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THE DOCUMENTS

- Payment for PTC application, J. R. Simplot Company – Project Idaho of $1000
- PTC application, J. R. Simplot Company – Project Idaho for Caldwell, Idaho site

PREPARED BY THE J.R. SIMPLOT COMPANY
WAS DELIVERED TO:

Air Quality Program Office - Application Processing
Idaho Department of Environmental Quality
1410 North Hilton
Boise, ID 83706-1255

December 6, 2011

RECEIVED at DEQ BY:

Signature: R. Greenwood - DEQ/Security
Docs/Application To Air Quality Division/Tessa
Date: Check To FISCAL & Receipted
12-06-11

J.R. SIMPLOT COMPANY ONE CAPITAL CENTER 999 MAIN STREET SUITE 1300
P.O. BOX 27 BOISE, IDAHO 83707 (208) 336-2110 FAX (208) 389-7515

CORPORATE HEADQUARTERS

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December 6, 2011

Hand delivered

Mr. Mike Simon
Department of Environmental Quality
Air Quality Division
Stationary Source Program
1410 North Hilton
Boise, Idaho 83706-1255

RE: Permit To Construct (PTC) Application
J.R. Simplot Company – Caldwell, Project Idaho

Dear Mr. Simon:

Enclosed is a Permit to Construct application addressing the proposed "Project Idaho" construction of a new potato processing facility at the J.R. Simplot Company's (Simplot's) current Caldwell potato facility site.

Simplot retained Environ International Corporation (Environ) to prepare this application. Simplot and Environ held a meeting with DEQ on November 29, 2011, to discuss the application and project, and this application reflects the comments discussed.

This packet includes the PTC application, detailed emission calculations for the proposed project, and contains check no: 1181038 for the amount of $1,000 to cover the PTC application fee.

Pursuant to IDAPA 58.01.01.123, I hereby certify that, based on information and belief formed after reasonable inquiry, the statements and information in this application are true, accurate, and complete.

Please feel free to call Henry Hamanishi at 208-389-7375 or Eric Hansen of ENVIRON at 425-412-1811 if you any questions or need additional information.

Sincerely,

Mark Currie
Senior Director Potato Operations HQ FG

cc: Eric Hansen, ENVIRON International Corporation
Henry Hamanishi, J.R. Simplot Co.
Burl Ackerman, J.R. Simplot Co.

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STATE A Q PROGRAM

Project Idaho

Permit to Construct Application

J.R. Simplot Company

Caldwell, Idaho

Prepared for:

J.R. Simplot Company

Boise, Idaho

Prepared by:

ENVIRON International Corporation

Lynnwood, Washington

December 2011

Project Number:

29-22721H

ENVIRON

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1 Introduction and Background

The J.R. Simplot Company (Simplot) owns and operates a potato processing plant in Caldwell, Idaho. The Caldwell plant site is located approximately two miles west of the City of Caldwell on Highway 19 in Canyon County, Idaho. The Caldwell processing plant is surrounded by Simplot agricultural land except on the north side, where Highway 19 abuts the site. The wastewater treatment plant and anaerobic digester are located north of highway 19. Figure 1-1 displays the site location.

Simplot proposes to replace the existing Caldwell potato plant with a new building and state-of-the-art equipment that will increase production while improving energy efficiency. To support the process equipment, Simplot proposes to install three new boilers capable of firing natural gas. Two of the three boilers will also be capable of burning a mixture of natural gas and biogas from the existing anaerobic digester. Simplot refers to the proposal as "Project Idaho."

This Permit to Construct application requests approval from the Department of Environmental Quality (DEQ) to construct and operate the new boilers and processing equipment. This application also requests that the DEQ impose a limit on greenhouse gas emissions to ensure the Caldwell facility's minor source status with respect to EPA's Prevention of Significant Deterioration permit program.

1.1 Organization

ENVIRON International Corporation (ENVIRON) prepared this air quality permit to construct (PTC) application on behalf of Simplot. Key components of a PTC application include:

A description of the project and anticipated air pollutant emissions

A discussion of applicable air quality regulations

Dispersion modeling analysis of air emissions

This PTC application is organized to address each of these permit requirements. In addition, Simplot's request for a limit on greenhouse gas emissions is presented in Section 3.2.1.

Appendix A includes IDEQ's standard PTC forms. Appendix B provides a process flow diagram of the facility. Appendix C provides detailed calculations supporting emission rates presented in the body of this application. Appendix D provides a disc with electronic modeling files.

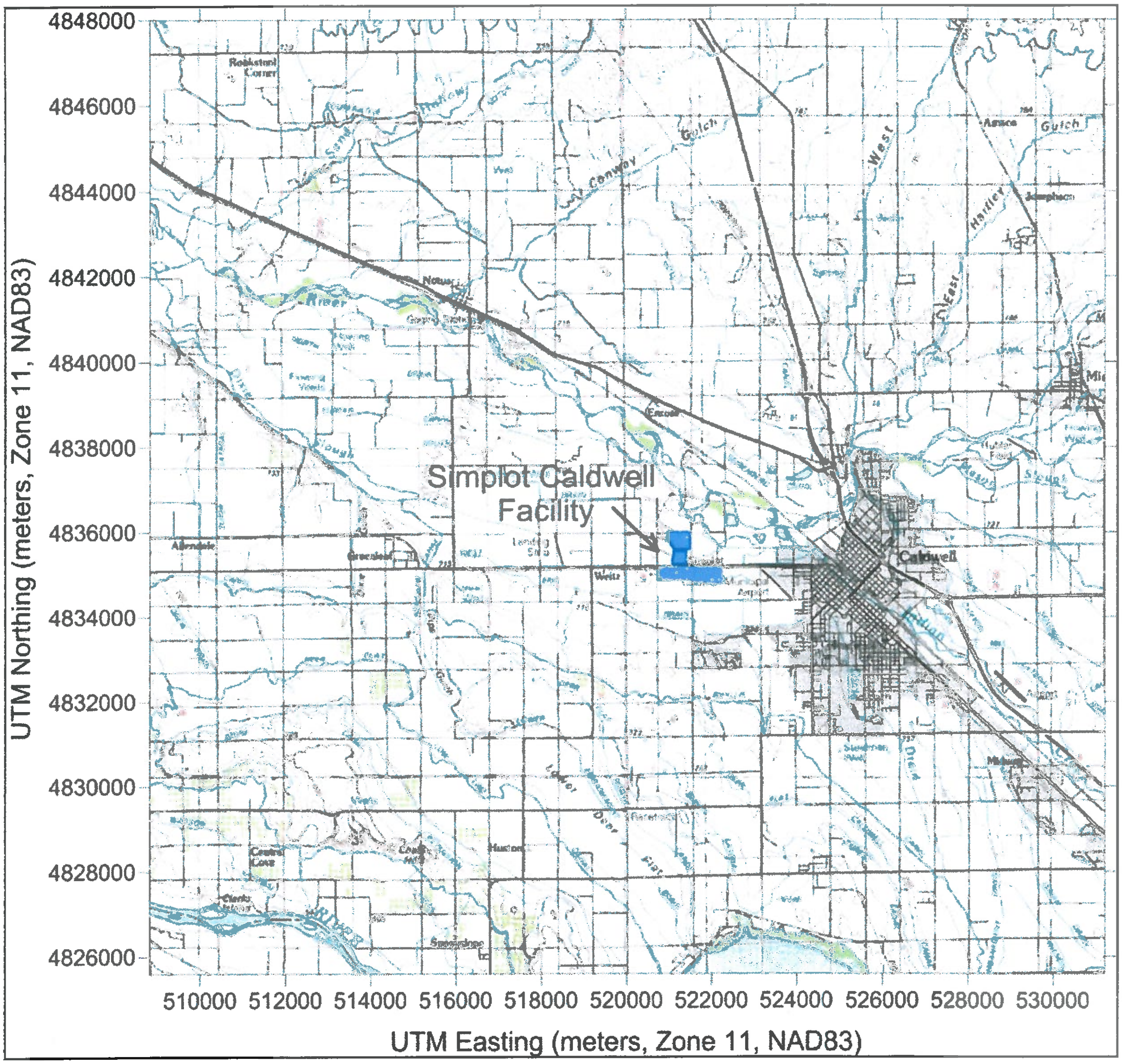

Figure 1-1. Project Vicinity Map

2 Project Description

2.1 Physical Description

Simplot proposes to construct a new production building with five process lines east of the existing Plant 2. Emissions from the fryers and dryers will be directed to a regenerative thermal oxidizer (RTO) to achieve a very high degree of emissions control.

Steam for process needs and building heat will be provided by three new boilers each rated at 98 million British thermal units per hour (MMBtu/hr) on a higher heating value (HHV) basis. The proposed boilers will be equipped with ultra-low NOx burners. The existing anaerobic digester and flare will not be modified, and existing internal combustion (IC) emergency engines will remain in place. No physical changes or change in the method of operation of the digester, flare, or emergency engines will occur as part of Project Idaho.

The Project includes decommissioning existing production units and demolishing some existing buildings and structures at the Caldwell site. Existing emission units that will be decommissioned as part of this project include Boilers No. 1 and No. 8, the dryers and fryers, the Wet Electrostatic Precipitator (WESP), and all air makeup units (AMUs). Existing buildings that will be demolished as part of this project include the Plant 1 Building (the original processing plant – currently abandoned), the Plant 2 Building (the current processing plant), Warehouse K-1, Warehouse J, Warehouse H (all three warehouses are for raw storages of potatoes), and various support buildings.

2.1.1 Process Description

The Caldwell facility will produce par-fried French fries that will include both battered and unbattered products, par-fried preformed potato products, and shredded potatoes using the same general production process Simplot uses today. Trucks will transport raw potatoes to the facility, where the potatoes will be unloaded inside the enclosed receiving area within the new processing building. The potatoes are mechanically sorted by size and, during harvest season, randomly inspected by the Idaho Department of Agriculture.

After sorting and inspection, the potatoes will be transported to one of the facility's five production lines. Steam peelers will remove the potato peels for most product cuts prior to being sliced into various shapes and lengths. After the potatoes are cut and sorted into different lengths, they will be dipped into hot water blancher tanks to remove the excess sugars. After leaving the blancher, potatoes in Line 5 will be shredded and then frozen for packing.

The potato products for Lines 1, 2, 3, and 4 will be conveyed to steam-heated dryers to remove surface moisture. Once the surface moisture is removed, the potatoes in Line 1 and Line 2 will be conveyed to the Line 1 and Line 2 fryers. Line 3 and Line 4 potatoes will be formed into preformed potato products before being conveyed to the Line 3 and Line 4 fryers. Following the frying process, the final potato products will be frozen and packaged for shipping. Table 2-1 presents the nominal capacity for processing Lines 1 – 4.

Table 2-1: Project Idaho Nominal Processing Capacity		
Line No.	Product Type	Finished Product Throughput (lb/hr)
Line 1	Batter/Fry	55,000
Line 2	Batter/Fry	55,000
Line 3	Pre-Form	11,000
Line 4	Pre-Form	11,000

All proposed dryers (Lines 1 – 4) and fryers (Lines 1 – 4) will be heated using steam from the boilers. Process exhaust from the fryers and the dryers will be routed to the RTO to minimize particulate matter and volatile organic compounds emitted to the atmosphere.

The boilers will provide steam to the blanchers, peelers, fryers, and dryers. Simplot will operate three new boilers with two of the boilers capable of firing either natural gas or a mixture of natural gas and biogas from the existing anaerobic digester.

One of the fry lines and formed lines will be able to make kosher product. To meet kosher requirements, one of three boilers is dedicated to the kosher product lines.

The Caldwell facility will continue to use the existing anaerobic digester to biologically treat process wastewater prior to application on the facility's agricultural lands. An existing flare is used to combust biogas generated by the anaerobic digester before it is vented to atmosphere. A current PTC for the digester and flare (P-2009.0136) allows biogas to be burned in the existing Boiler No.1, and Simplot intends to connect the boiler to the digester.

With Project Idaho, Simplot proposes to combust the digester biogas in two of the new boilers or in the existing flare. However, Simplot will install sulfur removal technology to remove 98 percent of the hydrogen sulfide in the biogas prior to combustion in the new boilers.

A process flow diagram for the proposed plant is provided in Appendix B.

The existing Caldwell facility uses natural gas-fired AMUs to maintain a comfortable indoor air temperature for employees during the winter. The new processing plant will use heat exchangers to recover heat generated by the potato processing equipment to heat the facility, which will eliminate the need for AMUs at the proposed plant.

There are five existing emergency engines at the Caldwell facility. All of the emergency engines are tested periodically throughout the year.

2.2 Project Idaho Emissions

This section describes the new Project Idaho emission units, the methods used to calculate potential emissions from these new emission units, and short-term and annual mass emissions.

Criteria pollutants include nitrogen oxides (NO_X); carbon monoxide (CO); sulfur dioxide (SO_2); particulate matter (PM); particulate matter with diameter less than 10 microns (PM_{10}), particulate matter with diameter less than 2.5 microns ($PM_{2.5}$), lead (Pb), volatile organic compounds (VOC), and greenhouse gases (GHGs). Idaho also regulates industrial emissions of specific compounds deemed "toxic air pollutants" under IDAPA 58.01.01.210. This application identifies emissions of these pollutants.

In this section we present emissions from the boilers and the RTO. Detailed emission rate calculations for each new emission unit are included in Appendix C of this PTC application.

2.2.1 New Emission Units

The primary source of emissions associated with Project Idaho is the combustion of gaseous fuels, which include natural gas and biogas generated by the anaerobic digester. The new fryers and dryers will also produce particulate matter and VOC, but these process gases will be controlled by a RTO system before being exhausted to atmosphere.

2.2.1.1 New Boilers

Each of the new boilers (Boilers A, B, and C) will have a maximum heat input rate of 98 MMBtu/hr (HHV) and will be equipped with ultra-low NOx burners. All three boilers will be capable of burning natural gas fuel, and two of the proposed boilers will also be capable of burning a combination of natural gas and anaerobic digester biogas. For the purposes of emission calculations and dispersion modeling, ENVIRON has assumed Boilers B and C will be capable of burning biogas, but this assumption could change prior to Simplot finalizing project build out. Anticipated criteria pollutant emission rates for the proposed Boiler A and Boiler B are presented in Tables 2-2 and 2-3 (Boiler B and Boiler C will have equivalent emission rates).

Emission rates for the boilers are based on burner vendor information, biogas sulfur and heat content information, and AP-42 Section 1.4, Natural Gas Combustion (July 1998), emission factors. The AP-42 Section 1.4 emission factors are provided in pound pollutant per million cubic feet (lb/MMscf) natural gas. ENVIRON divided the AP-42 emission factors by the referenced natural gas heat content (1,020 Btu/scf) to normalize the emission factors by heat input rate. [(1)]

Greenhouse gas emission factors (CO_2, CH_4, and N_2O) for natural gas combustion are based on EPA's mandatory greenhouse gas reporting rule (40 CFR 98, Subpart C, Table C-1). All

[1] The method used to convert natural gas combustion emission factors from "lb/MMscf" to "lb/MMBtu" is discussed in AP-42 Section 1.4.

greenhouse gas emissions are converted to carbon dioxide equivalents (CO_2e) based on global warming potentials (GWP) for each greenhouse gas: CO_2 = 1; CH_4 = 21; and N_2O = 310. [(2)]

As part of the proposed project, Simplot will also install a biogas fuel scrubber system that will remove at least 98 percent of the sulfur in the biogas directed to two of the new boilers. Each of those boilers will be capable of burning all the biogas generated by the anaerobic digester, but emission calculations included in this PTC application assume 50 percent of the biogas generated goes to each.

NO_X and CO emissions are based on installation of ultra-low NO_X burners and 15 ppmvd (3 percent oxygen) and 50 ppmvd (3 percent oxygen), respectively. ENVIRON used the natural gas combustion F-Factor (8,710 dscf exhaust gas per MMBtu heat input) from EPA Method 19, 3 percent excess oxygen, and standard gas conditions to calculate potential NO_X and CO emission rates. Following is an example calculation of short term CO emissions from one of the new boilers:

$$\left(\frac{98 MMBtu}{hr}\right)\left(\frac{8{,}710 dscf}{MMBtu}\right)\left(\frac{20.9\% O_2}{(20.9-3)\% O_2}\right)\left(\frac{50 ppm\ CO}{10^6}\right)\left(\frac{lbmol * K}{1.314 atm * ft^3}\right)\left(\frac{1 atm}{293.15K}\right)\left(\frac{28 lb\ CO}{1 lbmol\ CO}\right) = 3.62 lb\ CO / hr$$

Short-term potential emissions from each boiler are based on the maximum hourly heat input of 98 MMBtu/hr; annual emissions are based on 8,760 hours at the potential short-term emission rate.

TAP emission rates from Boiler A are presented in Table 2-4. Combustion related TAP emission factors are based on AP-42 Section 1.4 emission factors converted to "lb/MMBtu" using the referenced natural gas heat content (1,020 Btu/scf) to normalize the emission factors by heat input rate. TAP emissions from Boilers A, B and C are equivalent, based on AP-42 emission factors.

AP-42 provides a chromium emission factor for natural gas combustion, but does not include guidance for partitioning emissions between hexavalent chromium (TAP) and trivalent chromium. EPA's 2002 National-Scale Air Toxics Assessment (NATA) released June 2009 includes a chromium speciation profile for natural gas-fired boilers, which indicates 4 percent of total chromium is emitted as hexavalent chromium and 96 percent is emitted as trivalent chromium. Consequently, ENVIRON assumed 4 percent of total chromium emissions were emitted as hexavalent chromium.

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[2] The global warming potentials for greenhouse gases are provided in 40 CFR 98, Subpart A.

Table 2-2: Regulated Pollutant Potential to Emit for Boiler A

Pollutant	Emission Factor [1]		Potential Emissions [2]	
	(ppmvd)	(lb/MMBtu)	(lb/hr)	(tpy)
NO_X	15 (3% O_2)	--	1.8	7.8
CO	50 (3% O_2)	--	3.6	15.9
SO_2	--	0.0006	0.058	0.25
PM_{10}	--	0.0075	0.73	3.2
$PM_{2.5}$	--	0.0075	0.73	3.2
VOC	--	0.0054	0.53	2.3
Lead	--	4.9E-07	4.8E-05	2.1E-04
CO_2e [3]	--	--	11,466	50,223

Notes:

[1] NO_X and CO emission factors based on vendor guarantees. SO_2, PM_{10}, $PM_{2.5}$, VOC, and Pb emission factors based on AP-42 Section 1.4 (Natural Gas Combustion) corrected to lb/MMBtu using the referenced natural gas heat content (1,020 btu/scf).

[2] Potential short-term emission rates (lb/hr) based on maximum heat input rate (98 MMBtu/hr), and annual average emission rate based on 8,760 hours per year.

[3] Greenhouse gas emissions based on CO_2, CH_4, and N_2O emission factors from 40 CFR 98, Subpart C, Table C-1 (natural gas). CO_2 equivalent based on 40 CFR 98, Subpart A global warming potential for each greenhouse gas (CO_2 = 1, CH_4 = 21, and N_2O = 310).

Table 2-3: Regulated Pollutant Potential to Emit for Boiler B

Pollutant	Emission Factor [1]		Potential Emissions [2]	
	(ppmvd)	(lb/MMBtu)	(lb/hr)	(tpy)
NO_X	15 (3% O_2)	--	1.8	7.8
CO	50 (3% O_2)	--	3.6	15.9
SO_2 [3]	--	0.0006	0.35	1.2
PM_{10}	--	0.0075	0.73	3.2
$PM_{2.5}$	--	0.0075	0.73	3.2
VOC	--	0.0054	0.53	2.3
Lead	--	4.9E-07	4.8E-05	2.1E-04
CO_2e [4]	--	--	11,466	50,223

Notes:

[1] NO_X and CO emission factors based on vendor guarantees. SO_2, PM_{10}, $PM_{2.5}$, VOC, and Pb emission factors based on AP-42 Section 1.4 (Natural Gas Combustion) corrected to lb/MMBtu using the referenced natural gas heat content (1,020 btu/scf).

[2] Potential short-term emission rates (lb/hr) based on maximum heat input rate (98 MMBtu/hr), and annual average emission rate based on 8,760 hours per year.

[3] SO_2 lb/hr and tpy emissions include AP-42 natural gas combustion (0.0006 lb/MMBtu) and 50 percent of the biogas (0.0317 MMscf/hr, 198 MMscf/yr, SO_2 emission factor of 908.7 lb/MMscf, and 98 percent sulfur removal prior to burning).

[4] Greenhouse gas emissions based on CO_2, CH_4, and N_2O emission factors from 40 CFR 98, Subpart C, Table C-1 (natural gas). CO_2 equivalent based on 40 CFR 98, Subpart A global warming potential for each greenhouse gas (CO_2 = 1, CH_4 = 21, and N_2O = 310).

