPPER, INDOOR	0.63	0.19	---	---	---	---	---
SAWDUST BIN TRUCK LOADOUT	1.33	0.40	---	---	---	---	---
SAWMILL CHIP BIN TRUCK LOADOUT	3.13	0.94	---	---	---	---	---
<b>Planer, Fugitives</b>							
PLANER CHIPPER AND SCREEN	0.13	0.04	---	---	---	---	---
PLANER CHIP BIN TRUCK LOADOUT	1.25	0.38	---	---	---	---	---
PLANER SHAVINGS BIN TRUCK LOADOUT	1.50	0.45	---	---	---	---	---
<b>Fugitive Road Dust</b>							
FUGITIVE DUST - PAVED ROADS	0.49	0.12	---	---	---	---	---
<b>Fugitive Totals</b>	<b>16.16</b>	<b>4.46</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Point Sources</b>							
<b>Lumber Drying</b>							
LUMBER DRY KILNS	3.25	1.63	---	---	175	---	31.2
<b>Sawmill Point Sources</b>							
SAWMILL CHIP BIN VENT - POINT SOURCE	6.27	1.88	---	---	---	---	---
SAWDUST BIN VENT - POINT SOURCE	2.65	0.80	---	---	---	---	---
FIREWATER PUMP	0.08	0.08	0.08	1.19	0.10	0.26	0.002
<b>Planer Point Sources</b>							
PLANER CHIPPER TARGET BOX - POINT SOURCE	1.25	0.38	---	---	---	---	---
PLANER SHAVINGS CYCLONE BAGHOUSE - POINT SOURCE	5.44	1.63	---	---	---	---	---
<b>Steam Plant</b>							
HOG FUEL BOILER	30.4	27.3	12.1	106	29.9	238	19.3
EFB MEDIA BAGHOUSE	1.0	1.0	---	---	---	---	---
NATURAL GAS BOILER (BRC)	1.5	1.5	0.12	7.39	1.09	7.50	0.37
<b>Point Source Totals</b>	<b>52</b>	<b>36</b>	<b>12</b>	<b>115</b>	<b>206</b>	<b>246</b>	<b>50.9</b>
<b>Plant Wide Total</b>	<b>68.0</b>	<b>40.7</b>	<b>12.26</b>	<b>115</b>	<b>206</b>	<b>246</b>	<b>50.9</b>

Greenhouse Gas, plantwide, excludes biogenic CO<sub>2</sub>: 28,000 metric ton equivalent CO<sub>2</sub>

**IDAHO FOREST GROUP - CHILCO**

**Emission Inventory/Calculations**

PTE Emissions

<b>Lumber Production</b>		
Sawmill	325,000	mbdft/year
Dry Kilns	325,000	mbdft/year
Planer	325,000	mbdft/year
Logs Used	1,170,000	tons/year
Sawmill Hours	8,760	hours/year, est
Planer Hours	8,760	hours/year

<b>Hog Fuel Boiler</b>	607,594	1000 lbs/yr Steam Produced
<b>Natural Gas Boller</b>	395	mmscf gas burned

<b>Residuals Production</b>			
	<b>tons/year</b>	<b>Estimation Factor</b>	
Sawmill Chips	250,792	Permit	lb chips/mbdft sawmill
Sawdust	106,144	Permit	lb sawdust/mbdft sawmill
Hog Bark	234,000	400	lb bark/ton logs
Planer Chips	50,000	Permit	lb chips/mbdft planer
Shavings	120,000	Permit	lb shavings/mbdft planer

**KIPPER & SONS HOG FUEL BOILER**

Controlled by EFB

75 1000 lb steam/hr	Design Capacity
23,551 dscfm @ 0% O2 (stack test)	
37,100 dscfm @ 8% O2, max	
8,760 Hours/Year, potential	
125 mmBtu/hr maximum	
607,594 1000 lb steam/year	Permit limit, running 12-month total
964,859 mmBtu/year	

**CRITERIA POLLUTANTS**

PM (controlled):		
Emission Factor:	0.08 gr/dscf @ 8% Oxygen	Regulatory Limit
Emissions:	111.4 tons/year	Potential Hours
	610.6 lbs/day	
	25.44 lbs/hr	Potential Emissions
PM10 (controlled):		
Emissions:	30.4 tons/year	Permit Limit
	166.3 lbs/day	
	6.93 lbs/hr	Permit Limit
PM2.5 (controlled):		
Emissions:	27.3 tons/year	PM2.5 is 90% of PM10
	149.7 lbs/day	Based on AP-42, Table 1.6-1
	6.24 lbs/hr	
Sulfur Dioxide:		
Emission Factor:	0.025 lb/mmBtu	(AP-42 TABLE 1.6-2, Rev 9/03)
Emissions:	12.06 tons/year	Actual based on mmBtu/yr
	75.00 lbs/day	
	3.13 lbs/hr	
Nitrogen Oxides (NOx)		
Emission Factor:	0.22 lb/mmBtu	(AP-42 TABLE 1.6-2, Rev 9/03)
Emissions:	106.13 tons/year	Actual based on mmBtu/yr
	660.0 lbs/day	
	27.50 lbs/hr	
Volatile Organic Compounds (VOC)		
Emission Factor:	0.062 lb/mmBtu	Value from air quality
Emissions:	29.91 tons/year	for this boiler when it was at
	186.0 lbs/day	Sandpoint
	7.75 lbs/hr	
Carbon Monoxide (CO)		
Emission Factor:	0.785 lb/1000 lb steam	As permitted in the 2004 original permit.
Emissions:	238.48 tons/year	Source test result was 0.59 lb/1000 lb steam
	1413.00 lbs/day	
	58.88 lbs/hr	
Lead (Pb)		
Emission Factor:	4.80E-05 lb/mmBtu	(AP-42 TABLE 1.6-4, Rev 9/03)
Emissions:	2.32E-02 tons/year	
	1.44E-01 lbs/day	
	6.00E-03 lbs/hr	

**EFB MEDIA BAGHOUSE**

PM10/PM2.5 :	5000 scf/min	Baghouse design flow.
Emission Factor:	0.0054 gr/dscf	Baghouse design emission rate.
Emissions:	1.0 tpy	Permit Limit
	5.55 lbs/day	Assumed to be all PM2.5
	0.23 lb/hr	Permit Limit

The uncontrolled emissions from this source are not known, therefore this is not defined as an insignificant source.

**IDAHO FOREST GROUP - CHILCO BOILER  
HAZARDOUS AIR POLLUTANTS (HAPS)**

Operating Parameters:

Potential Hours of Operation

8,760 hours/yr

Annual Boiler Heat Input, actual

964,859 mmBtu /yr

<b>Emission Factors:</b>		
AP-42 Ch.1.6, Tables 1.6-3 and 1.6-4 (9/03)	Emission Factor (lb/mmBtu)	Total Annual Emissions (tons/yr)
Acetaldehyde	8.3E-04	4.00E-01
Acetophenone	3.2E-09	1.54E-06
Acrolein	4.0E-03	1.93E+00
Benzene	4.2E-03	2.03E+00
Benzo(a)pyrene	2.6E-06	1.25E-03
bis(2-ethylhexyl)phthalate	4.7E-08	2.27E-05
Bromomethane (methyl bromide)	1.5E-05	7.24E-03
2-Butanone (MEK)	5.4E-06	2.61E-03
Carbon tetrachloride	4.5E-05	2.17E-02
Chlorine	7.9E-04	3.81E-01
Chlorobenzene	3.3E-05	1.59E-02
Chloroform	2.8E-05	1.35E-02
Chloromethane (Methyl Chloride)	2.3E-05	1.11E-02
1,2-Dichloroethane	2.9E-05	1.40E-02
Dichloromethane (Methylenechloride)	2.9E-04	1.40E-01
1,2-Dichloropropane (Propylene dichloride)	3.3E-05	1.59E-02
Ethylbenzene	3.1E-05	1.50E-02
Formaldehyde (Permit Limit = 2.41 tpy)	4.4E-03	2.12E+00
Hydrogen chloride	1.9E-02	9.17E+00
Methanol (from ODEQ)	1.4E-03	6.75E-01
Naphthalene	9.7E-05	4.68E-02
4-Nitrophenol	1.1E-07	5.31E-05
Pentachlorophenol	5.1E-08	2.46E-05
Phenol	5.1E-05	2.46E-02
Polycyclic Organic Matter (POM)	2.9E-06	1.39E-03
Benzo(a)anthracene	6.5E-08	
Benzo(a)pyrene	2.6E-06	
Benzo(b)fluoranthene	1.0E-07	
Benzo(k)fluoranthene	3.6E-08	
Indeno(1,2,3,cd)pyrene	8.7E-08	
Styrene	1.9E-03	9.17E-01
2,3,7,8-Tetrachlorodibenzo-p-dioxins	8.6E-12	4.15E-09
Toluene	9.2E-04	4.44E-01
1,1,1-Trichloroethane (Methyl Chloroform)	3.1E-05	1.50E-02
2,4,6-Trichlorophenol <	2.2E-08	1.06E-05
Vinyl Chloride	1.8E-05	8.68E-03
o-Xylene	2.5E-05	1.21E-02
Antimony	7.9E-06	3.81E-03
Arsenic	2.2E-05	1.06E-02
Beryllium	1.1E-06	5.31E-04
Cadmium	4.1E-06	1.98E-03
Chromium, total	2.1E-05	1.01E-02
Chromium, hexavalent	3.5E-06	1.69E-03
Cobalt	6.5E-06	3.14E-03
Lead	4.8E-05	2.32E-02
Manganese	1.6E-03	7.72E-01
Mercury	3.5E-06	1.69E-03
Nickel	3.3E-05	1.59E-02
Selenium	2.8E-06	1.35E-03
<b>TOTAL HAPS</b>		<b>19.27</b>