Table 2-4: Toxic Air Pollutant Potential to Emit for Boiler A

Toxic Air Pollutant	CAS#	Emission Factor [1]	Potential Emissions [2]	
		(lb/MMBtu)	(lb/hr)	(lb/yr)
Arsenic	7440-38-2	2.0E-07	1.9E-05	0.2
Barium	7440-39-3	4.3E-06	4.2E-04	4
Benzene	71-43-2	2.1E-06	2.0E-04	2
Beryllium	7440-41-7	1.2E-08	1.2E-06	0.010
Cadmium	7440-43-9	1.1E-06	1.1E-04	0.9
Chromium-Total [3]	7440-47-3_Cr	1.4E-06	1.3E-04	1.2
Chromium III	7440-47-3_CrIII	1.3E-06	1.3E-04	1.1
Chromium VI	7440-47-3_CrVI	5.5E-08	5.4E-06	0.05
Cobalt	7440-48-4	8.2E-08	8.1E-06	0.07
Copper	7440-50-8	8.3E-07	8.2E-05	1
Formaldehyde	50-00-0	7.4E-05	7.2E-03	63
Hexane	110-54-3	1.8E-03	1.7E-01	1,515
Manganese	7439-96-5	3.7E-07	3.7E-05	0.32
Mercury	7439-97-6	2.5E-07	2.5E-05	0.22
Molybdenum	7439-98-7	1.1E-06	1.1E-04	0.9
Naphthalene	91-20-3	6.0E-07	5.9E-05	0.5
Nickel	7440-02-0	2.1E-06	2.0E-04	1.8
Pentane	109-66-0	2.5E-03	2.5E-01	2,188
Selenium	7782-49-2	2.4E-08	2.3E-06	0.02
Toluene	108-88-3	3.3E-06	3.3E-04	2.9
Nitrous Oxide	10024-97-2	2.2E-03	2.1E-01	1,852
Benz(a)anthracene	56-55-3	1.8E-09	1.7E-07	0.002
Benzo(a)pyrene	50-32-8	1.2E-09	1.2E-07	0.001
Benzo(b)fluoranthene	205-99-2	1.8E-09	1.7E-07	0.002
Benzo(k)fluoranthene	207-08-9	1.8E-09	1.7E-07	0.002
Chrysene	218-01-9	1.8E-09	1.7E-07	0.002
Dibenzo(a,h)anthrancene	53-70-3	1.2E-09	1.2E-07	0.001
Indeno(1,2,3-cd)pyrene	193-39-5	1.8E-09	1.7E-07	0.002
3-Methylchloranthrene	91-57-6	1.8E-09	1.7E-07	0.002
Dichlorobenzene	23521-22-6	1.2E-06	1.2E-04	1.0

Table 2-4: Toxic Air Pollutant Potential to Emit for Boiler A				
Toxic Air Pollutant	CAS#	Emission Factor (1)	Potential Emissions (2)	
		(lb/MMBtu)	(lb/hr)	(lb/yr)
Zinc	7440-66-6	2.8E-05	2.8E-03	24
Ammonia (4)	7664-41-7	3.1E-03	3.1E-01	2,693
PAH (total) (5)	PAH	--	1.10E-06	0.010

Notes:

[1] TAP emission factors based on emission factors based on AP-42 Section 1.4 (Natural Gas Combustion) corrected to lb/MMBtu using the referenced natural gas heat content (1,020 btu/scf).

[2] Potential short-term emission rates (lb/hr) based on maximum heat input rate (98 MMBtu/hr), and annual average emission rate based on 8,760 hours per year.

[3] AP-42 provides a chromium emission factor for natural gas fired external combustion, but does not include guidance for partitioning emissions between the carcinogenic chromium VI (hexavalent chromium) and the chromium III (trivalent chromium). EPA's 2002 National-Scale Air Toxics Assessment (NATA) released June 2009 includes a chromium speciation profile for natural gas-fired boilers, which indicates 4 percent of total chromium is chromium VI and 96 percent is chromium III. ENVIRON assumed 4 percent of total chromium emissions were emitted as chromium VI.

[4] Ammonia emission factor from EPA's WebFIRE database (http://cfpub.epa.gov/oarweb/index.cfm?action=fire.main).

[5] PAH group contains the following PAHs: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indenol(1,2,3,-cd)pyrene, benzo(a)pyrene.

2.2.1.2 New Dryers and Fryers

Project Idaho will construct five potato processing lines. Lines 1 – 4 will each have a dryer and a fryer that will emit PM and VOC. Line 5 will not have a fryer or a dryer and will therefore not have any process emissions. Exhaust from the Line 1 – 4 dryers and fryers will be routed to a RTO system that will control PM and VOC emissions. The RTO vendor guarantees VOC emissions will be reduced by at least 90 percent, and Simplot expects PM emissions to be reduced by at least 90 percent. [3] Table 2-5 presents potential PM and VOC emissions from Lines 1 – 4. Uncontrolled PM and VOC emission factors for the processing lines are based on source testing conducted on similar process lines at other Simplot facilities.

[3] RTO vendors are willing to guarantee 98 percent VOC destruction efficiency for controlling fryer and dryer exhaust. A search of available Best Available Control Technology (BACT) determinations for similar sources found a RTO permitted in South Coast Air Quality Management District that controls VOC and PM emissions from corn chip fryer. The BACT determination listed VOC and PM_{10} control efficiencies of 98 percent and 95 percent, respectively (http://yosemite.epa.gov/R9/AIR/EPSS.NSF/735056a63c1390e08825657e0075d180/4e2cc36c191d8c228825770e0072256c/$FILE/Frito-Lay%20Evaluation.pdf)

The RTO will consist of two chambers and four supplemental natural gas-fired burners with a total heat input of 25.2 MMBtu/hr. During RTO startup, low process gas loads (i.e. one process line operating), and maintenance activities (burnout of residual solids), the natural gas burners will be firing at their maximum capacity (25.2 MMBtu/hr). During normal operations, the RTO switches to a supplement fuel injection mode, where natural gas is injected into the RTO chamber to maintain optimal RTO operating temperature. The expected natural gas combustion rate during normal operation is approximately 10 MMBtu/hr. To account for potential combustion emissions from the RTO, ENVIRON based RTO emission calculations on burning 25.2 MMBtu/hr continuously throughout the year (8,760 hrs/yr).

Criteria pollutant emission rates for the proposed RTO (controlling process emissions from Lines 1 – 4 Dryers and Fryers) are presented in Table 2-6. Combustion emission rates for the RTO are based on burner vendor NO_X emission information and AP-42 Section 1.4, Natural Gas Combustion (July 1998), emission factors. The AP-42 Section 1.4 emission factors are provided in pound pollutant per million cubic feet (lb/MMscf) natural gas. ENVIRON divided the AP-42 emission factors by the referenced natural gas heat content (1,020 Btu/scf) to normalize the emission factors by heat input rate. (1)

Greenhouse gas emission factors (CO_2, CH_4, and N_2O) for natural gas combustion are based on EPA's mandatory greenhouse gas reporting rule (40 CFR 98, Subpart C, Table C-1). All greenhouse gas emissions are converted to carbon dioxide equivalents (CO_2e) based on global warming potentials for each greenhouse gas: CO_2 = 1; CH_4 = 21; and N_2O = 310. (2)

Table 2-5: Process Emissions from Processing Lines 1 – 4

Source	Emission Factor (1)		Uncontrolled Emissions (2)				Controlled Emissions (3)			
	PM (lb/Mlb product)	VOC (lb/Mlb product)	PM		VOC		PM		VOC	
			(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Line 1 Dryer	0.191	0.200	10.5	46.0	11.0	48.1	1.0	4.6	1.1	4.8
Line 1 Fryer	0.250	0.101	13.8	60.3	5.6	24.4	1.4	6.0	0.6	2.4
Line 2 Dryer	0.191	0.200	10.5	46.0	11.0	48.1	1.0	4.6	1.1	4.8
Line 2 Fryer	0.250	0.101	13.8	60.3	5.6	24.4	1.4	6.0	0.6	2.4
Line 3 Dryer	0.114	0.200	1.3	5.5	2.2	9.6	0.1	0.5	0.2	1.0
Line 3 Fryer	0.721	0.471	7.9	34.8	5.2	22.7	0.8	3.5	0.5	2.3
Line 4 Dryer	0.114	0.200	1.3	5.5	2.2	9.6	0.1	0.5	0.2	1.0
Line 4 Fryer	0.721	0.471	7.9	34.8	5.2	22.7	0.8	3.5	0.5	2.3

Notes:

1 PM and VOC emission factors are average of source tests from similar lines at Aberdeen, Caldwell, Nampa, and Heyburn plants.

2 Potential short-term emission rates (lb/hr) based on maximum production rate for each line (Lines 1 & 2 = 55,000 lb/hr each; and Lines 3 & 4 = 11,000 lb/hr each). Annual emissions based on 8,760 hours at the short-term rate.

3 Controlled emission rates based on RTO controlling 90 percent of PM and VOC process emissions from the fryers and dryers.

Table 2-6: Regulated Pollutant Potential to Emit for RTO

Pollutant	Emission Factor [1]		Potential Emissions [2]	
	(lb/hr from Lines 1 – 4)	(lb/MMBtu)	(lb/hr)	(tpy)
NO_X	--	0.10	2.47	10.82
CO	--	0.0824	2.08	9.09
SO_2	--	0.0006	1.5E-02	0.06
PM_{10}	67	0.0075	6.71	29.38
$PM_{2.5}$	67	0.0075	6.71	29.38
VOC	48	0.0054	4.80	21.02
Lead	--	4.9E-07	1.2E-05	5.4E-05
CO_2e [3]	175	--	3,124	13,683

Notes:

[1] NO_X emission factors based on burner vendor information. CO, SO_2, PM_{10}, $PM_{2.5}$, VOC, and Pb emission factors based on AP-42 Section 1.4 (Natural Gas Combustion) corrected to lb/MMBtu using the referenced natural gas heat content (1,020 btu/scf).

[2] Potential short-term emission rates (lb/hr) based emissions from Lines 1 – 4 (90 percent PM and VOC control) plus natural gas combustion emission factors and maximum heat input rate (25.2 MMBtu/hr), and annual average emission rate based on 8,760 hrs/yr.

[3] Greenhouse gas emissions based on 100 percent of VOC (as carbon) from Lines 1 – 4 converted to CO_2 plus CO_2, CH_4, and N_2O emission factors from 40 CFR 98, Subpart C, Table C-1 (natural gas). CO_2 equivalent based on 40 CFR 98, Subpart A global warming potential for each greenhouse gas (CO_2 = 1, CH_4 = 21, and N_2O = 310).

TAP emissions from the RTO are presented in Table 2-7. Combustion related VOC and TAP emission factors are based on AP-42 Section 1.4 emission factors converted to "lb/MMBtu" using the referenced natural gas heat content (1,020 Btu/scf) to normalize the emission factors by heat input rate.

AP-42 provides a chromium emission factor for natural gas combustion, but does not include guidance for partitioning emissions between hexavalent chromium (TAP) and trivalent chromium. EPA's 2002 National-Scale Air Toxics Assessment (NATA) released June 2009 includes a chromium speciation profile for natural gas-fired boilers, which indicates 4 percent of total chromium is emitted as hexavalent chromium and 96 percent is emitted as trivalent chromium. Consequently, ENVIRON assumed 4 percent of total chromium emissions were emitted as hexavalent chromium.

Table 2-7: Toxic Air Pollutant Potential to Emit for RTO

Toxic Air Pollutant	CAS#	Emission Factor [1]	Potential Emissions [2]	
		(lb/MMBtu)	(lb/hr)	(lb/yr)
Arsenic	7440-38-2	2.0E-07	4.9E-06	4.3E-02
Barium	7440-39-3	4.3E-06	1.1E-04	9.5E-01
Benzene	71-43-2	2.1E-06	5.2E-05	4.5E-01
Beryllium	7440-41-7	1.2E-08	3.0E-07	2.6E-03
Cadmium	7440-43-9	1.1E-06	2.7E-05	2.4E-01
Chromium-Total [3]	7440-47-3_Cr	1.4E-06	3.5E-05	3.0E-01
Chromium III	7440-47-3_CrIII	1.3E-06	3.3E-05	2.9E-01
Chromium VI	7440-47-3_CrVI	5.5E-08	1.4E-06	1.2E-02
Cobalt	7440-48-4	8.2E-08	2.1E-06	1.8E-02
Copper	7440-50-8	8.3E-07	2.1E-05	1.8E-01
Formaldehyde	50-00-0	7.4E-05	1.9E-03	1.6E+01
Hexane	110-54-3	1.8E-03	4.4E-02	3.9E+02
Manganese	7439-96-5	3.7E-07	9.4E-06	0.08
Mercury	7439-97-6	2.5E-07	6.4E-06	0.06
Molybdenum	7439-98-7	1.1E-06	2.7E-05	2.4E-01
Naphthalene	91-20-3	6.0E-07	1.5E-05	1.3E-01
Nickel	7440-02-0	2.1E-06	5.2E-05	4.5E-01
Pentane	109-66-0	2.5E-03	6.4E-02	5.6E+02
Selenium	7782-49-2	2.4E-08	5.9E-07	5.2E-03
Toluene	108-88-3	3.3E-06	8.4E-05	7.4E-01
Nitrous Oxide	10024-97-2	2.2E-03	5.4E-02	4.8E+02
Benz(a)anthracene	56-55-3	1.8E-09	4.4E-08	3.9E-04
Benzo(a)pyrene	50-32-8	1.2E-09	3.0E-08	2.6E-04
Benzo(b)fluoranthene	205-99-2	1.8E-09	4.4E-08	3.9E-04
Benzo(k)fluoranthene	207-08-9	1.8E-09	4.4E-08	3.9E-04
Chrysene	218-01-9	1.8E-09	4.4E-08	3.9E-04
Dibenzo(a,h)anthrancene	53-70-3	1.2E-09	3.0E-08	2.6E-04
Indeno(1,2,3-cd)pyrene	193-39-5	1.8E-09	4.4E-08	3.9E-04
3-Methylchloranthrene	91-57-6	1.8E-09	4.4E-08	3.9E-04
Dichlorobenzene	23521-22-6	1.2E-06	3.0E-05	2.6E-01

Table 2-7: Toxic Air Pollutant Potential to Emit for RTO

Toxic Air Pollutant	CAS#	Emission Factor (1)	Potential Emissions (2)	
		(lb/MMBtu)	(lb/hr)	(lb/yr)
Zinc	7440-66-6	2.8E-05	7.2E-04	6.3E+00
Ammonia (4)	7664-41-7	3.1E-03	7.9E-02	6.9E+02
PAH (total) (5)	PAH	--	2.82E-07	2.47E-03

Notes:

[1] TAP emission factors based on emission factors based on AP-42 Section 1.4 (Natural Gas Combustion) corrected to lb/MMBtu using the referenced natural gas heat content (1,020 btu/scf).

[2] Potential short-term emission rates (lb/hr) based on maximum heat input rate (25.2 MMBtu/hr), and annual average emission rate based on 8,760 hours per year.

[3] AP-42 provides a chromium emission factor for natural gas fired external combustion, but does not include guidance for partitioning emissions between the carcinogenic chromium VI (hexavalent chromium) and the chromium III (trivalent chromium). EPA's 2002 National-Scale Air Toxics Assessment (NATA) released June 2009 includes a chromium speciation profile for natural gas-fired boilers, which indicates 4 percent of total chromium is chromium VI and 96 percent is chromium III. ENVIRON assumed 4 percent of total chromium emissions were emitted as chromium VI.

[4] Ammonia emission factor from EPA's WebFIRE database (http://cfpub.epa.gov/oarweb/index.cfm?action=fire.main).

[5] PAH group contains the following PAHs: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indenol(1,2,3,-cd)pyrene, benzo(a)pyrene.

2.3 Facility-wide Emissions with Project Idaho

Table 2-8 presents total potential emissions attributable to Project Idaho if all three boilers and the RTO were operating at their rated capacity every hour of the year. For informational purposes, Table 2-8 also identifies actual emissions from the existing English Boiler, Boiler 8, three fryers, two dryers, and numerous AMUs; these emissions will be end when the existing equipment is shut down. Note that the benefit in terms of emissions reductions attributable to Project Idaho will be even greater than implied by this table because we compare future potential emissions against 2009 and 2010 actual emissions. Future actual emissions will be lower than the future potential emissions shown in Table 2-8.

Tables 2-9 and 2-10 present the potential non-carcinogenic and carcinogenic TAP emissions from new units associated with Project Idaho, and compare the total potential TAP emission rates to the applicable ELs prescribed by IDAPA 58.01.01.585 and 586, respectively.

Table 2-8: Regulated Pollutant Emission Increases for Project Idaho

Pollutant	Boiler A		Boiler B		Boiler C		RTO		Total Emission Increase [1]		Modeling Thresholds [2]		Emissions Eliminated [3]
	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(tpy)
NO_X	1.8	7.8	1.8	7.8	1.8	7.8	2.5	11.0	7.9	34.5	0.2	1.2	61.5
CO	3.6	15.9	3.6	15.9	3.6	15.9	2.1	9.1	12.9	56.7	15	--	65.0
SO_2	0.1	0.3	0.3	1.2	0.3	1.2	1.5E-02	0.06	0.8	2.6	0.21	1.2	0.5
PM_{10} (total)	0.7	3.2	0.7	3.2	0.7	3.2	6.7	29.4	8.9	39.0	0.22	--	104.3
$PM_{2.5}$ (total)	0.7	3.2	0.7	3.2	0.7	3.2	6.7	29.4	8.9	39.0	0.054	0.35	104.3
VOC	0.5	2.3	0.5	2.3	0.5	2.3	4.8	21.0	6.4	28.0	--	--	15.0
Pb	4.8E-05	2.1E-04	4.8E-05	2.1E-04	4.8E-05	2.1E-04	1.2E-05	5.4E-05	1.6E-04	6.9E-04	--	--	--
GHG (CO_2e)	11,466	50,223	11,466	50,223	11,466	50,223	3,124	13,683	37,523	<99,000	--	--	36,837

Notes:

[1] Potential Emission Rate for new emission units as a result of proposed project. Proposed facility-wide cap on GHG emissions at 99,000 tpy CO_2e.

[2] Level I modeling thresholds from IDEQ Modeling Guidance Document (Revision 2, July 2011).

[3] Emissions eliminated based on reported actual emissions for Simplot Caldwell 2009 and 2010 emission inventories (sum of English Boiler, Boiler 8, WESP, Dryers, and AMUs).

Table 2-9: Non – Carcinogenic Toxic Air Pollutant Emission Increases for Project Idaho

Toxic Air Pollutant	CAS#	Boiler A (lb/hr)	Boiler B (lb/hr)	Boiler C (lb/hr)	RTO (lb/hr)	Total (lb/hr)	EL [1] (lb/hr)	Exceed EL?
Ammonia	7664-41-7	0.3	0.3	0.3	7.9E-02	1.0	1.2	No
Dichlorobenzene	23521-22-6	1.2E-04	1.2E-04	1.2E-04	3.0E-05	3.8E-04	30.0	No
Hexane	110-54-3	0.2	0.2	0.2	4.4E-02	0.6	12.0	No
Naphthalene	91-20-3	5.9E-05	5.9E-05	5.9E-05	1.5E-05	1.9E-04	3.3	No
Pentane	109-66-0	0.2	0.2	0.2	6.4E-02	0.8	118.0	No
Toluene	108-88-3	3.3E-04	3.3E-04	3.3E-04	8.4E-05	1.1E-03	25.0	No
Barium	7440-39-3	4.2E-04	4.2E-04	4.2E-04	1.1E-04	1.4E-03	3.3E-02	No
Chromium-Total	7440-47-3_Cr	1.3E-04	1.3E-04	1.3E-04	3.5E-05	4.4E-04	3.3E-02	No
Chromium III	7440-47-3_CrIII	1.3E-04	1.3E-04	1.3E-04	3.3E-05	4.2E-04	3.3E-02	No
Cobalt	7440-48-4	8.1E-06	8.1E-06	8.1E-06	2.1E-06	2.6E-05	3.3E-03	No
Copper	7440-50-8	8.2E-05	8.2E-05	8.2E-05	2.1E-05	2.7E-04	1.3E-02	No
Manganese	7439-96-5	3.7E-05	3.7E-05	3.7E-05	9.4E-06	1.2E-04	6.7E-02	No
Mercury	7439-97-6	2.5E-05	2.5E-05	2.5E-05	6.4E-06	8.1E-05	1.0E-03	No
Molybdenum	7439-98-7	1.1E-04	1.1E-04	1.1E-04	2.7E-05	3.4E-04	0.3	No
Selenium	7782-49-2	2.3E-06	2.3E-06	2.3E-06	5.9E-07	7.5E-06	1.3E-02	No
Zinc	7440-66-6	2.8E-03	2.8E-03	2.8E-03	7.2E-04	9.1E-03	0.7	No
Nitrous Oxide	10024-97-2	0.2	0.2	0.2	5.4E-02	0.7	6.0	No

Notes:

[1] Screening Emission Levels from IDAPA 58.01.01.585.

Table 2-10: Carcinogenic Toxic Air Pollutant Emission Increases for Project Idaho

Toxic Air Pollutant	CAS#	Boiler A (lb/yr)	Boiler B (lb/yr)	Boiler C (lb/yr)	RTO (lb/yr)	Total (lb/yr)	Total – Ann. Average [1] (lb/hr)	EL [2] (lb/hr)	Exceed EL?
3-Methylchloranthrene	91-57-6	1.5E-03	1.5E-03	1.5E-03	3.9E-04	4.9E-03	5.6E-07	2.5E-06	No
Benzene	71-43-2	1.8	1.8	1.8	0.5	5.8	6.6E-04	8.0E-04	No
Benzo(a)pyrene	50-32-8	1.0E-03	1.0E-03	1.0E-03	2.6E-04	3.3E-03	3.8E-07	2.0E-06	No
Formaldehyde	50-00-0	63.3	63.3	63.3	16.2	205.6	2.3E-02	5.1E-04	Yes
Naphthalene (PAH)	91-20-3	0.5	0.5	0.5	1.3E-01	1.7	1.9E-04	9.1E-05	Yes
Arsenic	7440-38-2	0.2	0.2	0.2	4.3E-02	0.5	6.2E-05	1.5E-06	Yes
Beryllium	7440-41-7	1.0E-02	1.0E-02	1.0E-02	2.6E-03	3.3E-02	3.7E-06	2.8E-05	No
Cadmium	7440-43-9	0.9	0.9	0.9	0.2	3.0	3.4E-04	3.7E-06	Yes
Chromium VI	7440-47-3_CrVI	4.7E-02	4.7E-02	4.7E-02	1.2E-02	0.2	1.7E-05	5.6E-07	Yes
Nickel	7440-02-0	1.8	1.8	1.8	0.5	5.8	6.5E-04	2.7E-05	Yes
Polyaromatic Hydrocarbons	PAH	9.6E-03	9.6E-03	9.6E-03	2.5E-03	3.1E-02	3.5E-06	2.0E-06	Yes

Notes:

[1] Annual average emission rate calculated by dividing annual total TAP emission rate (lb/yr) by 8,760 hrs/yr.

[2] Screening Emission Levels from IDAPA 58.01.01.585.

[3] PAH group contains the following PAHs: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indenol(1,2,3,-cd)pyrene, benzo(a)pyrene. Screening Emission Level (EL) equivalent to benzo(a)pyrene.