**NATURAL GAS BOILER (BRC)  
PACKAGE BOILER**

6,678 dscfm @ 0% O<sub>2</sub>, f-factor  
 1,056 lbmol/hr @ 0% O<sub>2</sub>  
 8,760 Hours/Year  
 40,000 pph steam  
 46 mmBtu/hr, accounts for heat recovery  
 1,020 btu/cf gas  
 45,098 scfh gas, based on heat input

**CRITERIA POLLUTANTS**

PM/PM10/PM2.5 (controlled):		
Emission Factor:	7.6 lb/mmescf	(AP-42 TABLE 1.4-2, Rev 7/98)
Emissions:	1.50 tons/year	
	8.23 lbs/day	
	0.34 lbs/hr	
Sulfur Dioxide:		
Emission Factor:	0.6 lb/mmescf	(AP-42 TABLE 1.4-2, Rev 7/98)
Emissions:	0.12 tons/year	
	0.65 lbs/day	
	0.03 lbs/hr	
Nitrogen Oxides (NO <sub>x</sub> )		
Emission Rate:	30 ppm @ 3% O <sub>2</sub>	Manufacturer
Emissions:	7.39 tons/year	Low-NO <sub>x</sub> burner
	40.52 lbs/day	
	1.69 lbs/hr	
Volatile Organic Compounds (VOC)		
Emission Factor:	5.5 lb/mmescf	(AP-42 TABLE 1.4-2, Rev 7/98)
Emissions:	1.09 tons/year	
	5.95 lbs/day	
	0.25 lbs/hr	
Carbon Monoxide (CO)		
Emission Factor:	50 ppm @ 3% O <sub>2</sub>	Manufacturer
Emissions:	7.50 tons/year	
	41.11 lbs/day	
	1.71 lbs/hr	
Lead (Pb)		
Emission Factor:	5.00E-04 lb/mmescf	(AP-42 TABLE 1.4-2, Rev 7/98)
Emissions:	9.88E-05 tons/year	
	5.41E-04 lbs/day	
	2.25E-05 lbs/hr	

# Chilco Natural Gas Boiler

## Operating Parameters:

Potential Hours of Operation	8,760 hours/yr
Max Heat Input	46.0 MMBtu / hr
Annual Boiler Heat Input	402,960 MMBtu / yr
	0.045 mmscf/hr

Emission Factors:			Potential Emissions:		
AP-42 Ch.1.4, Tables 1.4-3 and 1.4-4 (7/98) emission factors	HAP (y/n)	TAP Class (A/B)	Emission Factor (lb/MMBtu)	Potential Emissions (lb/hr)	Total Annual (tons/yr)
Acenaphthene	y		1.8E-09	8.12E-08	3.56E-07
Acenaphthylene	y		1.8E-09	8.12E-08	3.56E-07
Anthracene	y		2.4E-09	1.08E-07	4.74E-07
Benzene	y	A	2.1E-06	9.47E-05	4.15E-04
Benzo(a)pyrene	y	A	1.2E-09	5.41E-08	2.37E-07
Benzo(g,h,i)perylene	y		1.2E-09	5.41E-08	2.37E-07
7,12-Dimethylbenz(a)anthracene	y		1.6E-08	7.22E-07	3.16E-06
Dichlorobenzene	y		1.2E-06	5.41E-05	2.37E-04
Fluoranthene	y		2.9E-09	1.35E-07	5.93E-07
Fluorene	y		2.7E-09	1.26E-07	5.53E-07
Formaldehyde	y	A	7.4E-05	3.38E-03	1.48E-02
Hexane	y	B	1.8E-03	8.12E-02	3.56E-01
2-Methylnaphthalene	y		2.4E-08	1.08E-06	4.74E-06
3-Methylchloranthrene	y		1.8E-09	8.12E-08	3.56E-07
Naphthalene	y	B	8.0E-07	2.75E-05	1.20E-04
Phenanthrene	y		1.7E-08	7.67E-07	3.36E-06
Pyrene	y		4.9E-09	2.25E-07	9.88E-07
Polycyclic Organic Matter (POM)	y	A	1.2E-08	5.41E-07	2.37E-06
Benzo(a)anthracene			1.8E-09		
Benzo(a)pyrene			1.2E-09		
Benzo(b)fluoranthene			1.8E-09		
Benzo(k)fluoranthene			1.8E-09		
Chrysene			1.8E-09		
Dibenzo(a,h)anthracene			1.8E-09		
Indeno(1,2,3-cd)pyrene			1.8E-09		
Toluene	y	B	3.3E-06	1.53E-04	6.72E-04
Arsenic	y	A	<b>2.4E-04</b>	<b>1.08E-05</b>	4.74E-05
Beryllium	y	A	1.2E-08	5.41E-07	2.37E-06
Cadmium	y	A	1.1E-06	4.96E-05	2.17E-04
Chromium	y	A	1.4E-07	6.31E-06	2.77E-05
Cobalt	y	B	8.2E-08	3.79E-06	1.66E-05
Manganese	y	B	3.7E-07	1.71E-05	7.51E-05
Mercury	y	B	2.5E-07	1.17E-05	5.14E-05
Nickel	y	A	2.1E-06	9.47E-05	4.15E-04
Selenium	y	B	2.4E-08	1.08E-06	4.74E-06
			<b>TOTAL HAPS</b>		<b>0.37</b>
Pentane	n	B	2.8E-03	1.31E-01	5.73E-01
Barium	n	B	4.3E-06	1.98E-04	8.69E-04
Copper	n	B	8.3E-07	3.83E-05	1.68E-04
Molybdenum	n	B	1.1E-06	4.96E-05	2.17E-04
Zinc	n	B	2.8E-05	1.31E-03	5.73E-03