As discussed further in Section 3.2.1, Simplot requests a limit on natural gas combustion to ensure that facility-wide greenhouse gas emissions dto not exceed 99,000 tons per year. This fuel restriction will also limit annual emissions of criteria pollutants. Annual emissions of criteria pollutants from the new boilers can be determined by subtracting contributions from engine testing and RTO operation. Although the anaerobic digester also generates greenhouse gases, those emissions are considered biogenic and are ignored when evaluating applicability of the PSD or Title V permit programs.[4]

After subtracting 31 tons of greenhouse gas emissions attributable to periodic engine testing and 13,683 tons attributable to RTO operation, there remains a 85,286 ton "margin" of CO_2e available to the boilers. Considering the emission factors and global warming potential of CO_2, CH_4, and N_2O, ENVIRON back-calculated an annual boiler fuel allowance for the boilers. Table 2-11 identifies the maximum annual emissions of criteria pollutants expected with the fuel limit in place. Details of the calculation are included in Appendix C.

Table 2-11: Regulated Pollutant Potential Annual Emissions with Fuel Limit (tons)

Pollutant	Boilers	Flare	RTO	Engines	Solvents	Total
NO_X	13	4	11	0.75	-	29
CO	27	22	9	0.17	-	58
SO_2	0.4	90	0.1	0.0003	-	90
PM_{10} / $PM_{2.5}$	5	0	29	0.05	-	35
VOC	4	8	21	0.06	2.8	36

Simplot does not propose that these potential emissions (or the annual limits in Table 2-8) be formalized as permit limits. In general, emission limits are established to ensure Best Available Control Technology is applied, to avoid applicability of a regulatory program, or to ensure compliance with ambient air quality standards. In this case, BACT does not apply, potential annual emissions are well below PSD and Title V applicability thresholds even without the fuel restriction in place, and predicted ambient concentrations are well below annual ambient air

[4] In a January 12, 2011 letter to Senator Jeff Merkley, EPA Administrator Lisa Jackson announced her decision to defer applicability of carbon dioxide emissions attributable to biomass and other biogenic sources from preconstruction permit requirements. The three year deferral was promulgated on July 20, 2011 (76 FR 43490). Due to the biogenic exemption, the CO_2 emissions from flaring or combusting biogas in a boiler are not counted toward PSD or Title V applicability.

quality standards even without the lower annual emissions that result from the fuel restriction. The purpose of Table 2-11 is simply to demonstrate that potential annual emissions are lower with the fuel restriction in place. For simplicity, the dispersion modeling described in Chapter 4 is based on emissions at full firing capacity of the boilers every hour of the year.

2.4 Project Construction Schedule and Commissioning

Simplot plans to initiate demolition, silt fencing, grading and similar non-permanent construction activities in early 2012, prior to issuance of the Permit to Construct. Foundations and other permanent installations would not be started until after the air permit is issued.

Ideally, construction would begin in April 2012 and be sufficiently complete to begin commissioning of the process plant and boilers by August 2013. It will take approximately nine months to commission the new plant. During the first three or four months of commissioning, existing process lines in Plant 2will gradually cease operation as the comparable replacement lines come on line at the new facility.

The currently plan is to first start one french fry line, one preform line, and the shredded potato line in the new plant. At that time, the existing Line 1 preform line, Line 6 french fry line, and the Line 3 shredded potato line will come off line. Note that the shredded potato lines do not have emissions related to dryers or fryers, but they require steam from the boilers.

As discussed in Chapter 4, ENVIRON conducted dispersion modeling analyses to demonstrate that the project will not exceed ambient air quality standards during the commissioning period when both the existing and new plants are operating. It was assumed that only the existing Line 4 preform line was operating at the existing plant, while a preform line and a French fry line are operational at the new plant. Although only one of the three lines that direct fryer emissions to the WESP would be operating at the existing plant during this commissioning period, we assumed WESP PM emissions were equal to those observed in the higher of the two source tests.[5]

We assumed that the existing English boiler was operating at half load at the existing plant, but the condensing economizer would not be used. Only one of the new boilers would be required at the new plant, but we assumed it would operate at full load. Biogas would be combusted in the new boiler. Because commissioning is expected to take place between August and October, we assumed the air makeup units at the existing plant would operate at only 25 percent of their capacity.

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[5] Source tests conducted in October 2000 and again in October 2003 revealed total PM (filterable plus condensable) emissions of 1.85 and 1.98 lb/hr, respectively.

3 Regulatory Analysis

This section identifies and discusses federal and state air quality regulations and guidelines that potentially apply to Project Idaho.

3.1 Emission Standards

3.1.1 New Source Performance Standards

New Source Performance Standards (NSPS) are nationally uniform standards applied to specific categories of stationary sources that are constructed, modified, or reconstructed after the standard was proposed. NSPS are found in Title 40, Part 60 of the Code of Federal Regulations (CFR). NSPS usually represent a minimum level of control that is required on a new source.

EPA has also established NSPS that apply to stationary compression and spark ignition internal combustion engines (40 CFR Part 60, Subparts IIII and JJJJ, respectively). However, Project Idaho will not add any engines to the Caldwell site and will not affect NSPS applicability of the existing engines.

Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR Parts 60.40c – 60.48c)

Subpart Dc of the NSPS applies to steam generating units that are constructed, modified, or reconstructed after June 9, 1989 and has a maximum design heat input capacity of 100 MMBtu/hr or less, but greater than 10 MMBtu/hr. Subpart Dc will apply to all three new boilers (Boiler A, B, and C) because each have maximum heat input rate of 98 MMBtu/hr and will be constructed after June 9, 1989. Simplot will be required to monitor and record natural gas and biogas usage in all boilers. Subpart Dc does not regulate SO_2 emissions from gaseous fueled boilers.

3.1.2 National Emission Standards for Hazardous Air Pollutants / Maximum Achievable Control Technology Standards

Prior to the Clean Air Act Amendments in 1990, National Emission Standards for Hazardous Air Pollutants (NESHAPs) were risk-based emission standards for eight hazardous air pollutants (HAPs). Under the provisions of Section 112 of the 1990 Clean Air Act Amendments, EPA was required to regulate the emissions of a total of 189 HAPs from all stationary and mobile sources. [6] EPA does this by specific industry categories so that it can tailor the controls to the major sources of emissions and the HAPs of concern from that industry. The rules promulgated under Section 112 generally specify the Maximum Achievable Control Technology (MACT) that

[6] EPA has removed three HAPs from the list: caprolactum, ethylene glycol monobutyl ether, and methyl ethyl ketone (MEK). MEK was one of the listed chemicals in Subpart CC which is applicable to the source and to the project.

must be applied for a given industry category. Consequently, these rules are often called MACT standards.

There are two types of NESHAPs, one for "major" sources of HAP emissions and one for "area" sources of HAP emissions. Major sources are facilities that emit more than 10 tons of a single HAP, or 25 tons of all HAPs combined. Area sources are facilities that are not a major source.

The Caldwell facility is and will remain an area source for HAP emissions because the facility will not be a major source of HAP emissions

EPA has also established a NESHAPS that applies to stationary reciprocating internal combustion engines (40 CFR Part 63, Subpart ZZZZ). However, Project Idaho will not add any engines to the Caldwell site and will not affect NESHAPS applicability of the existing engines.

40 CFR Part 63 Subpart JJJJJJ – National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers at Area Sources (40 CFR Parts 63.11193 – 63.11237)

On March 21, 2011, EPA issued MACT standards for boilers and process heaters at major sources of HAPs (MACT rule for major sources, 40 CFR 63 Subpart DDDDD). Concurrently, EPA published the national emission standards for hazardous air pollutants for industrial, commercial, and institutional boilers at area source facilities (MACT rule for area sources, 40 CFR 63 Subpart JJJJJJ). Standards for area sources can be based on either generally available control technology (GACT), or maximum achievable control technology.

The total HAP emissions from the Caldwell facility is 2.1 tpy based on the most recent emission inventory calculations, which is lower than the 10 tpy threshold for single HAP and 25 tpy threshold for all HAPs. Therefore, the Caldwell facility's boilers are located at area (minor HAP) sources of HAPs, and they are not subject to the requirements of the Boiler MACT rule for major sources.

The new MACT rule for area sources lists seven types of boilers that are not subject to any requirements in 40 CFR 63 Subpart JJJJJJ, including gas-fired boilers. According to the definitions provided in the rule, "gas-fired boiler" includes any boiler that burns gaseous fuels not combined with any solid fuels, burns liquid fuel only during periods of gas curtailment, gas supply emergencies, or periodic testing on liquid fuel. The gaseous fuels includes, but is not limited to, natural gas, process gas, landfill gas, coal derived gas, refinery gas, hydrogen, and biogas.

Because the boilers at the Caldwell facility only use natural gas and biogas, they belong to the gas-fired boiler category at area source facilities. Subsequently, these boilers are not subject to any requirements of the MACT rule for area sources.

3.2 Federal Air Quality Permits

3.2.1 Prevention of Significant Deterioration

Because Canyon County is attainment or unclassifiable for all criteria pollutants, EPA's Prevention of Significant Deterioration (PSD) permit program would apply if Project Idaho were a new major source or major modification of an existing major source. Project Idaho is neither.

Potato processing facilities are not designated facilities under 40 CFR 52.21(b); consequently, potato processing facilities are deemed minor sources for the purposes of the PSD program unless potential annual emissions of a regulated pollutant exceed 250 tons. The Caldwell facility's existing and proposed PTE of traditional criteria pollutants is less than the 250 ton major source threshold. Accordingly, the Caldwell facility is not subject to the PSD program based on traditional regulated pollutants.

Although a 250-ton PSD threshold applies to the facility, a 100-ton per year threshold applies to fossil fuel-fired boilers with an aggregate heat input exceeding 250 MMBtu/hr. As indicated by emissions information presented in Table 2-8, however, potential annual emissions of traditional PSD pollutants from the three boilers are well below 100 tons.

As of July 1, 2011, however, the major source criteria specified in the Tailoring Rule for greenhouse gas emissions became effective. Although actual emissions with Project Idaho are less than the thresholds, the existing facility's potential natural gas consumption based on boiler and burner firing capacity is high enough that potential carbon dioxide emissions exceed the 100,000 ton per year PSD threshold. It is important to note, however, that the potential natural gas consumption results largely from the need to maintain redundant boiler capacity.

Table 3-1 summarizes existing actual and potential emissions. This table indicates that actual gas consumption in 2008, the recent year with the highest gas consumption, was only 36 percent of the potential gas use implied by burner capacity. The actual and potential annual carbon dioxide emissions associated with the actual and potential gas consumption are 50,277 and 139,079 tons CO_2e, respectively. In short, the steam demands on existing boilers are such that the Caldwell facility has always been a true minor source of greenhouse gas emissions; there has never been a need to fire the boilers hard enough on an annual basis to generate 100,000 tons of greenhouse gas emissions.

Table 3-1 also indicates that projected actual gas consumption by the three boilers is approximately 43 percent of the potential gas consumption. Once again, the primary reason for the excess capacity is redundancy.

With this application, Simplot requests that DEQ restrict greenhouse gas emissions from the Caldwell facility to 99,000 tons per year. In order to ensure facility-wide GHG emissions remain less than the proposed 99,000 tpy CO_2e emission limit, Simplot is also proposing an annual facility-wide natural gas limit of 1,692,245 MMBtu/yr, which correlates to 99,000 tpy CO_2e. Details of this calculation are provided in Appendix C. With these proposed limits in place, the Caldwell facility will formalize its minor source status.

Table 3-1: Actual and Potential Natural Gas Consumption with GHG Emissions				
Year	Maximum Actual [1]	Existing Potential	Projected Actual	Future Potential
Natural Gas Consumption (MMBtu/yr)	859,399	2,377,333	1,096,259	2,796,192
GHG emissions [2] (tons CO_2e/yr)	50,277	139,079	64,134	163,583

Notes:

1 – Actual annual natural gas consumption for 2007 – 2010 ranged from 637,441 MMBtu/yr to 859,399 MMBtu/yr.
2 – GHG emissions associated with natural gas combustion based on emission factors from 40 CFR 98, Subpart C, Table C-1 and the global warming potentials for greenhouse gases provided in 40 CFR 98, Subpart A.

3.2.2 Title V Operation Permit

Title V of the federal Clean Air Act requires facilities with the potential to emit more than 100 tons of a regulated criteria pollutant, 10 tons of a single HAP, or 25 tons of all HAP combined on an annual basis to obtain a Title V Air Operating Permit. The Simplot-Caldwell facility is currently subject to Title V because potential annual CO and PM_{10} emissions exceed 100 tons. An application to renew the existing air operating permit was submitted in August 2011.

As indicated in Table 3-2, facility-wide potential emissions will be lower than existing potential emissions. With the proposed limit on greenhouse gas emissions, facility-wide emissions will also be less than the Title V thresholds. As such the Caldwell facility will not be subject to Title V permitting requirements.

Table 3-2: Facility-Wide Potential Emissions Summary (Tons per Year)								
Pollutant	Boiler A	Boiler B	Boiler C	Biogas Flare	RTO	Emergency Engines	Solvent and Adhesive Use	Total Emissions
NO_X	7.8	7.8	7.8	4.0	11.0	0.8	-	39.3
CO	15.9	15.9	15.9	22.0	9.1	0.2	-	78.8
SO_2	0.3	1.2	1.2	90.0	0.06	2.7E-04	-	92.6
PM_{10}	3.2	3.2	3.2	0.4	29.4	0.1	-	39.5
$PM_{2.5}$	3.2	3.2	3.2	0.4	29.4	0.1	-	39.5
VOC	2.3	2.3	2.3	8.3	21.0	0.1	2.8	39.1
Pb	2.1E-04	2.1E-04	2.1E-04	2.9E-05	5.4E-05	-	-	7.1E-04
CO_2e [1]	50,223	50,223	50,223	11,819	13,683	31	-	99,000

Notes:

1 – Simplot proposes to limit annual greenhouse gas emissions to 99,000 tons.

3.3 State Requirements

3.3.1 Permit to Construct Program

DEQ's PTC regulations require all facilities to obtain a PTC or a documented exemption determination before beginning construction of a new source of air pollution or modifying an existing source in a manner that would cause its emissions to increase. The purpose of this document is meet DEQ requirements for a preconstruction permit for Project Idaho.

3.3.2 Tier I Operating Permit

As discussed in Section 3.2.2 and presented in Table 3-2, the Caldwell facility will be a minor source for Title V and Tier I Operating Permit programs after the facility-wide GHG annual emission limit becomes enforceable.

3.3.3 General Requirements

Idaho has no performance or technology standards specific to potato processing facilities. The only state requirements directly applicable to the facility are rules that address general air quality issues, including:

- Opacity [IDAPA 58.01.01.625]
- Fugitive particulate matter emissions [IDAPA 58.01.01.650-651]
- Particulate emissions from fuel burning equipment [IDAPA 58.01.01.676]
- Particulate matter emissions from new process equipment [IDAPA 58.01.01.701]
- Nuisance odors [IDAPA 58.01.01.776.01]

Simplot acknowledges its responsibility to comply with each of these regulations. Because only gaseous fuels will be used in the boilers and because a thermal oxidizer will virtually eliminate particulate matter and VOC emissions from dryers and fryers, compliance with opacity, particulate emissions, and nuisance odors is assured.

4 Air Quality Impact Assessment

ENVIRON applied computer-based dispersion modeling techniques to simulate dispersion of criteria pollutant and toxic air pollutant emissions attributable to Project Idaho. The results of the modeling are used to assess compliance with National Ambient Air Quality Standards (NAAQS), Idaho's acceptable ambient concentrations (AACs), and acceptable ambient concentrations for carcinogens (AACCs).

The dispersion modeling techniques employed in the modeling analysis follow a basic set of EPA regulatory guidelines (40 CFR Part 51, Appendix W; called the Guidelines). The Guidelines include recommendations for model selection, data preparation, and modeling application, but allow flexibility on a case-by-case basis. ENVIRON submitted a dispersion modeling protocol to DEQ on November 23, 2011.

Section 4.1 discusses the selection and application of the dispersion model. Section 4.2 discusses the model application and includes stack parameters, receptor locations, and meteorological data processing. Section 4.3 identifies the project-specific maximum model-predicted ambient concentrations of criteria pollutants and TAPs, and compares these predictions with appropriate screening criteria. Section 4.4 identifies the facility-wide maximum model-predicted ambient concentrations of applicable criteria pollutants and compares these predictions with appropriate regulatory criteria. A compact disk containing the air quality modeling input and output files is included in Appendix D.

4.1 Dispersion Model Selection

ENVIRON based its selection of a dispersion model on the Guidelines for near-field air quality impact analyses (AQIA). Building downwash and complex terrain are issues that often influence the dispersion model selection process. The terrain surrounding the Caldwell facility is relatively flat, but there are both existing and proposed buildings that will influence the dispersion of pollutant emissions from emission unit stacks.

The Guidelines recommend the use of AERMOD for complex source configurations and for sources subject to building downwash. ENVIRON used AERMOD (Version 11103) to predict ambient concentration impacts resulting from the project.

4.2 Model Application

ENVIRON applied AERMOD using the regulatory default options except where noted below.

4.2.1 Ambient Air Boundary

The ambient air boundary is defined in IDAPA 58.01.01.006 as "that portion of the atmosphere, external to buildings, to which the general public has access." The general public is precluded from entering the Caldwell facility and from entering a large portion of agricultural land surrounding the facility. The proposed processing plant will be located within a fenced area, and much of the surrounding fields are gated to prevent the general public from entering Simplot-owned property. Figure 4-1 displays the ambient air boundaries used in the AQIA, with the processing site outlined in green and Simplot ownership identified in blue. Ambient air boundaries to the north of the main processing area include Highway 19 and irrigation canals that are operated and maintained by a private company. In general, public access to Simplot's properties is discouraged through the use of "No Trespassing" signs placed along property boundaries and through the use of security guards that require trespassers to leave the property.

4.2.2 Receptor Locations

ENVIRON used four nested receptor grids in the AQIA. The receptor grids are designed to assess the maximum ambient impacts resulting from the project. The modeling domain is 20 km by 20 km and includes nested receptor grids of 25-meter, 50-meter, 200-meter, and 500-meter resolution; receptors were also spaced 25 meters apart along the ambient air boundaries as shown in Figure 4-2.

Base elevation and hill height scale values for each receptor were determined using AERMAP (Version 11103) and terrain elevations from the USGS National Elevation Dataset (NED) 1/3 arc-second data set available from the USGS "Seamless Server" Internet site. These data have a horizontal spatial resolution of approximately $9x10^{-5}$ degrees (~10 meters). All receptor locations are in Universal Transverse Mercator (UTM) coordinates using the spatial reference of NAD 83 and UTM Zone 11.

4.2.3 NO_X to NO_2 Chemical Transformations

ENVIRON conservatively assumed that 100 percent of the emitted NO_X is converted to NO_2.

4.2.4 Stack Orientation

All proposed new emission units will have unobstructed vertical releases. However, a few existing sources have horizontal releases. ENVIRON used the AERMOD Beta option to model horizontal exhausts. These horizontal exhausts were modeled using the AERMOD "POINTHOR" source type.