**LUMBER DRY KILNS**

325,000 mbdf/yr, lumber dried

**CRITERIA POLLUTANTS**

PM10 :	Emission Factor:	0.02 lbs/1000 bd.ft.	Oregon General Permit
	Emissions:	3.25 tons/year	AQGP-010
		17.81 lbs/day	
PM2.5 :	Emission Factor:	0.01 lbs/1000 bd.ft.	Assume PM2.5 is 50% of PM10
	Emissions:	1.63 tons/year	PM10 is based on AQGP-010
		8.90 lbs/day	
VOC:	Emission Factor:	1.08 lbs/1000 bd.ft.	Sources listed below
	Emissions:	175.0 tons/year	Permit Limit is 175.5 tpy
		959 lbs/day	

VOC emissions based on species-dependent weighted emission factor, using information below. Species mix is typical

Wood Species:	% of Total	VOC as VOC (lb/MBdf)	Weighted (lb/Mbdf)	Source of Emission Factor
Redwood	0%	0.15	0.00	1996 U of I Study
Cedar	0%	0.15	0.00	1996 U of I Study
Douglas Fir	40%	1.03	0.41	2007 OSU Study
Hem Fir	40%	0.70	0.28	2007 OSU Study
Hemlock	0%	0.25	0.00	2007 OSU Study
ESLP	9%	1.32	0.12	2000 OSU Study
Larch	0%	0.25	0.00	2007 OSU Study
AF(WW)	0%	0.70	0.00	2007 OSU Study
Ponderosa Pine	11%	2.46	0.26	2007 OSU Study
Total	100%		1.08	

Riley Creek - Chilco  
Dry Kiln Haps

EMISSIONS YEAR	PTE
----------------	-----

\* white wood is Engleman spruce, white fir, etc.

ENTER	
Total MBF processed	325,000
% Douglas Fir /Larch	40.0%
% Hem Fir	40.0%
% Ponderosa Pine	10.6%
% ESLP	9.4%
% Cedar	0.0%
% AF (WW)	0.0%
	100%

130,000 MBF/Yr by species calculated by Total MBF \* % species  
130,000  
34,450  
30,550  
0  
0  
325,000

EMISSION FACTORS						
units of pounds per thousand board feet (lb/mbf)						
Pollutant	Total HAP	Methanol	Formal- dehyde	Acetal- dehyde	Propion- aldehyde	Acrolein
Douglas Fir / Larch	0.1700	0.0964	0.0033	0.0687	0.0007	0.0009
Hem Fir	0.2500	0.1328	0.0030	0.1039	0.0084	0.0018
Pinderosa Pine	0.1483	0.1021	0.0067	0.0334	0.0027	0.0034
ESLPAF	0.0915	0.0539	0.0030	0.0333	0.0005	0.0008
Cedar	0.0915	0.0539	0.0030	0.0333	0.0005	0.0008
AF (WW)	0.2500	0.1328	0.0030	0.1039	0.0084	0.0018

EMISSIONS						
units of pounds per year (lb/yr)						
Species	Total HAP	Methanol	Formal- dehyde	Acetal- dehyde	Propion- aldehyde	Acrolein
Douglas Fir / Larch	22098	12536	425	8933	93	111
Hem Fir	32497	17262	396	13511	1090	239
Pinderosa Pine	5108	3517	231	1150	93	118
ESLP	2794	1647	91	1016	16	24
Cedar	0	0	0	0	0	0
AF (WW) or Other	0	0	0	0	0	0
TOTAL, lb/yr	62,498	34,961	1,143	24,610	1,292	492
TOTAL, ton/yr	31.25	17.48	0.57	12.31	0.65	0.25

Permit Limit  
is 0.65 tpy

## LOGS AND BARK, FUGITIVE EMISSIONS

### DEBARKER

1,170,000 Tons of Logs/Year  
8,760 Hours/Year

Spray is used as needed to control dust emissions.  
Spray is estimated to provide 50% control.