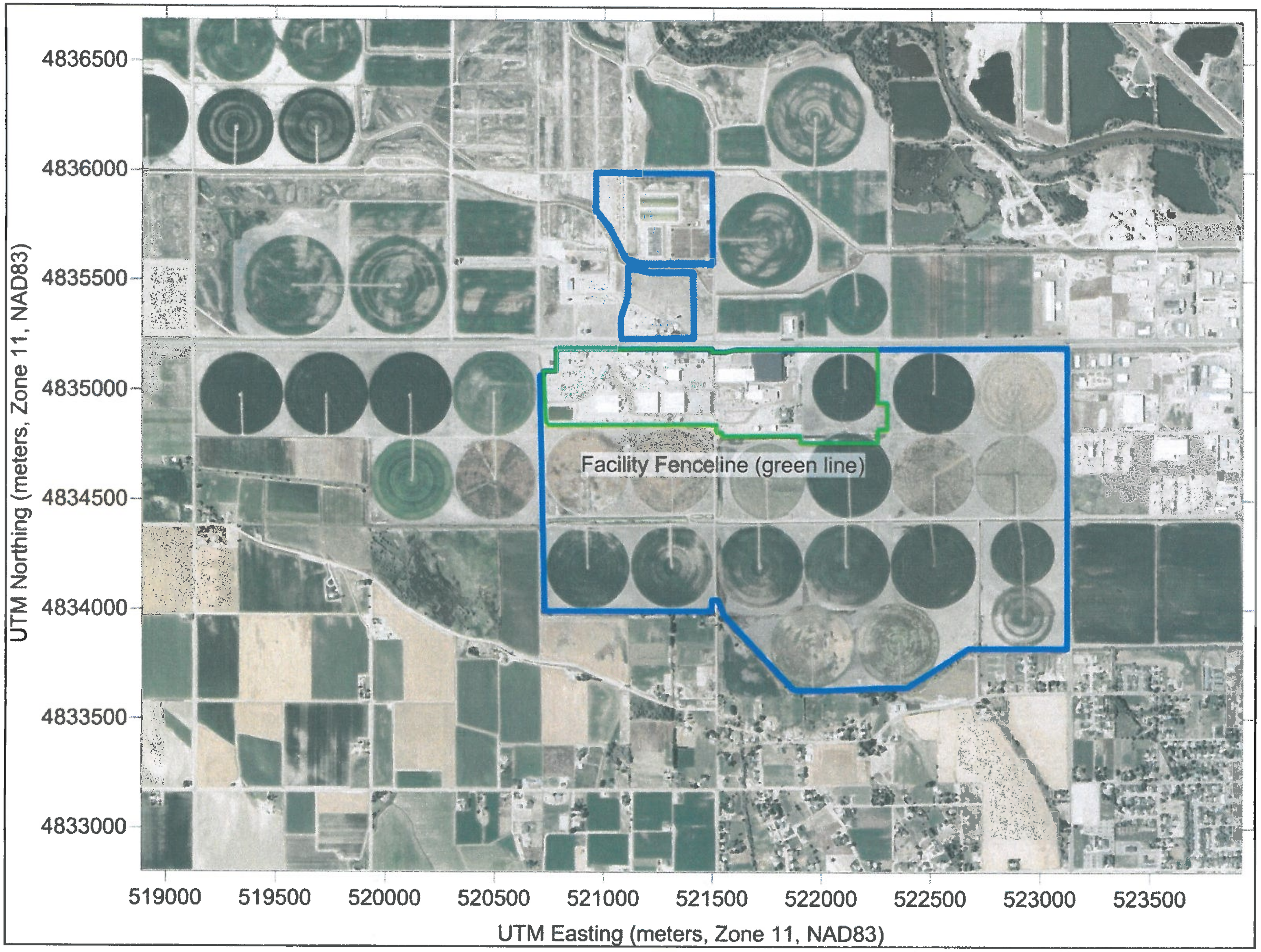

Figure 4-1. Simplot Caldwell – Ambient Air Boundaries

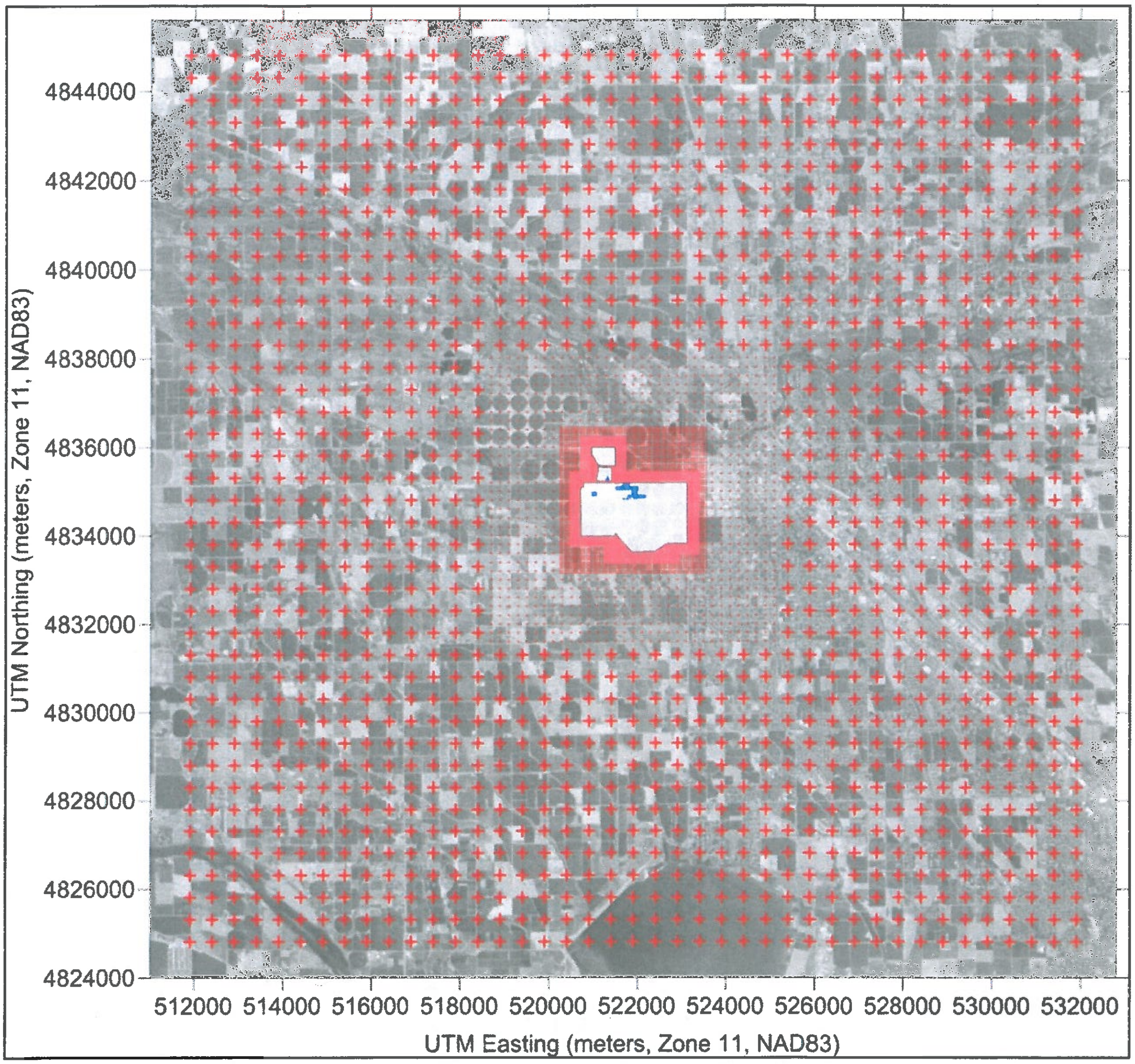

Figure 4-2. Simplot Caldwell – Modeling Domain with Receptors

4.2.5 Meteorological Data

ENVIRON used a five-year meteorological database that was constructed using available surface and upper air data for the dispersion modeling analysis. A meteorological data set was prepared using National Weather Service (NWS) surface data observations and upper air data observations from Boise, Idaho for the period 2005 – 2009. A wind rose presenting wind speed and wind direction data for the five-year period is shown in Figure 4-3. The wind rose shows that the winds are generally bimodal, with winds from the northwest and southeast directions following the Snake River Valley.

In addition to using the hourly NWS meteorological data, 1-minute wind speed and wind direction data from Boise Airport were used to resolve calm and variable wind conditions using the AERMINUTE (Version 11059) preprocessor.

Additional meteorological variables and geophysical parameters are required for use in the AERMOD dispersion modeling analysis to estimate the surface energy fluxes and construct boundary layer profiles. Surface characteristics including albedo, Bowen ratio, and surface roughness length were determined for the area surrounding the Boise Airport meteorological site using the AERMET surface characteristic preprocessor, AERSURFACE (Version 08009), and the USGS 1992 National Land Cover (NLCD92) land use data set. [7] The NLCD92 data set used in the analysis has a 30 m mesh size and 21 land use categories. Seasonal surface parameters were determined using AERSURFACE according to the EPA's guidance. [8]

Seasonal albedo and Bowen ratio values were based on averaging over a 10-km by 10-km region centered on the Boise Airport meteorological site. An unweighted arithmetic average was used for calculating seasonal albedo; and an unweighted geometric average was used for calculating seasonal Bowen ratio. Seasonal surface roughness values were calculated for 12 – 30-degree sectors extending one kilometer from the Boise Airport meteorological site. An inverse-distance-weighted geometric average was used to calculate seasonal surface roughness length values for each of the 12 sectors.

The AERSURFACE input file requires the user to provide additional location and climatological information regarding the primary meteorological site (Boise Airport). The following information was used to process seasonal surface parameters for the Boise Airport meteorological site:

- The site was assumed to not have continuous snow cover most of the winter. Annual average total snowfall for the Boise area is approximately 19 inches, but the average snow depth during December and February is less than one inch and the average

[7] The USGS NLCD92 data set is described and can be accessed at http://landcover.usgs.gov/natllandcover.php.

[8] The AERMOD Implementation Guide (EPA, 2009) and the AERSURFACE User's Guide (EPA-454/B-08-001, January 2008).

monthly temperature during December and February is greater than 32 degrees Fahrenheit. [9]

- The site is located at an airport.
- The site was assumed to not be located in an arid region.
- The surface moisture condition at the site was assumed to be average.

The land-use processing domain and NLCD92 land-use categories are shown in Figure 4-4. Table 4-1 presents the AERSURFACE calculated seasonal albedo, Bowen ratio, and surface roughness length values for the Boise Airport meteorological site. The EPA meteorological program AERMET (Version 11059) was used to combine surface meteorological observations with twice-daily upper air soundings from the same airport, and to derive the necessary meteorological variables and profiles for AERMOD.

[9] Western U.S. Climate Historical Summaries can be accessed at http://www.wrcc.dri.edu/Climsum.html

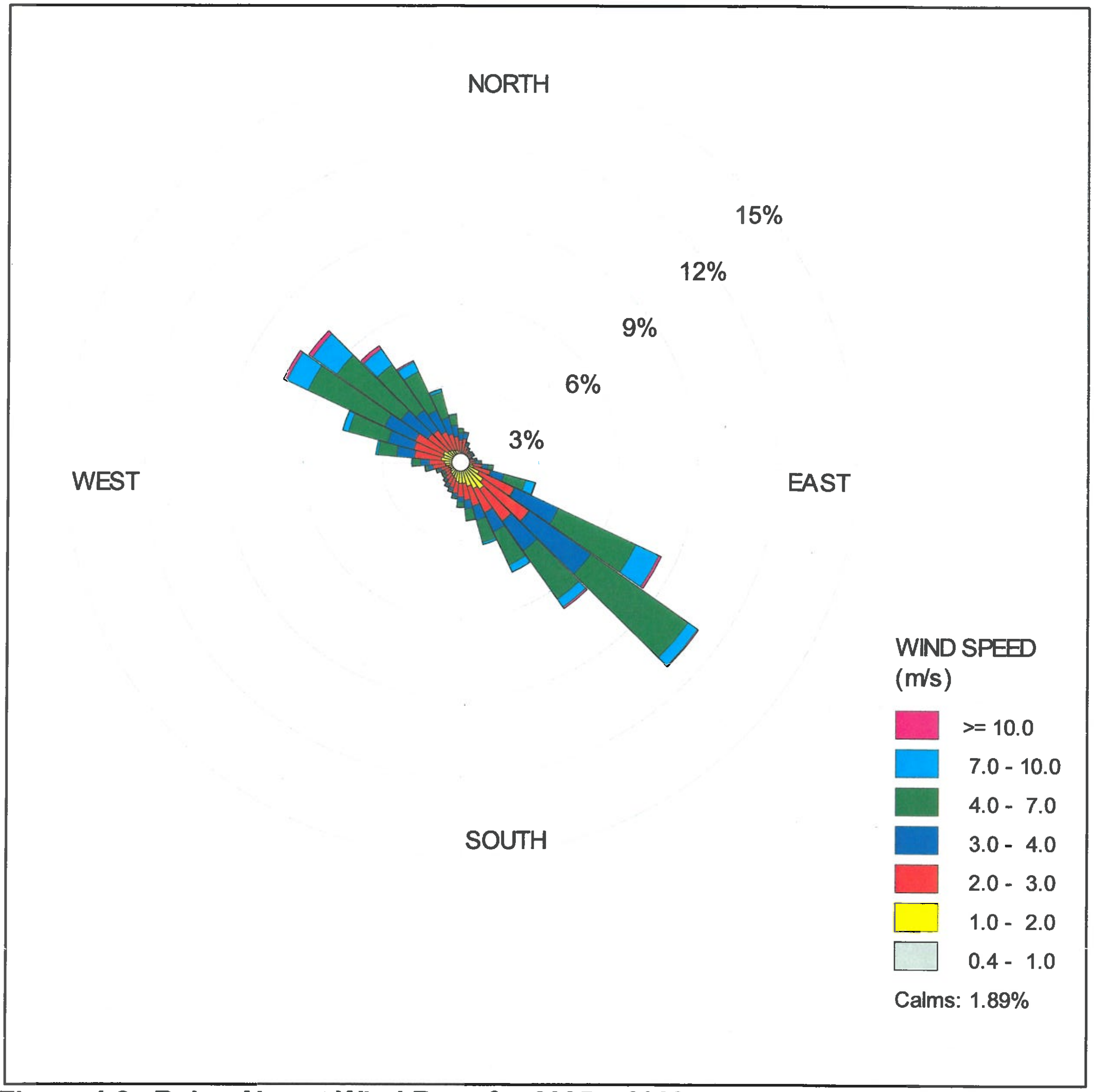

Figure 4-3. Boise Airport Wind Rose for 2005 – 2009

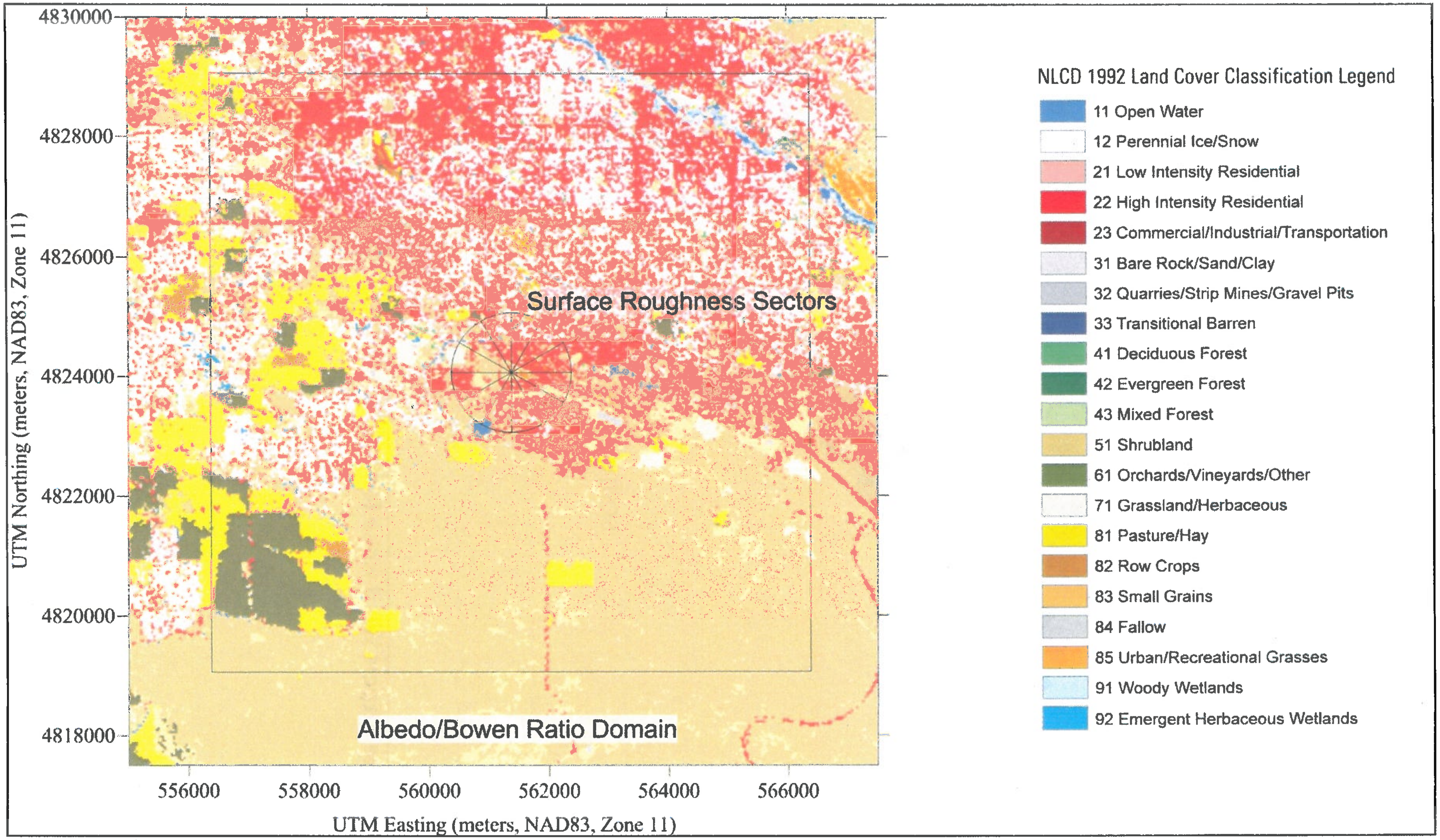

Figure 4-4. AERMET Land Use Analysis Domain

Table 4-1: Boise Airport Surface Characteristics

AERSURFACE Sector	Winter			Spring			Summer			Autumn		
	Albedo	Bowen Ratio	Surface Roughness Length (meter)	Albedo	Bowen Ratio	Surface Roughness Length (meter)	Albedo	Bowen Ratio	Surface Roughness Length (meter)	Albedo	Bowen Ratio	Surface Roughness Length (meter)
1	0.18	1.27	0.145	0.17	0.92	0.153	0.18	0.99	0.158	0.18	1.26	0.158
2	0.18	1.27	0.092	0.17	0.92	0.1	0.18	0.99	0.118	0.18	1.26	0.118
3	0.18	1.27	0.105	0.17	0.92	0.113	0.18	0.99	0.117	0.18	1.26	0.117
4	0.18	1.27	0.067	0.17	0.92	0.076	0.18	0.99	0.08	0.18	1.26	0.08
5	0.18	1.27	0.051	0.17	0.92	0.065	0.18	0.99	0.072	0.18	1.26	0.072
6	0.18	1.27	0.143	0.17	0.92	0.163	0.18	0.99	0.172	0.18	1.26	0.172
7	0.18	1.27	0.071	0.17	0.92	0.082	0.18	0.99	0.09	0.18	1.26	0.089
8	0.18	1.27	0.115	0.17	0.92	0.148	0.18	0.99	0.166	0.18	1.26	0.164
9	0.18	1.27	0.085	0.17	0.92	0.099	0.18	0.99	0.106	0.18	1.26	0.106
10	0.18	1.27	0.032	0.17	0.92	0.042	0.18	0.99	0.048	0.18	1.26	0.048
11	0.18	1.27	0.099	0.17	0.92	0.105	0.18	0.99	0.108	0.18	1.26	0.108
12	0.18	1.27	0.152	0.17	0.92	0.156	0.18	0.99	0.157	0.18	1.26	0.157

4.2.6 Stack Parameters and Building Configuration

In addition to emission rates (discussed in Section 2.2), the modeling analysis requires information regarding stack heights, building dimensions, and other exit parameters that characterize exhaust flow from the Simplot emission points. Table 4-2 presents the source release parameters used for the significant impact analysis (SIA). Figure 4-5 shows the site plan of the Caldwell facility with the locations of the point source stacks as well as significant structures that could potentially influence downwash from the stacks. Please note, the existing processing building and a few of the existing warehouses will be demolished as part of this project. In Figure 4-5, the significant structures that will be present after completion of the project are outlined in red with dimensions noted. The existing Plant 2 processing building was included in the modeling analyses, but Plant 2 will be demolished after the commissioning period is finished.

Table 4-2: Project Idaho Source Release Parameters

Source ID	UTMx (m) (1)	UTMy (m) (1)	elev.(m)	Stack Height (ft)	Exit Temp (F)	Exhaust Flow (acfm)	Exit Diam. (ft)	Exit Velocity (ft/s)	Stack Orient.
BLR_A (2)	521973	4834927	714	70	140	24,088	3.5	41.73	Vertical
BLR_B (2)	521973	4834919	714	70	140	24,088	3.5	41.73	Vertical
BLR_C (2)	521974	4834914	714	70	140	24,088	3.5	41.73	Vertical
RTO	522021	4834932	714	70	111	163,235	7	70.69	Vertical

Notes:

1 – UTM Zone 11, NAD83 Datum

2 – All three boilers will be equipped with condensing economizers, which affect exhaust temperature and acfm. The condensing economizers will be located in-line with each boiler's traditional stack, so no additional condensing economizer stacks will be required.

ENVIRON used EPA's Building Profile Input Program for the PRIME algorithm (BPIP PRIME, Version 04274) to prepare wind direction-specific building profile information required by AERMOD. The facility layout and building dimensions provided by Simplot were used to prepare the data input file for BPIP PRIME, which then provides AERMOD with necessary building downwash parameters.

BPIP PRIME was also used for a Good Engineering Practice (GEP) analysis of the proposed new stacks. Stacks below the GEP stack height are potentially subject to building wake effects, which can produce relatively high ground level predictions from AERMOD. For dispersion modeling purposes, the EPA does not allow credit for the added dispersion associated with releases above the GEP stack height and restricts the simulated heights in the model to the GEP stack height. However, none of the modeled stacks exceeded their associated GEP stack heights. All sources were therefore modeled using their proposed stack heights.

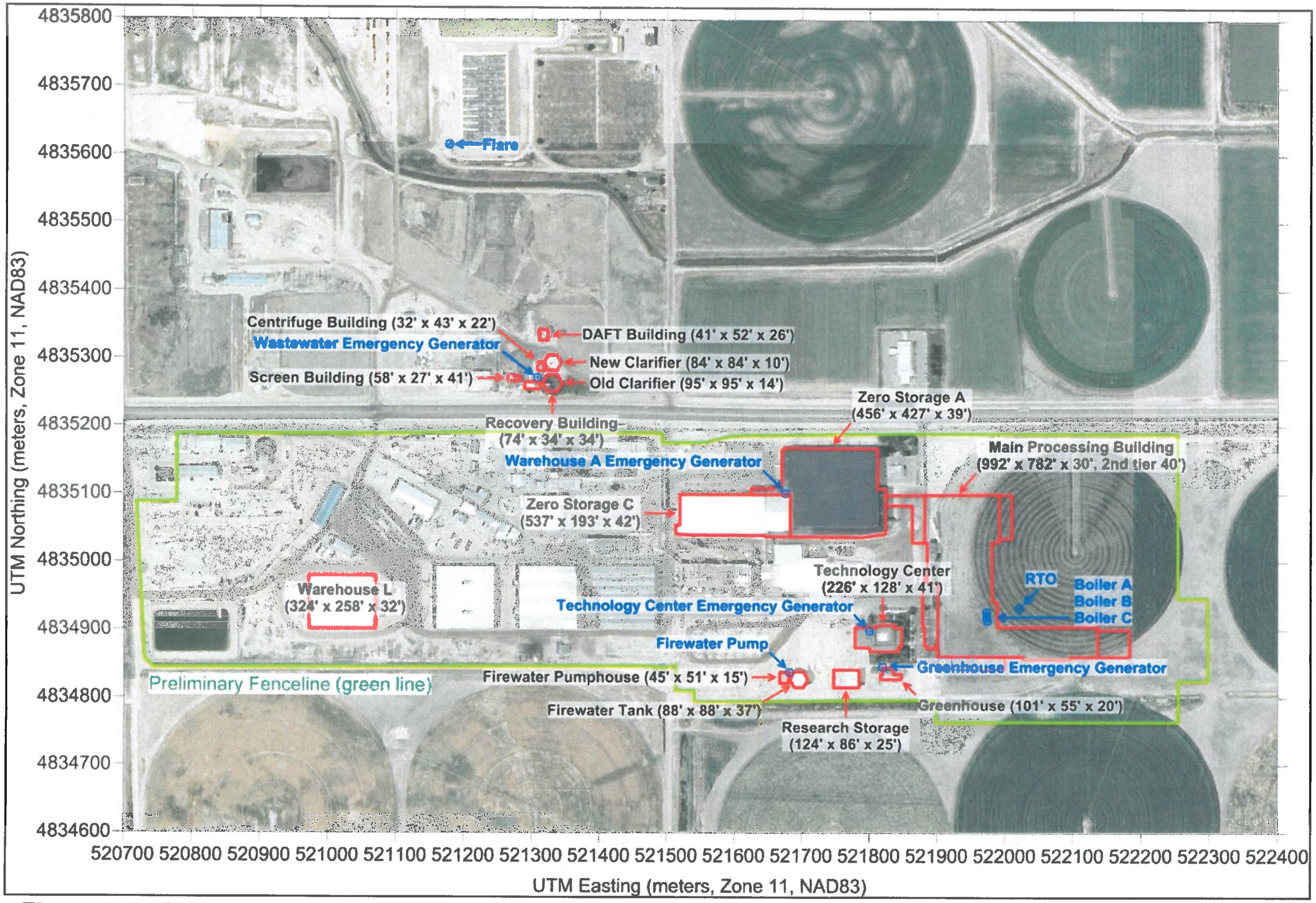

Figure 4-5. Simplot Caldwell Buildings (red lines) and Point Source Locations

4.3 Significant Impact Assessment

This section identifies ambient ground level concentrations resulting from NO_X, SO_2, PM_{10}, $PM_{2.5}$, and toxic air pollutant emissions from the project. No CO emissions will be modeled because the calculated CO emissions for the project are below Idaho's modeling threshold (See Table 2-8). For pollutants with model-predicted ambient concentrations exceeding the applicable significant impact levels (SILs), a full impact analysis (FIA) must be conducted. The FIA takes into account potential emissions from the entire facility and representative background concentrations for comparison with the NAAQS.