PM10:

Emission Factor:	0.011 lbs/ton	AIRS 3-07-008-01
Control:	50% spray bars	
Emissions:	3.22 tons/year	
	17.63 lbs/day	

PM2.5:

Emission Factor:	0.0033 lbs/ton	30% of PM10 for material handling sources
Control:	50% spray bars	Based on data from EPA's PM Calculator
Emissions:	0.97 tons/year	
	5.29 lbs/day	

### BARK HOG

Insignificant based on total emissions.

234,000 Tons of Bark/Year

PM10:

Emission Factor:	0.05 lbs/ton	General Material Handling Factor
Emissions:	0.59 tons/year	Based on original Chilco permit from IDEQ
	3.21 lbs/day	Bark Hog is enclosed, 90% control.

PM2.5:

Emission Factor:	0.015 lbs/ton	30% of PM10 for material handling sources
Control:	0.18 tons/year	Based on data from EPA's PM Calculator
Emissions:	0.96 lbs/day	

### COVERED BARK CONVEYOR

PM10:

Emission Factor:	0.05 lbs/ton	General Material Handling Factor
Emissions:	0.59 tons/year	Based on original Chilco permit from IDEQ
	3.21 lbs/day	Fully covered conveyor provides 90% control

PM2.5:

Emission Factor:	0.015 lbs/ton	30% of PM10 for material handling sources
Control:	0.18 tons/year	Based on data from EPA's PM Calculator
Emissions:	0.96 lbs/day	

### HOGGED FUEL DROP IN FUEL HOUSE

Approx. 80% of fuel goes to fuel house.

PM10:

Emission Factor:	0.05 lbs/ton	General Material Handling Factor
Emissions:	0.94 tons/year	Based on original Chilco permit from IDEQ
	5.13 lbs/day	Fuel house has 3 sides providing 80% control

PM2.5:

Emission Factor:	0.015 lbs/ton	30% of PM10 for material handling sources
Control:	0.28 tons/year	Based on data from EPA's PM Calculator
Emissions:	1.54 lbs/day	

### HOGGED FUEL TRUCK BIN LOADOUT

Approx. 20% of fuel goes to hog fuel bins.

PM10:

Emission Factor:	0.05 lbs/ton	General Material Handling Factor
Emissions:	0.59 tons/year	Based on original Chilco permit from IDEQ
	3.21 lbs/day	Bin has sides panels to block wind, 50% control.

PM2.5:

Emission Factor:	0.015 lbs/ton	30% of PM10 for material handling sources
Control:	0.18 tons/year	Based on data from EPA's PM Calculator
Emissions:	0.96 lbs/day	

## SAWMILL PROCESSES

### SAWMILL, INDOOR

Insignificant based on total emissions.

1,170,000 Tons of Logs/Year

PM10:	Emission Factor:	0.2 lbs/ton	Idaho Factor
	Controlled EF:	0.002 lbs/ton	Indoors with pneumatic dust pickup.
	Emissions:	1.17 tons/year	99% removal efficiency.
		6.41 lbs/day	
PM25:	Emission Factor:	0.02 lbs/ton	30% of PM10 for material handling sources
	Controlled EF:	0.0002 lbs/ton	Based on data from EPA's PM Calculator
	Emissions:	0.12 tons/year	Indoors with pneumatic dust pickup.
		0.64 lbs/day	99% removal efficiency.

### SAWMILL SCREEN (CLASSIFIER), INDOOR

Insignificant based on total emissions.

250,792 Tons of Chips/Year

PM10:	Emission Factor:	0.05 lbs/ton	General Material Handling Factor
	Controlled EF:	0.005 lbs/ton	Based on original Chilco permit from IDEQ
	Emissions:	0.63 tons/year	Enclosed process, 90% control.
		3.44 lbs/day	
PM25:	Emission Factor:	0.005 lbs/ton	30% of PM10 for material handling sources
	Controlled EF:	0.0005 lbs/ton	Based on data from EPA's PM Calculator
	Emissions:	0.06 tons/year	Enclosed process, 90% control.
		0.34 lbs/day	

### SAWMILL CHIPPER, INDOOR

Insignificant based on total emissions.

250,792 Tons of Chips/Year

PM10:	Emission Factor:	0.05 lbs/ton	General Material Handling Factor
	Controlled EF:	0.005 lbs/ton	Based on original Chilco permit from IDEQ
	Emissions:	0.63 tons/year	Enclosed process, 90% control.
		3.44 lbs/day	
PM25:	Emission Factor:	0.015 lbs/ton	30% of PM10 for material handling sources
	Controlled EF:	0.0015 lbs/ton	Based on data from EPA's PM Calculator
	Emissions:	0.19 tons/year	Enclosed process, 90% control.
		1.03 lbs/day	

### SAWDUST BIN TRUCK LOADOUT

Insignificant based on total emissions.

106,144 Tons of Sawdust/Year

PM10:	Emission Factor:	0.05 lbs/ton	General Material Handling Factor
	Controlled EF:	0.025 lbs/ton	Based on original Chilco permit from IDEQ
	Emissions:	1.33 tons/year	Sides of loadout blocked from wind, 50% control.
		7.27 lbs/day	
PM25:	Emission Factor:	0.015 lbs/ton	30% of PM10 for material handling sources
	Controlled EF:	0.0075 lbs/ton	Based on data from EPA's PM Calculator
	Emissions:	0.40 tons/year	Sides of loadout blocked from wind, 50% control.
		2.18 lbs/day	

### SAWMILL CHIP BIN TRUCK LOADOUT

250,792 Tons of Chips/Year

PM10:	Emission Factor:	0.05 lbs/ton	General Material Handling Factor
	Controlled EF:	0.025 lbs/ton	Based on original Chilco permit from IDEQ
	Emissions:	3.13 tons/year	Sides of loadout blocked from wind, 50% control.
		17.18 lbs/day	
PM25:	Emission Factor:	0.015 lbs/ton	30% of PM10 for material handling sources
	Controlled EF:	0.0075 lbs/ton	Based on data from EPA's PM Calculator
	Emissions:	0.94 tons/year	Sides of loadout blocked from wind, 50% control.
		5.15 lbs/day	

### SAWMILL CHIP BIN VENT - POINT SOURCE

250,792 Tons of Chips/Year

PM10:	Emission Factor:	0.05 lbs/ton	Idaho DEQ Target Box Factor.
	Emissions:	6.27 tons/year	Permit Limit
		34.36 lbs/day	
PM25:	Emission Factor:	0.015 lbs/ton	30% of PM10 for material handling sources
	Emissions:	1.88 tons/year	Based on data from EPA's PM Calculator
		10.31 lbs/day	

### SAWDUST BIN VENT - POINT SOURCE

106,144 Tons of Sawdust/Year

PM10:	Emission Factor:	0.05 lbs/ton	Idaho DEQ Target Box Factor.
	Emissions:	2.85 tons/year	Permit Limit
		14.54 lbs/day	
PM25:	Emission Factor:	0.015 lbs/ton	30% of PM10 for material handling sources
	Emissions:	0.80 tons/year	Based on data from EPA's PM Calculator
		4.36 lbs/day	

**PLANER PROCESSES**

**PLANER, INDOOR**

There are no emissions from the planers because they are pneumatically controlled through the shavings transport system.

**PLANER CHIPPER AND SCREEN**

Insignificant based on total emissions.

50,000 Tons of Planer Chips/Year

PM10 :	Emission Factor:	0.05 lbs/ ton	General Material Handling Factor
	Controlled EF:	0.005 lbs/ton	Based on original Chilco permit from IDEQ
	Emissions:	0.13 tons/year	Enclosed process, 90% control.
		0.68 lbs/day	
PM2.5 :	Emission Factor:	0.015 lbs/ ton	30% of PM10 for material handling sources
	Controlled EF:	0.0015 lbs/ton	Based on data from EPA's PM Calculator
	Emissions:	0.04 tons/year	Enclosed process, 90% control.
		0.21 lbs/day	

**PLANER CHIPPER TARGET BOX - POINT SOURCE**

Insignificant based on total emissions.

50,000 Tons of Planer Chips/Year

PM10 :	Emission Factor:	0.05 lbs/ ton	Idaho DEQ Factor
	Emissions:	1.25 tons/year	Based on original Chilco permit from IDEQ
		6.85 lbs/day	
PM2.5 :	Emission Factor:	0.015 lbs/ ton	30% of PM10 for material handling sources
	Emissions:	0.38 tons/year	Based on data from EPA's PM Calculator
		2.05 lbs/day	

**PLANER CHIP BIN TRUCK LOADOUT**

Insignificant based on total emissions.