ENVIRON applied AERMOD to simulate pollutant dispersion for five years of hourly meteorological conditions observed at the Boise Airport. ENVIRON determined the highest model-predicted concentration for each receptor and averaging period of interest. This section discusses the results of the modeling assessment.

4.3.1 Criteria Pollutant Concentrations

ENVIRON modeled the criteria pollutant concentrations using the emission rates presented in Table 2-8. The emission decreases associated with shutting down existing sources (English Boiler, Boiler 8, Fryers, Dryers, and AMUs) were conservatively not included in the SIA.

In order to assess the significance of the model predictions, ENVIRON compared the maximum criteria pollutant concentrations predicted by AERMOD with the SILs. Receptors with pollutant concentrations below the SILs are considered to be "insignificantly affected"; and these pollutants do not require an FIA to evaluate compliance with the NAAQS.

The results of the SIA are compared to SILs in Table 4-3. The AERMOD-predicted maximum ambient 3-hour, 24-hour, and annual average SO_2 concentrations for the project are less than the applicable SILs. However, the AERMOD-predicted maximum NO_X, PM_{10}, $PM_{2.5}$, and 1-hour SO_2 concentrations for the project exceed the applicable SILs and trigger the requirement for an FIA (discussed in Section 4.4).

Table 4-3: Project Idaho AERMOD-Predicted Criteria Pollutant Concentrations				
Pollutant	Ave. Period	Project Only Concentration (1) (μg/m³)	SIL (2) (μg/m³)	Over SIL?
NO_X	1-hr	78	7.5	yes
	annual	5	1	yes
SO_2	1-hr	11	7.8	yes
	3-hr	7	25	no
	24-hr	2	5	no
	annual	0.4	1	no
PM_{10}	24-hr	19	5	yes
	annual	5	1	yes
$PM_{2.5}$	24-hr	19	1.2	yes
	annual	5	0.3	yes

Notes:

1 – Maximum AERMOD-predicted ambient concentration for new Project Idaho sources.

2 – Significant Impact Levels from IDEQ Modeling Guidance (Doc. I D AQ-011 (rev. 2 July 2011) and IDAPA 58.01.01.006.107.

4.3.2 Toxic Air Pollutant Concentrations

As presented in Table 2-10, seven carcinogenic TAPs (formaldehyde, naphthalene as PAH, arsenic, cadmium, chromium VI, nickel, and Idaho's PAH group) emissions calculated for the project exceed applicable screening levels. ENVIRON modeled the carcinogenic TAP concentrations using the annual emission rates presented in Table 2-10. The emission decreases from shutting down existing sources (English Boiler, Boiler 8, Fryers, Dryers, and AMUs) were conservatively not included in the TAP modeling analysis for the project.

The results of the TAP modeling analysis are compared to the AACC in Table 4-4. All AERMOD-predicted ambient TAP concentrations are less than the applicable AACC thresholds.

Table 4-4: Project Idaho AERMOD-Predicted Toxic Air Pollutant Concentrations				
Toxic Air Pollutant	Ave. Period	Project Only Concentration (1) (μg/m³)	AACC (2) (μg/m³)	Over AACC?
Arsenic	Annual	4.0E-05	2.3E-04	no
Cadmium	Annual	2.2E-04	5.6E-04	no
Chromium VI	Annual	1.0E-05	8.3E-05	no
Formaldehyde	Annual	1.5E-02	7.7E-02	no
Naphthalene	Annual	1.2E-04	1.4E-02	no
Nickel	Annual	4.2E-04	4.2E-03	no
PAH	Annual	2.3E-06	1.4E-02	no

Notes:

1 – Maximum AERMOD-predicted ambient concentration for new Project Idaho sources.

2 – Acceptable Ambient Concentration for Carcinogens from IDAPA 58.01.01.586.

4.4 Full Impact Assessment

This section identifies ambient ground-level concentrations resulting from facility-wide emissions of NO_X, SO_2, PM_{10}, and $PM_{2.5}$. Two different FIAs were evaluated: 1) Project Idaho commissioning period; and 2) Project Idaho after commissioning.

4.4.1 Commissioning Period FIA

Section 2.4 describes the projected facility operation during Project Idaho commissioning. As certain lines in the existing Plant 2 are shutdown, similar lines in the new plant will startup. Modeled emission rates from all existing and proposed emission units in operation during the commissioning period are presented in Table 4-5; source release parameters are presented in Table 4-6.

The testing schedules for the emergency engines located at the Caldwell facility are presented in Table 4-7. Three of the emergency engines (EG2, EG3, and EG4) are only tested only twice per year. These three emergency engines were not included in the facility-wide modeling for 1-hour NO_X or 1-hour SO_2 because the sources are operated intermittently throughout the year. [10] Testing emissions for the remaining two emergency engines (EG1 and FWP1) were included in the FIA for 1-hour NO_X and 1-hour SO_2. Testing was assumed to occur between 12:00 pm and 7:00 pm.

The FIA results for the commissioning period including background concentrations are presented in Table 4-8 with the applicable NAAQS. The FIA indicates that ambient criteria pollutant concentrations attributable to expected facility emissions during the commissioning period will be less than the applicable NAAQS.

[10] Excluding intermittent sources from modeling analyses is discussed in Section 6.4.1 in IDEQ's Modeling Guidance Document (Revision 2, July 2011).

Table 4-5: Project Idaho Commissioning - NO_X, SO_2, PM_{10}, and $PM_{2.5}$ Emission Rates

Source ID	NO_X		SO_2		PM_{10}		$PM_{2.5}$	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Project Idaho and Remaining Sources (1)								
BLR_B (2)	1.8	7.8	0.69	2.3	0.7	3.2	0.7	3.2
RTO	2.5	11.0	0.01	0.1	3.4	14.7	3.4	14.7
FLARE (2)	1.3	4.0	28.84	90.0	0.1	0.4	0.1	0.4
EG1 (warehouse)	0.2	0.02	1.36E-04	1.36E-05	9.64E-05	2.31E-04	9.64E-05	2.31E-04
EG2 (greenhouse) (3)	--	0.01	--	3.53E-06	2.50E-05	6.00E-05	2.50E-05	6.00E-05
EG3 (wastewater) (3)	--	0.2	--	7.84E-05	0.007	0.02	0.007	0.02
EG4 (tech center) (3)	--	0.01	--	3.53E-06	1.21E-04	2.90E-04	1.21E-04	2.90E-04
FWP1 (firewater)	4.9	0.5	1.68E-03	1.68E-04	0.014	0.03	0.014	0.03
Plant 2 Sources (4)								
B01 (English Boiler)	2.4	10.5	0.03	0.1	0.4	1.6	0.4	1.6
WESP (5)	--	--	--	--	2.0	8.8	2.0	8.8
Air Makeup Unit 4	0.13	0.6	7.94E-04	3.48E-03	0.010	0.04	0.010	0.04
Air Makeup Unit 5	0.25	1.1	1.49E-03	6.52E-03	0.019	0.08	0.019	0.08
Air Makeup Unit 6	0.13	0.6	8.10E-04	3.55E-03	0.010	0.04	0.010	0.04
Air Makeup Unit 7	0.14	0.6	8.15E-04	3.57E-03	0.010	0.05	0.010	0.05
Air Makeup Unit 8	0.13	0.6	7.94E-04	3.48E-03	0.010	0.04	0.010	0.04
Air Makeup Unit 9	0.13	0.6	7.94E-04	3.48E-03	0.010	0.04	0.010	0.04
Air Makeup Unit 10	0.13	0.6	7.94E-04	3.48E-03	0.010	0.04	0.010	0.04
Air Makeup Unit 11	0.13	0.6	8.10E-04	3.55E-03	0.010	0.04	0.010	0.04
Air Makeup Unit 12	0.20	0.9	1.18E-03	5.15E-03	0.015	0.07	0.015	0.07

Notes:

1 – During commissioning, Simplot plans to operate one new boiler (with biogas burning capability), the RTO controlling half of potential process gas (one fry line and one form line), the biogas flare, and testing of emergency engines.

2 – SO_2 emissions for the new boiler (Boiler B) include the combustion of biogas (98 percent sulfur removal). Boiler B will combust all of the biogas generated. The facility-wide modeling for 1-hour SO_2 conservatively included Boiler B burning biogas and the existing flare burning biogas.

3 – Testing of emergency engines 2, 3, and 4 occur only twice per year therefore short term NO_X and SO_2 emissions were not included in the modeling analysis.

4 – During commissioning, Simplot plans to operate the existing English Boiler at half capacity, the existing WESP (with only one form line operating), and the air makeup units operating at 25 percent of capacity (commissioning will occur during summer months).

5 – WESP PM_{10}/$PM_{2.5}$ emission rate based on maximum measured PM concentration (2 lb/hr) during 2003 source test, when all three Caldwell lines were operating.

Table 4-6: Project Idaho Commissioning - Source Release Parameters

Source ID	UTMx (m) [1]	UTMy (m) [1]	elev.(m)	Stack Height (ft)	Exit Temp (F)	Exhaust Flow (acfm)	Exit Diam. (ft)	Exit Velocity (ft/s)	Stack Orient. [2]
BLR_B	521973	4834919	714	70	140	24,088	3.5	41.73	Vertical
RTO	522021	4834932	714	70	111	163,235	7.0	70.69	Vertical
FLAREST [3]	521178	4835615	712	32.67	1831.73	--	2.21	65.62	Vertical
FLARELT [3]	521178	4835615	712	30.77	1831.73	--	1.87	65.62	Vertical
EG1 (warehouse)	521675	4835101	714	44	1060	141	0.17	107.72	Vertical
EG2 (greenhouse)	521819	4834846	714	5	1080	141	0.17	107.72	Vertical
EG3 (wastewater)	521308	4835272	714	8	1060	336	0.21	164.04	Vertical
EG4 (tech center)	521800	4834899	714	41.33	1080	141	0.21	68.94	Horizontal
FWP1 (firewater)	521681	4834838	714	12	850	1,342	0.42	164.04	Horizontal
B01 (English Boiler)	521632	4834933	714	46	350	34,082	4.00	45.14	Vertical
WESP	521662	4834987	714	63	159	44,585	6.00	26.25	Vertical
AMU4 [4]	521730	4834988	714	28	122	Varies	0.66	0.003	Vertical
AMU5 [4]	521709	4834988	714	28	122	Varies	0.66	0.003	Vertical
AMU6 [4]	521777	4834954	714	26	122	Varies	0.66	0.003	Vertical
AMU7 [4]	521744	4834955	714	26	122	Varies	0.66	0.003	Vertical
AMU8 [4]	521711	4834955	714	26	122	Varies	0.66	0.003	Vertical
AMU9 [4]	521678	4834956	714	21	122	Varies	0.66	0.003	Vertical
AMU10 [4]	521645	4834956	714	45	122	Varies	0.66	0.003	Vertical
AMU11 [4]	521611	4834957	714	45	122	Varies	0.66	0.003	Vertical
AMU12 [4]	521578	4834957	714	45	122	Varies	0.66	0.003	Vertical

Notes:

1 – UTM Zone 11, NAD83 Datum

2 – The existing tech center and fire water pump engines have horizontal exhausts and were modeled using the AERMOD "POINTHOR" source type.

3 – Flare short-term and long-term release parameters were calculated using EPA Guidance Document: EPA-450/4-88-010 (Screening Procedures for Estimating the Air Quality Impact of Stationary Sources).

4 – Air Makeup Unit exhausts are not vented directly to stacks, rather the AMU exhaust exits through building vents. The AMU exhaust flow rates vary and were conservatively modeled using an exit velocity of 0.001 m/s.

Table 4-7: Simplot Caldwell – Emergency Engine Testing Schedule

Engine (Source ID)	Size (KW / hp)	Fuel	Testing Schedule
Warehouse A (EG1)	25 / 33.5	Natural Gas	30 minutes per month
Greenhouse (EG2)	7 / 9.4	Natural Gas	15 minutes per test, two tests per year
Wastewater Plant (EG3)	100 / 134	Diesel	30 minutes per test, two tests per year
Tech Center (EG4)	7 / 9.4	Natural Gas	30 minutes per test, two tests per year
Fire-Water Pump (FWP1)	224 / 300	Diesel	30 minutes per week

Table 4-8: AERMOD-Predicted Concentrations – Commissioning Period

Pollutant	Ave. Period	Facility-Wide Concentration (1) (µg/m³)	Background (2) (µg/m³)	Total (µg/m³)	NAAQS
NO_X	1-hr	93.3	88.4	155.4	188
	annual	5.7	48.7	54.1	100
SO_2	1-hr	152.2	10.6	162.8	196
PM_{10}	24-hr	12.6	85.5	99.8	150
	annual	3.5	21.1	25.0	50
$PM_{2.5}$	24-hr	14.1	16.6	31.5	35
	annual	3.5	6.7	10.6	15

Notes:

1 – The 1-hour NO_2 model-predicted concentration is based on the maximum five-year average of the 98th percentile daily maximum 1-hour NO_2 concentrations (conservative 100% NO_X to NO_2 conversion). The 1-hour SO_2 model-predicted concentration is based on the maximum five-year average of the 99th percentile daily maximum 1-hour SO_2 concentrations. The 24-hour PM_{10} model-predicted concentration is based on the sixth highest prediction over five years. All other pollutant concentrations are the five-year average of the maximum model-predicted concentrations for each year.

2 – Background concentrations were calculated from available data stored in EPA's AQS Database:

NO_2 background are the averages of 1-hour 98th percentile and annual concentrations from 2009 – 2010 at St. Luke's (Meridian, ID).

1-hour SO_2 background is the average of 1-hour 98th percentile concentrations from 2009 – 2010 at St. Luke's (Meridian, ID).

PM_{10} background are the averages of 24-hour and annual concentrations from 2009 – 2010 at Nampa, ID.

$PM_{2.5}$ background are the averages of 24-hour 98th percentile and annual concentrations from 2009 – 2010 at Nampa, ID.

4.4.2 Post-Commissioning FIA

Once the commissioning period has ended, Simplot plans to shut down all Plant 2 emission units (English Boiler, Boiler 8, three fryers, two dryers, WESP, and all AMUs) and demolish the Plant 2 building. Post-commissioning facility-wide emissions are presented in Table 4-9 and source release parameters are presented in Table 4-10.

As discussed previously, three emergency engines (EG2, EG3, and EG4) were not included in facility-wide modeling for 1-hour NO_X or 1-hour SO_2 because the sources are operated intermittently throughout the year. Testing emissions for the remaining two emergency engines (EG1 and FWP1) were included in the FIA for 1-hour NO_X and 1-hour SO_2 assuming testing occurs between 12:00 pm and 7:00 pm.

The FIA results for the post-commissioning period, including background concentrations, are presented in Table 4-11 with the applicable NAAQS. The FIA indicates that ambient criteria pollutant concentrations attributable to expected facility emissions after commissioning will be less than the applicable NAAQS.

Table 4-9: Facility-Wide NO_X, SO_2, PM_{10}, and $PM_{2.5}$ Emission Rates

	NO_X		SO_2		PM_{10}		$PM_{2.5}$	
Source ID	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
BLR_A	1.8	7.8	0.06	0.25	0.73	3.2	0.73	3.2
BLR_B (1)	1.8	7.8	0.35	1.2	0.73	3.2	0.73	3.2
BLR_C (1)	1.8	7.8	0.35	1.2	0.73	3.2	0.73	3.2
RTO	2.5	11.0	1.5E-02	0.06	6.7	29.4	6.7	29.4
FLARE (1)	1.3	4.0	28.84	90.0	0.1	0.4	0.1	0.4
EG1 (warehouse)	0.2	0.02	1.36E-04	1.36E-05	9.64E-05	2.31E-04	9.64E-05	2.31E-04
EG2 (2) (greenhouse)	--	0.01	--	3.53E-06	2.50E-05	6.00E-05	2.50E-05	6.00E-05
EG3 (2) (wastewater)	--	0.2	--	7.84E-05	0.007	0.02	0.007	0.02
EG4 (2) (tech center)	--	0.01	--	3.53E-06	1.21E-04	2.90E-04	1.21E-04	2.90E-04
FWP1 (firewater)	4.9	0.5	1.68E-03	1.68E-04	0.014	0.03	0.014	0.03

Notes:

1 – SO_2 emissions for Boiler B and Boiler C include the combustion of biogas (98 percent sulfur removal). Each of the two new boilers will combust half of the biogas generated. The facility-wide modeling for 1-hour SO_2 conservatively included boilers B and C burning biogas and the existing flare burning biogas, effectively double counting biogas emissions.

2 – Testing of emergency engines 2, 3, and 4 occur only twice per year therefore short term NO_X and SO_2 emissions were not included in the modeling analysis.

Table 4-10: Facility-Wide Source Release Parameters

Source ID	UTMx (m) [1]	UTMy (m) [1]	elev.(m)	Stack Height (ft)	Exit Temp (F)	Exhaust Flow (acfm)	Exit Diam. (ft)	Exit Velocity (ft/s)	Stack Orient. [2]
BLR_A	521973	4834927	714	70	140	24,088	3.5	41.73	Vertical
BLR_B	521973	4834919	714	70	140	24,088	3.5	41.73	Vertical
BLR_C	521974	4834914	714	70	140	24,088	3.5	41.73	Vertical
RTO	522021	4834932	714	70	111	163,235	7.0	70.69	Vertical
FLAREST [3]	521178	4835615	712	32.67	1831.73	--	2.21	65.62	Vertical
FLARELT [3]	521178	4835615	712	30.77	1831.73	--	1.87	65.62	Vertical
EG1 (warehouse)	521675	4835101	714	44	1060	141	0.17	107.72	Vertical
EG2 (greenhouse)	521819	4834846	714	5	1080	141	0.17	107.72	Vertical
EG3 (wastewater)	521308	4835272	714	8	1060	336	0.21	164.04	Vertical
EG4 (tech center)	521800	4834899	714	41.33	1080	141	0.21	68.94	Horizontal
FWP1 (firewater)	521681	4834838	714	12	850	1,342	0.42	164.04	Horizontal

Notes:

1 – UTM Zone 11, NAD83 Datum

2 – The existing tech center and fire water pump engines have horizontal exhausts and were modeled using the AERMOD "POINTHOR" source type.

3 – Flare short-term and long-term release parameters were calculated using EPA Guidance Document: EPA-450/4-88-010 (Screening Procedures for Estimating the Air Quality Impact of Stationary Sources).

Table 4-11: AERMOD-Predicted Facility-Wide Concentrations

Pollutant	Ave. Period	Facility-Wide Concentration (1) ($\mu g/m^3$)	Background (2) ($\mu g/m^3$)	Total ($\mu g/m^3$)	NAAQS
NO_X	1-hr	65.4	88.4	153.9	188
	annual	4.6	48.7	53.3	100
SO_2	1-hr	152.2	10.6	162.8	196
PM_{10}	24-hr	16.2	85.5	101.7	150
	annual	4.4	21.1	25.5	50
$PM_{2.5}$	24-hr	17.1	16.6	33.7	35
	annual	4.4	6.7	11.1	15

Notes:

1 – The 1-hour NO_2 model-predicted concentration is based on the maximum five-year average of the 98th percentile daily maximum 1-hour NO_2 concentrations (conservative 100% NO_X to NO_2 conversion). The 1-hour SO_2 model-predicted concentration is based on the maximum five-year average of the 99th percentile daily maximum 1-hour SO_2 concentrations. The 24-hour PM_{10} model-predicted concentration is the sixth highest prediction over five years. All other pollutant concentrations are the five-year average of the maximum model-predicted concentrations for each year.

2 – Background concentrations were calculated from available data stored in EPA's AQS Database:

NO_2 background are the averages of 1-hour 98th percentile and annual concentrations from 2009 – 2010 at St. Luke's (Meridian, ID).

1-hour SO_2 background is the average of 1-hour 98th percentile concentrations from 2009 – 2010 at St. Luke's (Meridian, ID).

PM_{10} background are the averages of 24-hour and annual concentrations from 2009 – 2010 at Nampa, ID.

$PM_{2.5}$ background are the averages of 24-hour 98th percentile and annual concentrations from 2009 – 2010 at Nampa, ID.