50,000 Tons of Planer Chips/Year

PM10 :	Emission Factor:	0.05 lbs/ton	General Material Handling Factor
	Controlled EF:	0.025 lbs/ton	Based on original Chilco permit from IDEQ
	Emissions:	1.25 tons/year	Sides of loadout blocked from wind, 50% control.
		6.85 lbs/day	
PM2.5 :	Emission Factor:	0.015 lbs/ ton	30% of PM10 for material handling sources
	Controlled EF:	0.0075 lbs/ton	Based on data from EPA's PM Calculator
	Emissions:	0.38 tons/year	Sides of loadout blocked from wind, 50% control.
		2.05 lbs/day	

**PLANER SHAVINGS BIN TRUCK LOADOUT**

Insignificant based on total emissions.

120,000 Tons of Planer Shavings/Year

PM10:	Emission Factor:	0.05 lbs/ton	General Material Handling Factor
	Controlled EF:	0.025 lbs/ton	Based on original Chilco permit from IDEQ
	Emissions:	1.50 tons/year	Sides of loadout blocked from wind, 50% control.
		8.22 lbs/day	
PM2.5:	Emission Factor:	0.015 lbs/ton	30% of PM10 for material handling sources
	Controlled EF:	0.0075 lbs/ton	Based on data from EPA's PM Calculator
	Emissions:	0.45 tons/year	Sides of loadout blocked from wind, 50% control.
		2.47 lbs/day	

**PLANER SHAVINGS CYCLONE BAGHOUSE - POINT SOURCE**

PM10 :		29000 scf/min	Baghouse design flow.
		8,760 hr/yr	actual
	Emission Factor:	0.005 gr/dscf	Baghouse design emission rate.
	Emissions:	5.44 tpy	
		29.83 lbs/day	
		1.24 lb/hr	
PM2.5 :	Emission Factor:	0.0015 gr/dscf	30% of PM10 for material handling sources
	Emissions:	1.63 tpy	Based on data from EPA's PM Calculator
		8.95 lbs/day	
		0.37 lb/hr	

### FUGITIVE DUST - PAVED ROADS

Calculations based on AP-42 Section 13.2.1.3, rev. 1/11

Source	Class	Number Trips Per Year	Distance per Trip (miles)	VMT	Emission Factor lb/VMT	Controlled Emission tpy	Surface Silt Loading sL	Avg. Vehicle Weight W	Weighted Vehicle Weight
Log Trucks	Paved, Loaded	41,786	0.25	10446	2.54	6.64	1.0	40	7.39
	Paved, Empty	41,786	0.25	10446	0.47	1.23	1.0	13	2.40
Chip Trucks	Paved, Loaded	1,751	0.50	875	2.54	0.56	1.0	40	0.62
	Paved, Empty	1,751	0.50	875	0.47	0.10	1.0	13	0.20
Shavings Trucks	Paved, Loaded	5,882	0.50	2941	2.54	1.87	1.0	40	2.08
	Paved, Empty	5,882	0.50	2941	0.47	0.35	1.0	13	0.68
Sawdust Trucks	Paved, Loaded	0	0.50	0	2.54	0.00	1.0	40	0.00
	Paved, Empty	0	0.50	0	0.47	0.00	1.0	13	0.00
Lumber Trucks	Paved, Loaded	18,056	0.50	9028	2.54	5.74	1.0	40	6.38
	Paved, Empty	18,056	0.50	9028	0.47	1.06	1.0	13	2.07
Misc. Vehicles incl employee	Paved	40,000	0.25	10000	0.05	0.13	1.0	3	0.53
		<b>174,949</b>		<b>56,581</b>					<b>22</b>

$$E = k(sL)^{0.91}(W)^{1.02} [1 - 1.2 * P/N]$$

	PM	PM10	PM2.5	P=	N=
k =	0.011	0.0022	0.00054	120	365
sL =	1.1	1.1	1.1		
W =	22	22	22		
E =	0.173	0.035	0.008		
% control from washing/	50%	50%	50%		

<b>Total PM Emissions:</b>	<b>2.4</b>	<b>tpy</b>
<b>Total PM10 Emissions</b>	<b>0.49</b>	<b>tpy</b>
<b>Total PM2.5 Emissions</b>	<b>0.12</b>	<b>tpy</b>

**FIREWATER PUMP**

Jockey Pump Controller                      3 horsepower  
 Main Controller                                150 horsepower  
     153 horsepower

Pump keeps fire suppression system charged in the event of a power outage. Tested monthly.