Appendix A: DEQ's Permit to Construct Forms

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**

COMPANY NAME, FACILITY NAME, AND FACILITY ID NUMBER

1. Company Name J.R. Simplot Company

2. Facility Name Caldwell Plant 3. Facility ID No. 027-00009

4. Brief Project Description - Project Idaho – Install new process equipment and three new boilers

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

1. FORMS INCLUDED

Included	N/A	Forms		DEQ Verify
☒	☐	Form CSPTC – Cover Sheet		☐
☒	☐	Form GI – Facility Information		☐
☒	☐	Form EU0 – Emissions Units General		☐
☐	☒	Form EU1– Industrial Engine Information	Please specify number of EU1s attached: ____	☐
☐	☒	Form EU2– Nonmetallic Mineral Processing Plants	Please specify number of EU2s attached: ____	☐
☐	☒	Form EU3– Spray Paint Booth Information	Please specify number of EU3s attached: ____	☐
☐	☒	Form EU4– Cooling Tower Information	Please specify number of EU3s attached: ____	☐
☒	☐	Form EU5 – Boiler Information	Please specify number of EU4s attached: 3	☐
☐	☒	Form CBP– Concrete Batch Plant	Please specify number of CBPs attached: ____	☐
☐	☒	Form HMAP – Hot Mix Asphalt Plant	Please specify number of HMAPs attached: ____	☐
☐	☒	PERF – Portable Equipment Relocation Form		☐
☒	☐	Form AO – Afterburner/Oxidizer		☐
☐	☒	Form CA – Carbon Adsorber		☐
☐	☒	Form CYS – Cyclone Separator		☐
☐	☒	Form ESP – Electrostatic Precipitator		☐
☐	☒	Form BCE– Baghouses Control Equipment		☐
☐	☒	Form SCE– Scrubbers Control Equipment		☐
☐	☒	Form VSCE – Venturi Scrubber Control Equipment		☐
☐	☒	Form CAM – Compliance Assurance Monitoring		☐
☒	☐	Forms EI— Emissions Inventory		☐
☒	☐	PP – Plot Plan (See Figure 4-5)		☐
☒	☐	Forms MI1 – MI4 – Modeling	(Excel workbook, all 4 worksheets)	☐
☒	☐	Form FRA – Federal Regulation Applicability		☐

IDENTIFICATION

1. Company Name	2. Facility Name:
J.R. Simplot Company	Caldwell Plant
3. Brief Project Description:	Project Idaho – Install new process equipment and three new boilers

FACILITY INFORMATION

4. Primary Facility Permit Contact Person/Title	Burl Ackerman		Environmental Manager	
5. Telephone Number and Email Address	(208) 389-7466		burl.ackerman@Simplot.com	
6. Alternate Facility Contact Person/Title	Henry Hamanishi		Environmental Manager	
7. Telephone Number and Email Address	208.389.7375		Henry.Hamanishi@simplot.com	
8. Address to Which the Permit Should be Sent	P.O. Box 1059			
9. City/County/State/Zip Code	Caldwell	Canyon	Idaho	83606
10. Equipment Location Address (if different than the mailing address above)	2 miles west of Caldwell on Highway 19			
11. City/County/State/Zip Code	Caldwell	Canyon	Idaho	83606
12. Is the Equipment Portable?	☐ Yes ☒ No			
13. SIC Code(s) and NAICS Code	Primary SIC: 2037	Secondary SIC: Not Applicable	NAICS: 311411	
14. Brief Business Description and Principal Product	Potato Processing			
15. Identify any adjacent or contiguous facility that this company owns and/or operates	Idaho Ethanol (not in operation by Simplot)			
16. Specify the reason for the application	☒ Permit to Construct (PTC) 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. ☐ Incorporate the PTC at the time of the Tier I renewal ☐ Co-process the Tier I modification and PTC ☐ Administratively amend the Tier I permit to incorporate the PTC upon your request (IDAPA 58.01.01.209.05.a, b, or c) ☐ Tier I Permit ☐ Tier II Permit ☐ 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	Mark Currie	Senior Director Potato Operations
18. Responsible Official's Signature	[signature]	Date: 12.2.11

19. ☒ Check here to indicate that you would like to review the draft permit prior to final issuance.

DEQ AIR QUALITY PROGRAM
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For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Emissions Unit - General **Form EU0**
Revision 4
08/28/08

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
J.R. Simplot Company	Caldwell Plant	027-00009
4. Brief Project Description:	Project Idaho – Install new process equipment and three new boilers	

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	Line 1 Fryer/Dryer
6.	EU ID Number:	Line 1
7.	EU Type: New Source	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	To be determined
9.	Model:	To be determined
10..	Maximum Capacity:	55,000 lb/hour
11.	Date of Construction:	Upon Permit to Construct
12.	Date of Modification (if any):	N/A
13.	Is this a Controlled Emission Unit?	☐ No ☒ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	Regenerative Thermal Oxidizer, RTO
15. Date of Installation:	Upon Permit to Construct 16. Date of Modification (if any): N/A
17. Manufacturer and Model Number:	To be determined
18. ID(s) of Emission Unit Controlled:	Line 1, Line 2, Line 3, and Line 4
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☒ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☒ Yes (manufacturer will be required to meet 90% VOC destruction) ☐ No

Control Efficiency	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
	90%	90%	N/A	N/A	90%	N/A

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency. See Section 2.2.1.2 of the PTC Application (example vendor proposal available upon request)

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	> 310 Days/yr
23.	Maximum Operation:	365 Days/yr

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☐ Yes ☒ No (If Yes, indicate all that apply below)
	Operation Hour Limit(s):	
	Production Limit(s):	
	Material Usage Limit(s):	
	Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	Other:	
25.	Rationale for Requesting the Limit(s):	

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
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Air Permit Hotline – 1-877-5PERMIT

Emissions Unit - General **Form EU0**
Revision 4
08/28/08

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
J.R. Simplot Company	Caldwell Plant	027-00009

4. Brief Project Description: Project Idaho – Install new process equipment and three new boilers

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5. Emissions Unit (EU) Name:	Line 2 Fryer/Dryer
6. EU ID Number:	Line 2
7. EU Type: New Source	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8. Manufacturer:	To be determined
9. Model:	To be determined
10.. Maximum Capacity:	55,000 lb/hour
11. Date of Construction:	Upon Permit to Construct
12. Date of Modification (if any):	N/A
13. Is this a Controlled Emission Unit?	☐ No ☒ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	Regenerative Thermal Oxidizer, RTO
15. Date of Installation:	Upon Permit to Construct 16. Date of Modification (if any): N/A
17. Manufacturer and Model Number:	To be determined
18. ID(s) of Emission Unit Controlled:	Line 1, Line 2, Line 3, and Line 4
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☒ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☒ Yes (manufacturer will be required to meet 90% VOC destruction) ☐ No

Control Efficiency	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
	90%	90%	N/A	N/A	90%	N/A

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency. See Section 2.2.1.2 of the PTC Application (example vendor proposal available upon request)

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22. Actual Operation:	> 310 Days/yr
23. Maximum Operation:	365 Days/yr

REQUESTED LIMITS

24. Are you requesting any permit limits?	☐ Yes ☒ No (If Yes, indicate all that apply below)
Operation Hour Limit(s):	
Production Limit(s):	
Material Usage Limit(s):	
Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
Other:	
25. Rationale for Requesting the Limit(s):	

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Emissions Unit - General **Form EU0**
Revision 4
08/28/08

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
J.R. Simplot Company	Caldwell Plant	027-00009

4. Brief Project Description: Project Idaho – Install new process equipment and three new boilers

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	Line 3 Fryer/Dryer
6.	EU ID Number:	Line 3
7.	EU Type: New Source	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	To be determined
9.	Model:	To be determined
10..	Maximum Capacity:	11,000 lb/hour
11.	Date of Construction:	Upon Permit to Construct
12.	Date of Modification (if any):	N/A
13.	Is this a Controlled Emission Unit?	☐ No ☒ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	Regenerative Thermal Oxidizer, RTO
15. Date of Installation: Upon Permit to Construct	Upon Permit to Construct 16. Date of Modification (if any): N/A
17. Manufacturer and Model Number:	To be determined
18. ID(s) of Emission Unit Controlled:	Line 1, Line 2, Line 3, and Line 4
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☒ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☒ Yes (manufacturer will be required to meet 90% VOC destruction) ☐ No

Control Efficiency	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
	90%	90%	N/A	N/A	90%	N/A

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency. See Section 2.2.1.2 of the PTC Application (example vendor proposal available upon request)

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	> 310 Days/yr
23.	Maximum Operation:	365 Days/yr

REQUESTED LIMITS

24. Are you requesting any permit limits? ☐ Yes ☒ No (If Yes, indicate all that apply below)

Operation Hour Limit(s):	
Production Limit(s):	
Material Usage Limit(s):	
Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
Other:	

25. Rationale for Requesting the Limit(s):

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Emissions Unit - General **Form EU0**
Revision 4
08/28/08

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
J.R. Simplot Company	Caldwell Plant	027-00009

4. Brief Project Description: Project Idaho – Install new process equipment and three new boilers

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	Line 4 Fryer/Dryer
6.	EU ID Number:	Line 4
7.	EU Type: New Source	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
8.	Manufacturer:	To be determined
9.	Model:	To be determined
10..	Maximum Capacity:	11,000 lb/hour
11.	Date of Construction:	Upon Permit to Construct
12.	Date of Modification (if any):	N/A
13.	Is this a Controlled Emission Unit?	☐ No ☒ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	Regenerative Thermal Oxidizer, RTO
15. Date of Installation: Upon Permit to Construct	Upon Permit to Construct 16. Date of Modification (if any): N/A
17. Manufacturer and Model Number:	To be determined
18. ID(s) of Emission Unit Controlled:	Line 1, Line 2, Line 3, and Line 4
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☒ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☒ Yes (manufacturer will be required to meet 90% VOC destruction) ☐ No

Control Efficiency	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
	90%	90%	N/A	N/A	90%	N/A

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency. See Section 2.2.1.2 of the PTC Application (example vendor proposal available upon request)

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	>310 Days/yr
23.	Maximum Operation:	365 Days/yr

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☐ Yes ☒ No (If Yes, indicate all that apply below)
	Operation Hour Limit(s):	
	Production Limit(s):	
	Material Usage Limit(s):	
	Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	Other:	
25.	Rationale for Requesting the Limit(s):	

Emissions Units - Industrial Boiler Information **Form EU5**

Revision 5

08/28/08

IDENTIFICATION

1. Company Name:	2. Facility Name:	3 Facility ID No:
J.R. Simplot Company	Caldwell Plant	027-00009
4. Brief Project Description:	Project Idaho – Install new process equipment and three new boilers	

EXEMPTION

Please see IDAPA 58.01.01.222 for a list of industrial boilers that are exempt from Permit to Construct requirements.

BOILER (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS

5. Type of Request:	☒ New Unit ☐ Unpermitted Existing Unit ☐ Modification to a Unit with Permit #:	
6. Use of Boiler:	☒ % Used For Process ☐ % Used For Space Heat ☐ % Used For Generating Electricity ☐ Other:	
7. Boiler ID Number: Boiler A	8. Rated Capacity: ☒ 98.0 Million British Thermal Units Per Hour (MMBtu/hr) ☐ 1,000 Pounds Steam Per Hour (1,000 lb steam/hr)	
9. Construction Date: After PTC issued	10. Manufacturer: To be determined	11. Model: To be determined
12. Date of Modification (if applicable): Not Applicable	13. Serial Number (if available): To be determined	14. Control Device (if any): Low NOx Burner (no control equipment form available) **Note: Attach applicable control equipment form(s)**

FUEL DESCRIPTION AND SPECIFICATIONS

15. Fuel Type	☐ Diesel Fuel (#) (gal/hr)	☒ Natural Gas (cf/hr)	☐ Coal (unit: /hr)	☐ Other Fuels (unit: /hr)
16. Full Load Consumption Rate		99,960 cf/hr		
17. Actual Consumption Rate		unavailable		
18. Fuel Heat Content (Btu/unit, LHV)		1020 BTU/cf		
19. Sulfur Content wt%		2,000 grains per million cubic feet		
20. Ash Content wt%		N/A		

STEAM DESCRIPTION AND SPECIFICATIONS

21. Steam Heat Content	NA	NA		
22. Steam Temperature (°F)	N/A	N/A		
23. Steam Pressure (psi)	N/A	N/A		
24 Steam Type	N/A	N/A	☐ Saturated ☐ Superheated	☐ Saturated ☐ Superheated

OPERATING LIMITS & SCHEDULE

25. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.):	Facility-Wide natural gas limit 1,692,245 MMBtu/yr	
26. Operating Schedule (hours/day, months/year, etc.):	8,760 hours/year	
27. NSPS Applicability: ☒ Yes ☐ No	If Yes, which subpart:	NSPS Subparts A and Dc

IDENTIFICATION

1. Company Name:	2. Facility Name:	3 Facility ID No:
J.R. Simplot Company	Caldwell Plant	027-00009
4. Brief Project Description:	Project Idaho – Install new process equipment and three new boilers	

EXEMPTION

Please see IDAPA 58.01.01.222 for a list of industrial boilers that are exempt from Permit to Construct requirements.

BOILER (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS

5. Type of Request: ☒ New Unit ☐ Unpermitted Existing Unit ☐ Modification to a Unit with Permit #:

6. Use of Boiler: ☒ % Used For Process ☐ % Used For Space Heat ☐ % Used For Generating Electricity ☐ Other:

7. Boiler ID Number: Boiler B	8. Rated Capacity: ☒ 98.0 Million British Thermal Units Per Hour (MMBtu/hr) ☐ 1,000 Pounds Steam Per Hour (1,000 lb steam/hr)	
9. Construction Date: After PTC issued	10. Manufacturer: To be determined	11. Model: To be determined
12. Date of Modification (if applicable): Not Applicable	13. Serial Number (if available): To be determined	14. Control Device (if any): Low NOx Burner (no control equipment form available) **Note: Attach applicable control equipment form(s)**

FUEL DESCRIPTION AND SPECIFICATIONS

15. Fuel Type	☐ Diesel Fuel (#) (gal/hr)	☒ Natural Gas (cf/hr)	☐ Coal (unit: /hr)	☒ Other Fuels (unit:cf /hr)
16. Full Load Consumption Rate		99,960 cf/hr when burning natural gas only [a]		31,740 cf/hr [a]
17. Actual Consumption Rate		unavailable		~15,870 cf/hr
18. Fuel Heat Content (Btu/unit, LHV)		1020 BTU/cf		600 BTU/cf
19. Sulfur Content wt%		2,000 grains per million cubic feet		<18.2 lb SO_2/MMscf biogas (after 98% Sulfur removal from biogas)
20. Ash Content wt%		N/A		N/A

Note:
a – When the boiler is burning a mixture of biogas and natural gas, the natural gas consumption will be less than the 99,960 cf/hr. The boiler will have a maximum heat input of 98.0 MMBtu/hr no matter the combination of natural gas and biogas being burned.

STEAM DESCRIPTION AND SPECIFICATIONS

21. Steam Heat Content	NA	NA		NA
22. Steam Temperature (°F)	N/A	N/A		N/A
23. Steam Pressure (psi)	N/A	N/A		N/A
24 Steam Type	N/A	N/A	☐ Saturated ☐ Superheated	N/A

OPERATING LIMITS & SCHEDULE

25. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.):	Facility-Wide natural gas limit 1,692,245 MMBtu/yr
26. Operating Schedule (hours/day, months/year, etc.):	8,760 hrs/yr
27. NSPS Applicability: ☒ Yes ☐ No — If Yes, which subpart:	Subparts A and Dc

DEQ AIR QUALITY PROGRAM
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Emissions Units - Industrial Boiler Information **Form EU5**

Revision 5

08/28/08

IDENTIFICATION

1. Company Name: J.R. Simplot Company	2. Facility Name: Caldwell Plant	3 Facility ID No: 027-00009
4. Brief Project Description:	Project Idaho – Install new process equipment and three new boilers	

EXEMPTION

Please see IDAPA 58.01.01.222 for a list of industrial boilers that are exempt from Permit to Construct requirements.

BOILER (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS

5. Type of Request: ☒ New Unit ☐ Unpermitted Existing Unit ☐ Modification to a Unit with Permit #:

6. Use of Boiler: ☒ % Used For Process ☐ % Used For Space Heat ☐ % Used For Generating Electricity ☐ Other:

7. Boiler ID Number: Boiler C	8. Rated Capacity: ☒ 98.0 Million British Thermal Units Per Hour (MMBtu/hr) ☐ 1,000 Pounds Steam Per Hour (1,000 lb steam/hr)	
9. Construction Date: After PTC issued	10. Manufacturer: To be determined	11. Model: To be determined
12. Date of Modification (if applicable): Not Applicable	13. Serial Number (if available): To be determined	14. Control Device (if any): Low NOx Burner (no control equipment form available) **Note: Attach applicable control equipment form(s)**

FUEL DESCRIPTION AND SPECIFICATIONS

15. Fuel Type	☐ Diesel Fuel (#) (gal/hr)	☒ Natural Gas (cf/hr)	☐ Coal (unit: /hr)	☒ Other Fuels (unit:cf /hr)
16. Full Load Consumption Rate		99,960 cf/hr when burning natural gas only [a]		31,740 cf/hr [a]
17. Actual Consumption Rate		unavailable		~15,870 cf/hr
18. Fuel Heat Content (Btu/unit, LHV)		1020 BTU/cf		600 BTU/cf
19. Sulfur Content wt%		2,000 grains per million cubic feet		<18.2 lb SO_2/MMscf biogas (after 98% Sulfur removal from biogas)
20. Ash Content wt%		N/A		N/A

Note:
a – When the boiler is burning a mixture of biogas and natural gas, the natural gas consumption will be less than the 99,960 cf/hr. The boiler will have a maximum heat input of 98.0 MMBtu/hr no matter the combination of natural gas and biogas being burned.

STEAM DESCRIPTION AND SPECIFICATIONS

21. Steam Heat Content	NA	NA		NA
22. Steam Temperature (°F)	N/A	N/A		N/A
23. Steam Pressure (psi)	N/A	N/A		N/A
24 Steam Type	N/A	N/A	☐ Saturated ☐ Superheated	N/A

OPERATING LIMITS & SCHEDULE

25. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.):	Facility-Wide natural gas limit 1,692,245 MMBtu/yr
26. Operating Schedule (hours/day, months/year, etc.):	8,760 hrs/yr
27. NSPS Applicability: ☒ Yes ☐ No — If Yes, which subpart:	NSPS Subparts A and Dc

IDENTIFICATION

1. Company Name:	J.R. Simplot Company	2. Facility Name:	Caldwell Plant	3. Facility ID No.:	027-00009
4. Brief Project Description:	Project Idaho – Install new process equipment and three new boilers				

AFTERBURNER/OXIDIZER INFORMATION

Equipment Description

5. Manufacturer:	To be determined	6. Model Number:	To be determined
7. Type	☐ Catalytic oxidizer ☐ Recuperative oxidizer ☐ Thermal (direct fired) oxidizer ☒ Regenerative thermal oxidizer (RTO) Number of chambers: Is a rotoconcentrator for VOC part of the design? ☐ Yes ☐ No	Media type for regenerative oxidizer: To be determined ☐ Saddles ☐ Monolith ☐ Other: For recuperative oxidizer, type of heat exchanger: ☐ Shell and tube ☐ Plate ☐ Other:	
8. Type of Burner	☒ Gas fired Btu rating: 4 – 6.6 MMBtu/hr per burner ☐ Electric KW rating: ☐ Oil fired Btu rating:	Blower scfm: 100,000 Blower hp: not available Manufacturer's emission guarantee for burners for: NOx: 0.1 lb/MMBtu (Maxon Kinemax Burner Spec.) CO: ppm @ % O_2	
9. Design Criteria	Retention time at normal operating temperature: to be determined Combustion chamber volume: to be determined Design gas flow: 100,000 scfm		
10. Pre-Treatment	Is a pre-treatment device for particulate removal present? ☐ Yes ☒ No If yes, indicate type: ☐ Cyclone ☐ Precooler ☐ Preheater ☐ Knock-out chamber ☐ Baghouse ☐ Other:		
11. Auxiliary Fuel Data	Auxiliary fuel available? ☐ Yes ☒ No If yes, indicate type:	Fuel usage (check one): Maximum / Minimum / Average ☐ Cubic feet (ft^3)/hour ☐ Gallons/hour	
12. For Catalytic Oxidizer	Catalyst manufacturer: Not Applicable Type of catalyst: ☐ Low temperature catalyst ☐ Commercial noble metal ☐ Other: Estimated catalyst life: years Catalyst cleaning frequency: months Method of cleaning:	Does the process emit any of the following potential catalyst masking agents or deactivators? ☐ Yes (if yes, check type[s] below) ☐ No ☐ Halogen ☐ Heavy metal ☐ Silicone ☐ Sulfur compounds ☐ Phosphorus compound ☐ Particulate matter	
13. Process Blower	Blower: not available Design flow rate: 100,000 scfm	Draft: ☐ Forced ☒ Induced	

Process Stream Characteristics				
14. Brief Description of Process	Process air from Line 1, Line 2, Line 3, and Line 4 fryers and dryers will be routed to the RTO.			
15. Emission Data	**Air contaminant**	**Concentration ppmv**	**Destruction efficiency %**	
	VOC	Not Applicable	>90%	
16. Instrumentation Data	To be determined			
17. Bakeout Process	Is bakeout a feature of the process? ☒ Yes ☐ No			
18. Operating Conditions		**Maximum**	**Minimum**	**Average**
	Operating temperature (degrees F):	To Be Determined	To Be Determined	To Be Determined
	Exit gas temperature (degrees F):	To Be Determined	To Be Determined	To Be Determined
	Pressure inches (H_2O):	To Be Determined	To Be Determined	To Be Determined
	Moisture content (%):	To Be Determined	To Be Determined	To Be Determined
	Gas volume (scfm):	100,000	To Be Determined	To Be Determined
	Gas velocity (duct-ft/min):	To Be Determined	To Be Determined	To Be Determined
19. Operating Schedule	Normal: > 310 days/yr Maximum: 8,760 hrs/yr			

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Air Permit Hotline – 1-877-5PERMIT

AIR PERMIT APPLICATION

Revision 6

10/7/09

IDENTIFICATION	
1. Company Name: J.R. Simplot Company	2. Facility Name: Caldwell Plant
3. Brief Project Description: Project Idaho – Install new process equipment and three new boilers	

APPLICABILITY DETERMINATION	
4. List applicable subparts of the New Source Performance Standards (NSPS) (40 CFR part 60). Examples of NSPS affected emissions units include internal combustion engines, boilers, turbines, etc. The applicant must thoroughly review the list of affected emissions units.	List of applicable subpart(s): Subpart A and Dc ☐ Not Applicable
5. List applicable subpart(s) of the National Emission Standards for Hazardous Air Pollutants (NESHAP) found in 40 CFR part 61 and 40 CFR part 63. Examples of affected emission units include solvent cleaning operations, industrial cooling towers, paint stripping and miscellaneous surface coating. EPA has a web page dedicated to NESHAP that should be useful to applicants.	List of applicable subpart(s): ☑ Not Applicable
6. For each subpart identified above, conduct a complete a regulatory analysis using the instructions and referencing the example provided on the following pages. **Note** - Regulatory reviews must be submitted with sufficient detail so that DEQ can verify applicability and document in legal terms why the regulation applies. Regulatory reviews that are submitted with insufficient detail will be determined incomplete.	☐ [Type a quote from the document or the summary of an interesting point. You ☑ DEQ has already been provided a detailed regulatory review. Give a reference to the document including the date. See Section 3.1 of PTC Application

IF YOU ARE UNSURE HOW TO ANSWER ANY OF THESE QUESTIONS, CALL THE AIR PERMIT HOTLINE AT 1-877-5PERMIT

It is emphasized that it is the applicant's responsibility to satisfy all technical and regulatory requirements, and that DEQ will help the applicant understand what those requirements are <u>prior</u> to the application being submitted but that DEQ will not perform the required technical or regulatory analysis on the applicant's behalf.