500 Hours of Operation

Testing and during power outages

PM/ PM10/PM2.5

Emission Factor:                      2.20E-03 lb/hp-hr  
 Emissions:                                8.42E-02 tons/year  
     0.34 lb/hr

AP-42, Section 3.3, Table 3.3-1

Sulfur Dioxide:

Emission Factor:                      2.05E-03 lb/hp-hr  
 Emissions:                                7.84E-02 tons/year  
     0.31 lb/hr

AP-42, Section 3.3, Table 3.3-1

Nitrogen Oxides (NOx)

Emission Factor:                      3.10E-02 lb/hp-hr  
 Emissions:                                1.19E+00 tons/year  
     4.74 lb/hr

AP-42, Section 3.3, Table 3.3-1

Volatile Organic Compounds (VOC) - Total Organic Compounds

Emission Factor:                      2.51E-03 lb/hp-hr  
 Emissions:                                9.62E-02 tons/year  
     0.38 lb/hr

AP-42, Section 3.3, Table 3.3-1

Carbon Monoxide (CO)

Emission Factor:                      6.68E-03 lb/hp-hr  
 Emissions:                                2.56E-01 tons/year  
     1.02 lb/hr

AP-42, Section 3.3, Table 3.3-1

Total HAPS

Emission Factor:                      6.45E-03 lb/MMBtu  
     4.52E-05 lb/hp-hr  
 Emissions:                                1.73E-03 tons/year  
     6.91E-03 lb/hr

AP-42, Section 3.3, Table 3.3-2

Lead

Emission Factor:                      4.80E-05 lb/MMBtu  
     3.36E-07 lb/hp-hr  
 Emissions:                                1.29E-05 tons/year  
     5.14E-05 lb/hr

AP-42, Section 3.3, Table 3.3-2

IFG Chilco  
Greenhouse Gas Calculations

Hog Fuel Boiler 964,859 MMBtu/year  
 Carbon Dioxide (CO2) (not actually a greenhouse gas when emitted from biomass burning)  
 Emission Factor: 195 lb/mmbtu (AP-42 TABLE 1.6-3, Rev 09/03)  
 Emissions: 94,074 tpy CO2  
 Methane  
 Emission Factor: 0.021 lb/mmbtu (AP-42 TABLE 1.6-3, Rev 09/03)  
 Emissions: 20,262 lb/yr  
 193.41 metric tons CO2e, GWP = 21  
 Nitrous Oxide  
 Emission Factor: 0.013 lb/mmbtu (AP-42 TABLE 1.6-3, Rev 09/03)  
 Emissions: 12,543 lb/yr  
 1,767.45 metric tons CO2e, GWP = 310

Natural Gas Combustion 46 MMBtu/hr Boiler Design  
 402,960 MMBtu/year  
 Carbon Dioxide (CO2)  
 Emission Factor: 53.02 kg/mmbtu EPA Mandatory Reporting Rule  
 Emissions: 21,365 metric tons CO2  
 21,365 metric tons CO2e, GWP = 1  
 Methane  
 Emission Factor: 0.001 kg/mmbtu EPA Mandatory Reporting Rule  
 Emissions: 0.40 metric tons CO2  
 8 metric tons CO2e, GWP = 21  
 Nitrous Oxide  
 Emission Factor: 1.00E-04 kg/mmbtu EPA Mandatory Reporting Rule  
 Emissions: 0.04 metric tons CO2  
 12 metric tons CO2e, GWP = 310

Fuel in On-site Vehicles

Gallons gasoline 20,000 Gallons/yr, estimated max  
 Gallons diesel 400,000 Gallons/yr  
 Carbon Dioxide (CO2) , Gasoline  
 Emission Factor: 8.81 kg/gallon Table 5, Climate Leader  
 Emissions: 176 metric tons CO2e, GWP = 1  
 Carbon Dioxide (CO2) , Diesel  
 Emission Factor: 10.15 kg/gallon Table 5, Climate Leader  
 Emissions: 4,060 metric tons CO2e, GWP = 1  
 Methane, Gasoline  
 Emission Factor: 5.00E-04 kg/gallon Table A-6: Climate Leader  
 Emissions: 0.21 metric tons CO2e, GWP = 21  
 Methane, Diesel  
 Emission Factor: 5.80E-04 kg/gallon Table A-6: Climate Leader  
 Emissions: 4.87 metric tons CO2e, GWP = 21  
 Nitrous Oxide, Gasoline  
 Emission Factor: 2.20E-04 kg/gallon Table A-6: Climate Leader  
 Emissions: 1.36 metric tons CO2e, GWP = 310  
 Nitrous Oxide, Diesel  
 Emission Factor: 2.60E-04 kg/gallon Table A-6: Climate Leader  
 Emissions: 1.61 metric tons CO2e, GWP = 310

Total GHG Emissions (excluding biogenic CO2)	Stationary Only		
Carbon Dioxide	25,601	21,365	
Methane	198.90	193.81	
Nitrous Oxide	1,770.46	1,767.49	
	27,570	23,326	metric tons CO2e