	DEQ AIR QUALITY PROGRAM 1410 N. Hilton Boise, ID 83706 For assistance: (208) 373-0502	PERMIT TO CONSTRUCT APPLICATION
Company Name:	J.R. Simplot Company	
Facility Name:	Caldwell Plant	
Facility ID No.:	027-00009	
Brief Project Description:	Project Idaho – Install new process equipment and three new boilers	

SUMMARY OF FACILITY WIDE EMISSION RATES FOR CRITERIA POLLUTANTS - POINT SOURCES

1.	2.	3.											
		PM_{10}		SO_2		NO_X		CO		VOC		Lead	
Emissions units	Stack ID	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Point Source(s)													
Boiler A	BLR_A	0.7	3.2	0.1	0.3	1.8	7.8	3.6	15.9	0.5	2.3	4.8E-05	2.1E-04
Boiler B	BLR_B	0.7	3.2	0.3	1.2	1.8	7.8	3.6	15.9	0.5	2.3	4.8E-05	2.1E-04
Boiler C	BLR_C	0.7	3.2	0.3	1.2	1.8	7.8	3.6	15.9	0.5	2.3	4.8E-05	2.1E-04
Regenerator Thermal Oxidizer	RTO	6.7	29.4	0.015	0.06	2.5	11.0	2.1	9.1	4.8	21.0	1.2E-05	5.4E-05
BIOGAS FLARE	FLAREST/ FLARELT	0.1	0.4	28.8	90.0	1.3	4.0	7.0	22.0	2.7	8.3	9.3E-06	2.9E-05
Warehouse A Emerg. Gen.	EG1	2.3E-03	2.3E-04	1.4E-04	1.4E-05	0.20	0.02	0.13	0.01	0.03	2.7E-03	–	–
Greenhouse Emerg. Gen.	EG2	6.0E-04	6.0E-05	3.5E-05	3.5E-06	0.05	0.01	0.03	3.3E-03	0.01	7.1E-04	–	–
Wastewater Plant Emerg. Gen.	EG3	0.16	1.6E-02	7.8E-04	7.8E-05	2.28	0.23	0.49	0.05	0.19	0.02	–	–
Tech Center Emerg. Gen.	EG4	2.9E-03	2.9E-04	3.5E-05	3.5E-06	0.12	0.01	0.03	3.3E-03	0.01	7.2E-04	–	–
Fire Water Pump	FWP1	0.34	3.4E-02	1.7E-03	1.7E-04	4.90	0.49	1.06	0.11	0.40	0.04	–	–
Total		9.6	39.5	29.6	92.6	16.7	39.3	21.7	78.8	9.7	36.3	1.7E-04	7.1E-04

DEQ AIR QUALITY PROGRAM
1410 N. Hilton
Boise, ID 83706
For assistance: (208) 373-0502

PERMIT TO CONSTRUCT APPLICATION

Company Name:	**J.R. Simplot Company**
Facility Name:	Caldwell Plant
Facility ID No.:	027-00009
Brief Project Description:	Project Idaho – Install new process equipment and three new boilers

SUMMARY OF FACILITY WIDE EMISSION RATES FOR CRITERIA POLLUTANTS - FUGITIVE SOURCES

		3.											
1.	2.	PM_{10}		SO_2		NO_X		CO		VOC		Lead	
Fugitive Source Name	Fugitive ID	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Fugitive Source(s)													
Solvent and Adhesive	--	--	--	--	--	--	--	--	--	--	2.80	--	--
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.80	0.00	0.00

Emission Inventory - Criteria Pollutants - Project emissions increase - Point Sources **Form EI-CP3**

	DEQ AIR QUALITY PROGRAM 1410 N. Hilton Boise, ID 83706 **For assistance: (208) 373-0502**	**PERMIT TO CONSTRUCT APPLICATION**
Company Name:	**J.R. Simplot Company**	
Facility Name:	Caldwell Plant	
Facility ID No.:	027-00009	
ief Project Description:	Project Idaho – Install new process equipment and three new boilers	

SUMMARY OF EMISSIONS INCREASE (PROPOSED PTE - PREVIOUSLY MODELED PTE) - POINT SOURCES

		3.											
1.	**2.**	**PM_{10}**		**SO_2**		**NO_X**		**CO**		**VOC**		**Lead**	
Emissions units	**Stack ID**	**lb/hr**	**T/yr**	**lb/hr**	**T/yr**	**lb/hr**	**T/yr**	**lb/hr**	**T/yr**	**lb/hr**	**T/yr**	**lb/hr**	**T/yr**
Point Source(s)													
Boiler A	BLR_A	0.7	3.2	0.1	0.3	1.8	7.8	3.6	15.9	0.5	2.3	4.8E-05	2.1E-04
Boiler B	BLR_B	0.7	3.2	0.3	1.2	1.8	7.8	3.6	15.9	0.5	2.3	4.8E-05	2.1E-04
Boiler C	BLR_C	0.7	3.2	0.3	1.2	1.8	7.8	3.6	15.9	0.5	2.3	4.8E-05	2.1E-04
Regenerator Thermal Ox	RTO	6.7	29.4	0.015	0.06	2.5	11.0	2.1	9.1	4.8	21.0	1.2E-05	5.4E-05
Total		8.9	39.0	0.8	2.6	7.9	34.5	12.9	56.7	6.4	28.0	1.6E-04	6.9E-04

Da

Emission Inventory Criteria Pollutants - Project emissions increase - Fugitive Sources **Form EI-CP4**

DEQ AIR QUALITY PROGRAM
1410 N. Hilton
Boise, ID 83706
For assistance: (208) 373-0502

PERMIT TO CONSTRUCT APPLICATION

Company Name:	**J.R. Simplot Company**
Facility Name:	Caldwell Plant
Facility ID No.:	027-00009
Brief Project Description:	Project Idaho – Install new process equipment and three new boilers

SUMMARY OF EMISSIONS INCREASE (PROPOSED PTE - PREVIOUSLY MODELED PTE) - FUGITIVE SOURCES

		3.											
1.	2.	PM_{10}		SO_2		NO_X		CO		VOC		Lead	
Fugitive Source Name	**Fugitive ID**	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Fugitive Source(s)													
Not Applicable													
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

DEQ AIR QUALITY PROGRAM
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PERMIT TO CONSTRUCT APPLICATION

Revision 3
4/5/2007

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

Company Name:	J.R. Simplot Company
Facility Name:	Caldwell Plant
Facility ID No.:	027-00009
Brief Project Description:	Project Idaho – Install new process equipment and three new boilers

SUMMARY OF AIR IMPACT ANALYSIS RESULTS - CRITERIA POLLUTANTS

		1.		2.	3.	4.		5.
Criteria Pollutants	**Averaging Period**	**Significant Impact Analysis Results (µg/m3)**	**Significant Contribution Level (µg/m3)**	**Full Impact Analysis Results [a] (µg/m3)**	**Background Concentration (µg/m3) [b]**	**Total Ambient Impact (µg/m3)**	**NAAQS (µg/m3)**	**Percent of NAAQS**
PM_{10}	24-hour	19	5	16.21	85.50	101.71	150	68%
	Annual	5	1	4.37	21.10	25.47	50	51%
SO_2	3-hr	7	25	–	–	–	1300	–
	24-hr	2	5	–	–	–	365	–
	Annual	0.4	1	–	–	–	80	–
NO_2	Annual	4.7	1	4.58	48.70	53.28	100	53%
CO	1-hr	–	2000	–	–	–	10000	–
	8-hr	–	500	–	–	–	40000	–

a - The 24-hour PM10 model-predicted concentration is the sixth highest prediction over five years. All other pollutant concentrations are the five-year average of the maximum model-predicted concentrations for each year.
b - PM10 background are the averages of 24-hour and annual concentrations from 2009 – 2010 at Nampa, ID. NO2 background are the average annual concentrations from 2009 – 2010 at St. Luke's (Meridian, ID).

DEQ AIR QUALITY PROGRAM
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PERMIT TO CONSTRUCT APPLICATION

Revision 3
3/27/2007

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

Company Name:	J.R. Simplot Company
Facility Name:	Caldwell Plant
Facility ID No.:	027-00009
Brief Project Description:	Project Idaho – Install new process equipment and three new boilers

POINT SOURCE STACK PARAMETERS

1. Emission Units	2. Stack ID	3a. UTM Easting [a] (m)	3b. UTM Northing [a] (m)	4. Base Elevation (m)	5. Stack Height (m)	6. Modeled Diameter (m)	7. Stack Exit Temperature (K)	8. Stack Exit Flowrate (acfm)	9. Stack Exit Velocity (m/s)	10. Stack Orientation (e.g. horizontal, rain cap)
Point Source(s)										
Boiler A	BLR_A	521,973	4,834,927	714	21.34	1.07	333.15	24,088	12.72	Vertical
Boiler B	BLR_B	521,973	4,834,919	714	21.34	1.07	333.15	24,088	12.72	Vertical
Boiler C	BLR_C	521,974	4,834,914	714	21.34	1.07	333.15	24,088	12.72	Vertical
Regenerator Thermal Oxidizer	RTO	522,021	4,834,932	714	21.34	2.13	317.04	163,235	21.55	Vertical
Biogas Flare - st. parameters	FLAREST	521,178	4,835,615	712	9.96	0.68	1,273.00	–	20.00	Vertical
Biogas Flare - lt. parameters	FLARELT	521,178	4,835,615	712	9.38	0.57	1,273.00	–	20.00	Vertical
Warehouse A Emerg. Gen.	EG1	521,675	4,835,101	714	13.41	0.05	844.26	141	32.83	Vertical
Greenhouse Emerg. Gen.	EG2	521,819	4,834,846	714	1.52	0.05	855.37	141	32.83	Vertical
Wastewater Plant Emerg. Gen.	EG3	521,308	4,835,272	714	2.44	0.06	844.26	336	50.00	Vertical
Tech Center Emerg. Gen.	EG4	521,800	4,834,899	714	12.60	0.06	855.37	141	21.01	Horizontal
Fire Water Pump	FWP1	521,681	4,834,838	714	3.66	0.13	727.59	1,342	50.00	Horizontal

Notes:
a - UTM Zone 11, NAD83 Datum

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline - 1-877-5PERMIT

PERMIT TO CONSTRUCT APPLICATION

Revision 3
4/5/2007

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

Company Name:	J.R. Simplot Company
Facility Name:	Caldwell Plant
Facility ID No.:	027-00009
Brief Project Description:	Project Idaho – Install new process equipment and three new boilers

FUGITIVE SOURCE PARAMETERS

1. Emission Units	2. Stack ID	3a. UTM Easting (m)	3b. UTM Northing (m)	4. Base Elevation (m)	5. Release Height (m)	6. Easterly Length (m)	7. Northerly Length (m)	8. Angle From North (°)	9. Initial Veritcal Dimension (m)	10. Initial Horizontal Dimension (m)
Area Source(s)										
Not Applicable										
Volume Source(s)										
Not Applicable										
Date										

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the

PERMIT TO CONSTRUCT APPLICATION

Revision 3
4/5/2007

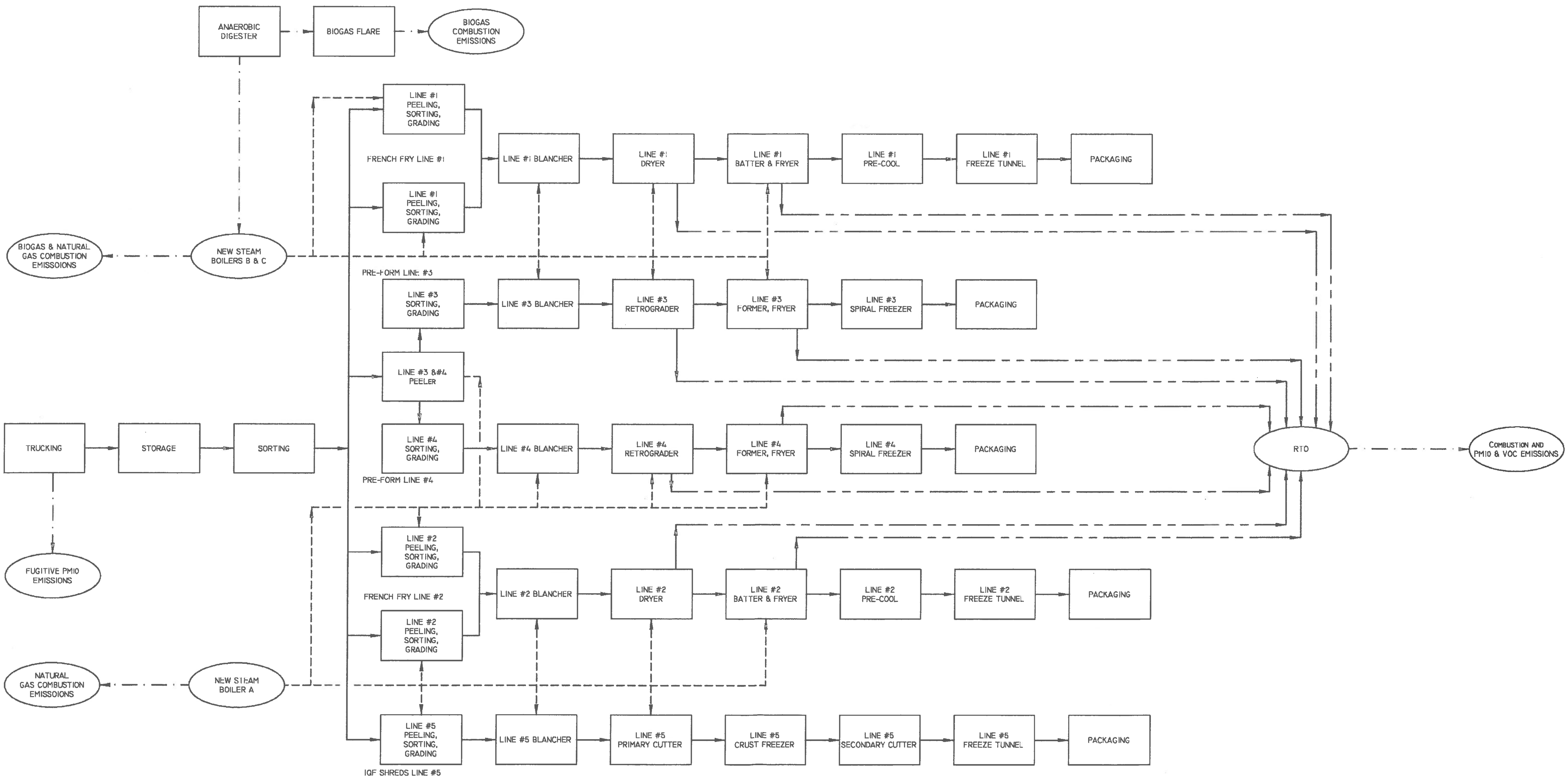
Please see instructions on page 2 before filling out the form.

Company Name:	J.R. Simplot Company
Facility Name:	Caldwell Plant
Facility ID No.:	027-00009
Brief Project Description:	Project Idaho – Install new process equipment and three new boilers

BUILDING AND STRUCTURE INFORMATION

1. Building ID Number	2. Length (ft)	3. Width (ft)	4. Base Elevation (m)	5. Building Height (m)	6. Number of Tiers	7. Description / Comments
Main Processing Building	992.45	782.15	714	9.1 & 12.2	2	See BPIP Prime Input File for Actual Dimensions
Zero Storage A	456.27	426.80	714	11.89	1	See BPIP Prime Input File for Actual Dimensions
Zero Storage C	537.07	192.72	714	12.80	1	See BPIP Prime Input File for Actual Dimensions
Warehouse L	323.79	258.46	714	9.75	1	See BPIP Prime Input File for Actual Dimensions
Technology Center	226.21	128.48	714	12.60	1	See BPIP Prime Input File for Actual Dimensions
Greenhouse	100.66	55.35	714	5.94	1	See BPIP Prime Input File for Actual Dimensions
Firewater Tank	87.50	87.50	714	11.28	1	See BPIP Prime Input File for Actual Dimensions
Firewater Pump Building	44.62	50.52	714	4.67	1	See BPIP Prime Input File for Actual Dimensions
Research Storage	123.92	85.56	714	7.62	1	See BPIP Prime Input File for Actual Dimensions
DAFT Building	41.27	51.99	714	8.03	1	See BPIP Prime Input File for Actual Dimensions
New Clarifier	83.90	83.90	714	3.12	1	See BPIP Prime Input File for Actual Dimensions
Old Clarifier	95.25	95.25	714	4.11	1	See BPIP Prime Input File for Actual Dimensions
Centriguge Building	31.79	43.21	714	6.65	1	See BPIP Prime Input File for Actual Dimensions
Recovery Building	74.05	33.83	714	10.46	1	See BPIP Prime Input File for Actual Dimensions
Screen Building	57.64	26.74	714	12.60	1	See BPIP Prime Input File for Actual Dimensions
West Section Plant 2	347.77	108.27	714	13.30	1	See BPIP Prime Input File for Actual Dimensions
Southwest Section Plant 2	121.39	59.06	714	7.70	1	See BPIP Prime Input File for Actual Dimensions
Central Section Plant 2	98.43	167.32	714	6.10	1	See BPIP Prime Input File for Actual Dimensions
East Section Plant 2	426.51	131.23	714	7.50	1	See BPIP Prime Input File for Actual Dimensions
North Section Plant 2	206.69	95.14	714	8.10	1	See BPIP Prime Input File for Actual Dimensions

Appendix B: Process Flow Diagram


ANAEROBIC DIGESTER
BIOGAS FLARE
BIOGAS COMBUSTION EMISSIONS
LINE #1 PEELING, SORTING, GRADING
FRENCH FRY LINE #1
LINE #1 PEELING, SORTING, GRADING
LINE #1 BLANCHER
LINE #1 DRYER
LINE #1 BATTER & FRYER
LINE #1 PRE-COOL
LINE #1 FREEZE TUNNEL
PACKAGING
BIOGAS & NATURAL GAS COMBUSTION EMISSIONS
NEW STEAM BOILERS B & C
PRE-FORM LINE #3
LINE #3 SORTING, GRADING
LINE #3 BLANCHER
LINE #3 RETROGRADER
LINE #3 FORMER, FRYER
LINE #3 SPIRAL FREEZER
PACKAGING
LINE #3 &#4 PEELER
TRUCKING
STORAGE
SORTING
LINE #4 SORTING, GRADING
PRE-FORM LINE #4
LINE #4 BLANCHER
LINE #4 RETROGRADER
LINE #4 FORMER, FRYER
LINE #4 SPIRAL FREEZER
PACKAGING
RTO
COMBUSTION AND PM10 & VOC EMISSIONS
FUGITIVE PM10 EMISSIONS
LINE #2 PEELING, SORTING, GRADING
FRENCH FRY LINE #2
LINE #2 PEELING, SORTING, GRADING
LINE #2 BLANCHER
LINE #2 DRYER
LINE #2 BATTER & FRYER
LINE #2 PRE-COOL
LINE #2 FREEZE TUNNEL
PACKAGING
NATURAL GAS COMBUSTION EMISSOIONS
NEW STEAM BOILER A
LINE #5 PEELING, SORTING, GRADING
IQF SHREDS LINE #5
LINE #5 BLANCHER
LINE #5 PRIMARY CUTTER
LINE #5 CRUST FREEZER
LINE #5 SECONDARY CUTTER
LINE #5 FREEZE TUNNEL
PACKAGING

Appendix C: Detailed Emission Calculations

J.R. Simplot Company - Project Idaho

Boiler A

	Boiler Specifications	
Operating hours	8,760 hours/year	
Firing rate	98.00 MMBtu/hr	HHV

Stack Exhaust Flow Information

F Factor (Natural Gas)	8,710 dscf/MMBtu	Source: EPA Method 19
Exhaust gas volume flow	14,226 dscfm @ 0%O2	
Exhaust gas volume flow - corrected	16,611 dscfm @ 3%O2	Corrected to 3% O2
Exhaust Temperature	140 F	Estimate - inline condensing economizer creates lower exhaust temp
Exhaust Oxygen	4 % O2	Estimate
Exhaust Moisture	17 % Moisture	Estimate
Exhaust gas volume - estimated actual	24,088 acfm	based on expected operating conditions

Criteria and PSD Pollutant Emissions

Pollutant	Emission Factor ppmvd	Emission Factor lb/MMBtu	Emission Rate [b] lb/hr	Emission Rate [b] tpy	MW
NOx [a]	15 (3% O2)	0.0182	1.79	7.82	46
CO [a]	50 (3% O2)	0.0370	3.62	15.87	28
SO2 [a]	--	0.0006	0.058	0.25	64
PM10 (Filt. & Cond.) [a]	--	0.0075	0.730	3.20	--
PM2.5 (Filt.& Cond.) [a]	--	0.0075	0.730	3.20	--
VOC [a]	--	0.0054	0.528	2.31	16
Lead [a]	--	4.9E-07	4.8E-05	2.1E-04	

PVM=mRuT --> V=mRuT/PM --> m=PVM/RuT
Ideal Gas Law

T =	293.15 K
P =	1 atm
Ru=	1.314 ft^3*atm/(K*lb-mol)

notes:

a - Proposed NOx and CO ppmvd limits are based on 3% Oxygen.

b - Emission factors based on AP-42, Section 1.4 (Natural Gas Combustion) corrected to lb/mmBtu using natural gas heat content (1,020 btu/cf).

c - Hourly emissions based on 98.0 MMBtu/hr, and annual emissions based on 8,760 hrs/yr.

Greenhouse Gas Emissions

Greenhouse Gas	Emission Factor [a] lb/MMBtu	Emission Rate [b] lb/hr	Emission Rate [b] tpy
CO2	117	11,455	50,174
CH4	2.2E-03	2.2E-01	9.4E-01
N2O	2.2E-04	2.2E-02	9.4E-02
CO2e [c]		11,466	50,223

notes:

a - Greenhouse Gas emission factors from 40 CFR 98, Subpart C, Table C-1.

b - Hourly emissions based on 98.0 MMBtu/hr, and annual emissions based on 8,760 hrs/yr.

c - CO2e calculated based on global warming potential (GWP) for each Greenhouse gas: CO2 = 1; CH4 = 21; and N2O = 310 (40 CFR Part 98, Subpart A).

Toxic Air Pollutant Emissions

CAS	Compound	Emission Factor [a] lb/mmscf	Emission Factor [a] lb/mmBtu	Emission Rate [e] lb/hr	Emission Rate [e] lb/yr
7440-38-2	Arsenic	2.0E-04	2.0E-07	1.9E-05	0.2
7440-39-3	Barium	4.4E-03	4.3E-06	4.2E-04	4
71-43-2	Benzene	2.1E-03	2.1E-06	2.0E-04	2
7440-41-7	Beryllium	1.2E-05	1.2E-08	1.2E-06	0.010
7440-43-9	Cadmium	1.1E-03	1.1E-06	1.1E-04	0.9
7440-47-3_Cr	Chromium-Total [b]	1.4E-03	1.4E-06	1.3E-04	1.2
7440-47-3_CrIII	Chromium III	1.3E-03	1.3E-06	1.3E-04	1.1
7440-47-3_CrVI	Chromium VI	5.6E-05	5.5E-08	5.4E-06	0.05
7440-48-4	Cobalt	8.4E-05	8.2E-08	8.1E-06	0.07
7440-50-8	Copper	8.5E-04	8.3E-07	8.2E-05	1
50-00-0	Formaldehyde	7.5E-02	7.4E-05	7.2E-03	63
110-54-3	Hexane	1.8E+00	1.8E-03	1.7E-01	1,515
7439-96-5	Manganese	3.8E-04	3.7E-07	3.7E-05	0.32
7439-97-6	Mercury	2.6E-04	2.5E-07	2.5E-05	0.22
7439-98-7	Molybdenum	1.1E-03	1.1E-06	1.1E-04	0.9
91-20-3	Naphthalene	6.1E-04	6.0E-07	5.9E-05	0.5
7440-02-0	Nickel	2.1E-03	2.1E-06	2.0E-04	1.8
109-66-0	Pentane	2.6E+00	2.5E-03	2.5E-01	2,188
7782-49-2	Selenium	2.4E-05	2.4E-08	2.3E-06	0.02
108-88-3	Toluene	3.4E-03	3.3E-06	3.3E-04	2.9
10024-97-2	Nitrous Oxide	2.2E+00	2.2E-03	2.1E-01	1,852
56-55-3	Benz(a)anthracene	1.8E-06	1.8E-09	1.7E-07	0.002
50-32-8	Benzo(a)pyrene	1.2E-06	1.2E-09	1.2E-07	0.001
205-99-2	Benzo(b)fluoranthene	1.8E-06	1.8E-09	1.7E-07	0.002
207-08-9	Benzo(k)fluoranthene	1.8E-06	1.8E-09	1.7E-07	0.002
218-01-9	Chrysene	1.8E-06	1.8E-09	1.7E-07	0.002
53-70-3	Dibenzo(a,h)anthrancene	1.2E-06	1.2E-09	1.2E-07	0.001
193-39-5	Indeno(1,2,3-cd)pyrene	1.8E-06	1.8E-09	1.7E-07	0.002
91-57-6	3-Methylchloranthrene	1.8E-06	1.8E-09	1.7E-07	0.002
23521-22-6	Dichlorobenzene	1.2E-03	1.2E-06	1.2E-04	1.0
7440-66-6	Zinc	2.9E-02	2.8E-05	2.8E-03	24
7664-41-7	Ammonia [c]	3.2E+00	3.1E-03	3.1E-01	2,693
PAH	PAH (total) [d]	-	-	1.10E-06	0.010

notes:

a - All other HAP and TAP emission factors based on AP-42, Section 1.4 (Natural Gas Combustion) corrected to lb/mmBtu using natural gas heat content (1,020 btu/cf).

b - AP-42 provides a chromium emission factor for natural gas fired external combustion, but does not include guidance for partitioning emissions between the carcinogenic chromium VI (hexavalent chromium) and the chromium III (trivalent chromium). EPA's 2002 National-Scale Air Toxics Assessment (NATA) released June 2009 includes a chromium speciation profile for natural gas-fired boilers, which indicates 4 percent of total chromium is chromium VI and 96 percent is chromium III. ENVIRON assumed 4 percent of total chromium emissions were emitted as chromium VI.

c - Ammonia emission factor from EPA's WebFIRE database (http://cfpub.epa.gov/oarweb/index.cfm?action=fire.main)

d - (Polycyclic Organic Matter) For emissions of PAH mixtures, the following PAHs and shall be considered together as one TAP, equivalent in potency to benzo(a)pyrene: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indenol(1,2,3,-cd)pyrene, benzo(a)pyrene.

e - Hourly emissions based on 98.0 MMBtu/hr and annual emissions based on 8,760 hrs/yr.

J.R. Simplot Company - Project Idaho

Boiler B

	Boiler Specifications	
Operating hours	8,760 hours/year	
Firing rate	98.00 MMBtu/hr	HHV
Stack Exhaust Flow Information		
F Factor (Natural Gas)	8,710 dscf/MMBtu	Source: EPA Method 19
Exhaust gas volume flow	14,226 dscfm @ 0%O2	
Exhaust gas volume flow - corrected	16,611 dscfm @ 3%O2	Corrected to 3% O2
Exhaust Temperature	140 F	Estimate - inline condensing economizer creates lower exhaust temp
Exhaust Oxygen	4 % O2	Estimate
Exhaust Moisture	17 % Moisture	Estimate
Exhaust gas volume - estimated actual	24,088 acfm	based on expected operating conditions

Criteria and PSD Pollutant Emissions

Pollutant	Emission Factor ppmvd	Emission Factor lb/MMBtu	Emission Rate [c] lb/hr	Emission Rate [c] tpy	MW
NOx [a]	15 (3% O2)	0.0182	1.79	7.82	46
CO [a]	50 (3% O2)	0.0370	3.62	15.87	28
SO2 [b]	--	0.0035	0.35	1.15	64
PM10 (Filt. & Cond.) [b]	--	0.0075	0.730	3.20	--
PM2.5 (Filt.& Cond.) [b]	--	0.0075	0.730	3.20	--
VOC [b]	--	0.0054	0.528	2.31	16
Lead [b]	--	4.9E-07	4.8E-05	2.1E-04	

PVM=mRuT --> V=mRuT/PM --> m=PVM/RuT

Ideal Gas Law

T =	293.15 K	
P =	1 atm	
Ru=	1.314 ft^3*atm/(K*lb-mol)	

notes:

a - Proposed NOx and CO ppmvd limits are based on 3% Oxygen.

b - Emission factors based on AP-42, Section 1.4 (Natural Gas Combustion) corrected to lb/mmBtu using natural gas heat content (1,020 btu/cf). Boiler also capable of burning biogas from anaerobic digester. Sulfur scrubber will remove 98 percent of sulfur in biogas, and assume half of biogas will go to Boiler B and half to Boiler C.

c - Hourly emissions based on 98.0 MMBtu/hr, and annual emissions based on 8,760 hrs/yr.

Greenhouse Gas Emissions

Greenhouse Gas	Emission Factor [a] lb/MMBtu	Emission Rate [b] lb/hr	Emission Rate [b] tpy
CO2	117	11,455	50,174
CH4	2.2E-03	2.2E-01	9.4E-01
N2O	2.2E-04	2.2E-02	9.4E-02
CO2e [c]		11,466	50,223

notes:

a - Greenhouse Gas emission factors from 40 CFR 98, Subpart C, Table C-1.

b - Hourly emissions based on 98.0 MMBtu/hr, and annual emissions based on 8,760 hrs/yr.

c - CO2e calculated based on global warming potential (GWP) for each Greenhouse gas: CO2 = 1; CH4 = 21; and N2O = 310 (40 CFR Part 98, Subpart A).

Toxic Air Pollutant Emissions

CAS	Compound	Emission Factor [a] lb/mmscf	Emission Factor [a] lb/mmBtu	Emission Rate [e] lb/hr	Emission Rate [e] lb/yr
7440-38-2	Arsenic	2.0E-04	2.0E-07	1.9E-05	0.2
7440-39-3	Barium	4.4E-03	4.3E-06	4.2E-04	4
71-43-2	Benzene	2.1E-03	2.1E-06	2.0E-04	2
7440-41-7	Beryllium	1.2E-05	1.2E-08	1.2E-06	0.010
7440-43-9	Cadmium	1.1E-03	1.1E-06	1.1E-04	0.9
7440-47-3_Cr	Chromium-Total [b]	1.4E-03	1.4E-06	1.3E-04	1.2
7440-47-3_CrIII	Chromium III	1.3E-03	1.3E-06	1.3E-04	1.1
7440-47-3_CrVI	Chromium VI	5.6E-05	5.5E-08	5.4E-06	0.05
7440-48-4	Cobalt	8.4E-05	8.2E-08	8.1E-06	0.07
7440-50-8	Copper	8.5E-04	8.3E-07	8.2E-05	1
50-00-0	Formaldehyde	7.5E-02	7.4E-05	7.2E-03	63
110-54-3	Hexane	1.8E+00	1.8E-03	1.7E-01	1,515
7439-96-5	Manganese	3.8E-04	3.7E-07	3.7E-05	0.32
7439-97-6	Mercury	2.6E-04	2.5E-07	2.5E-05	0.22
7439-98-7	Molybdenum	1.1E-03	1.1E-06	1.1E-04	0.9
91-20-3	Naphthalene	6.1E-04	6.0E-07	5.9E-05	0.5
7440-02-0	Nickel	2.1E-03	2.1E-06	2.0E-04	1.8
109-66-0	Pentane	2.6E+00	2.5E-03	2.5E-01	2,188
7782-49-2	Selenium	2.4E-05	2.4E-08	2.3E-06	0.02
108-88-3	Toluene	3.4E-03	3.3E-06	3.3E-04	2.9
10024-97-2	Nitrous Oxide	2.2E+00	2.2E-03	2.1E-01	1,852
56-55-3	Benz(a)anthracene	1.8E-06	1.8E-09	1.7E-07	0.002
50-32-8	Benzo(a)pyrene	1.2E-06	1.2E-09	1.2E-07	0.001
205-99-2	Benzo(b)fluoranthene	1.8E-06	1.8E-09	1.7E-07	0.002
207-08-9	Benzo(k)fluoranthene	1.8E-06	1.8E-09	1.7E-07	0.002
218-01-9	Chrysene	1.8E-06	1.8E-09	1.7E-07	0.002
53-70-3	Dibenzo(a,h)anthrancene	1.2E-06	1.2E-09	1.2E-07	0.001
193-39-5	Indeno(1,2,3-cd)pyrene	1.8E-06	1.8E-09	1.7E-07	0.002
91-57-6	3-Methylchloranthrene	1.8E-06	1.8E-09	1.7E-07	0.002
23521-22-6	Dichlorobenzene	1.2E-03	1.2E-06	1.2E-04	1.0
7440-66-6	Zinc	2.9E-02	2.8E-05	2.8E-03	24
7664-41-7	Ammonia [c]	3.2E+00	3.1E-03	3.1E-01	2,693
PAH	PAH (total) [d]	-	-	1.1E-06	0.010

notes:

a - All other HAP and TAP emission factors based on AP-42, Section 1.4 (Natural Gas Combustion) corrected to lb/mmBtu using natural gas heat content (1,020 btu/cf).

b - AP-42 provides a chromium emission factor for natural gas fired external combustion, but does not include guidance for partitioning emissions between the carcinogenic chromium VI (hexavalent chromium) and the chromium III (trivalent chromium). EPA's 2002 National-Scale Air Toxics Assessment (NATA) released June 2009 includes a chromium speciation profile for natural gas-fired boilers, which indicates 4 percent of total chromium is chromium VI and 96 percent is chromium III. ENVIRON assumed 4 percent of total chromium emissions were emitted as chromium VI.

c - Ammonia emission factor from EPA's WebFIRE database (http://cfpub.epa.gov/oarweb/index.cfm?action=fire.main)

d - (Polycyclic Organic Matter) For emissions of PAH mixtures, the following PAHs and shall be considered together as one TAP, equivalent in potency to benzo(a)pyrene: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indenol(1,2,3,-cd)pyrene, benzo(a)pyrene.

e - Hourly emissions based on 98.0 MMBtu/hr and annual emissions based on 8,760 hrs/yr.

J.R. Simplot Company - Project Idaho

Boiler C

	Boiler Specifications	
Operating hours	8,760 hours/year	
Firing rate	98.00 MMBtu/hr	HHV

Stack Exhaust Flow Information

F Factor (Natural Gas)	8,710 dscf/MMBtu	Source: EPA Method 19
Exhaust gas volume flow	14,226 dscfm @ 0%O2	
Exhaust gas volume flow - corrected	16,611 dscfm @ 3%O2	Corrected to 3% O2
Exhaust Temperature	140 F	Estimate - inline condensing economizer creates lower exhaust temp
Exhaust Oxygen	4 % O2	Estimate
Exhaust Moisture	17 % Moisture	Estimate
Exhaust gas volume - estimated actual	24,088 acfm	based on expected operating conditions

Criteria and PSD Pollutant Emissions

	Emission Factor		Emission Rate [c]		
Pollutant	ppmvd	lb/MMBtu	lb/hr	tpy	MW
NOx [a]	15 (3% O2)	0.0182	1.79	7.82	46
CO [a]	50 (3% O2)	0.0370	3.62	15.87	28
SO2 [b]	--	0.0035	0.35	1.15	64
PM10 (Filt. & Cond.) [b]	--	0.0075	0.730	3.20	--
PM2.5 (Filt.& Cond.) [b]	--	0.0075	0.730	3.20	--
VOC [b]	--	0.0054	0.528	2.31	16
Lead [b]	--	4.9E-07	4.8E-05	2.1E-04	

PVM=mRuT --> V=mRuT/PM --> m=PVM/RuT

Ideal Gas Law

T =	293.15 K	
P =	1 atm	
Ru=	1.314 ft^3*atm/(K*lb-mol)	

notes:

a - Proposed NOx and CO ppmvd limits are based on 3% Oxygen.

b - Emission factors based on AP-42, Section 1.4 (Natural Gas Combustion) corrected to lb/mmBtu using natural gas heat content (1,020 btu/cf). Boiler also capable of burning biogas from anaerobic digester. Sulfur scrubber will remove 98 percent of sulfur in biogas, and assume half of biogas will go to Boiler B and half to Boiler C.

c - Hourly emissions based on 98.0 MMBtu/hr, and annual emissions based on 8,760 hrs/yr.

Greenhouse Gas Emissions

	Emission Factor [a]	Emission Rate [b]	
Greenhouse Gas	lb/MMBtu	lb/hr	tpy
CO2	117	11,455	50,174
CH4	2.2E-03	2.2E-01	9.4E-01
N2O	2.2E-04	2.2E-02	9.4E-02
CO2e [c]		11,466	50,223

notes:

a - Greenhouse Gas emission factors from 40 CFR 98, Subpart C, Table C-1.

b - Hourly emissions based on 98.0 MMBtu/hr, and annual emissions based on 8,760 hrs/yr.

c - CO2e calculated based on global warming potential (GWP) for each Greenhouse gas: CO2 = 1; CH4 = 21; and N2O = 310 (40 CFR Part 98, Subpart A).

Toxic Air Pollutant Emissions

		Emission Factor [a]		**Emission Rate [e]**	
CAS	**Compound**	**lb/mmscf**	**lb/mmBtu**	**lb/hr**	**lb/yr**
7440-38-2	Arsenic	2.0E-04	2.0E-07	1.9E-05	0.2
7440-39-3	Barium	4.4E-03	4.3E-06	4.2E-04	4
71-43-2	Benzene	2.1E-03	2.1E-06	2.0E-04	2
7440-41-7	Beryllium	1.2E-05	1.2E-08	1.2E-06	0.010
7440-43-9	Cadmium	1.1E-03	1.1E-06	1.1E-04	0.9
7440-47-3_Cr	Chromium-Total [b]	1.4E-03	1.4E-06	1.3E-04	1.2
7440-47-3_CrIII	Chromium III	1.3E-03	1.3E-06	1.3E-04	1.1
7440-47-3_CrVI	Chromium VI	5.6E-05	5.5E-08	5.4E-06	0.05
7440-48-4	Cobalt	8.4E-05	8.2E-08	8.1E-06	0.07
7440-50-8	Copper	8.5E-04	8.3E-07	8.2E-05	1
50-00-0	Formaldehyde	7.5E-02	7.4E-05	7.2E-03	63
110-54-3	Hexane	1.8E+00	1.8E-03	1.7E-01	1,515
7439-96-5	Manganese	3.8E-04	3.7E-07	3.7E-05	0.32
7439-97-6	Mercury	2.6E-04	2.5E-07	2.5E-05	0.22
7439-98-7	Molybdenum	1.1E-03	1.1E-06	1.1E-04	0.9
91-20-3	Naphthalene	6.1E-04	6.0E-07	5.9E-05	0.5
7440-02-0	Nickel	2.1E-03	2.1E-06	2.0E-04	1.8
109-66-0	Pentane	2.6E+00	2.5E-03	2.5E-01	2,188
7782-49-2	Selenium	2.4E-05	2.4E-08	2.3E-06	0.02
108-88-3	Toluene	3.4E-03	3.3E-06	3.3E-04	2.9
10024-97-2	Nitrous Oxide	2.2E+00	2.2E-03	2.1E-01	1,852
56-55-3	Benz(a)anthracene	1.8E-06	1.8E-09	1.7E-07	0.002
50-32-8	Benzo(a)pyrene	1.2E-06	1.2E-09	1.2E-07	0.001
205-99-2	Benzo(b)fluoranthene	1.8E-06	1.8E-09	1.7E-07	0.002
207-08-9	Benzo(k)fluoranthene	1.8E-06	1.8E-09	1.7E-07	0.002
218-01-9	Chrysene	1.8E-06	1.8E-09	1.7E-07	0.002
53-70-3	Dibenzo(a,h)anthrancene	1.2E-06	1.2E-09	1.2E-07	0.001
193-39-5	Indeno(1,2,3-cd)pyrene	1.8E-06	1.8E-09	1.7E-07	0.002
91-57-6	3-Methylchloranthrene	1.8E-06	1.8E-09	1.7E-07	0.002
23521-22-6	Dichlorobenzene	1.2E-03	1.2E-06	1.2E-04	1.0
7440-66-6	Zinc	2.9E-02	2.8E-05	2.8E-03	24
7664-41-7	Ammonia [c]	3.2E+00	3.1E-03	3.1E-01	2,693
PAH	PAH (total) [d]	-	-	1.10E-06	0.010

notes:

a - All other HAP and TAP emission factors based on AP-42, Section 1.4 (Natural Gas Combustion) corrected to lb/mmBtu using natural gas heat content (1,020 btu/cf).

b - AP-42 provides a chromium emission factor for natural gas fired external combustion, but does not include guidance for partitioning emissions between the carcinogenic chromium VI (hexavalent chromium) and the chromium III (trivalent chromium). EPA's 2002 National-Scale Air Toxics Assessment (NATA) released June 2009 includes a chromium speciation profile for natural gas-fired boilers, which indicates 4 percent of total chromium is chromium VI and 96 percent is chromium III. ENVIRON assumed 4 percent of total chromium emissions were emitted as chromium VI.

c - Ammonia emission factor from EPA's WebFIRE database (http://cfpub.epa.gov/oarweb/index.cfm?action=fire.main)

d - (Polycyclic Organic Matter) For emissions of PAH mixtures, the following PAHs and shall be considered together as one TAP, equivalent in potency to benzo(a)pyrene: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indenol(1,2,3,-cd)pyrene, benzo(a)pyrene.

e - Hourly emissions based on 98.0 MMBtu/hr and annual emissions based on 8,760 hrs/yr.

Project Idaho

Fryer and dryer uncontrolled emissions

Simplot source tests

	Source Test Date	PM Front-half emissions Method 5 lbs/hr	PM Back-half emissions Method 202 lbs/hr	PM Total emissions lbs/hr	Production rate finished lbs/hr	VOC Method 25A lbs/hr	Emission Factor EF PM-Total lbs/M lbs	Emission Factor EF VOC lbs/M lbs
Aberdeen Line 1 batter french fry - fryer uncontrolled	4/28/1998	0.59	2.94	3.53	17,550		0.201	
Aberdeen Line 2 preform fryer - fryer uncontrolled	6/7/1999	0.52	2.4	2.92	2,400		1.217	
Nampa Main Line batter french fry - Fryerafter heat exchanger	9/15/2005	2.66	3.21	5.87	23,830		0.246	
Caldwell Line 1 preform fryer - fryer uncontrolled	5/28/1999	1.66	1.4	3.06	6,480		0.472	
Heyburn Line 2 french fry, Fryer Reyco air washed controlled	2/22/2000 fryer, 10/28/2000 dryer	2.9	3.68	6.58	21,690	2.2	0.303	0.101
Heyburn Line 3, preform fryer, fryer Rotoclone controlled	2/15/2000 fryer, 9/21/2000 dryer	0.42	0.71	1.13	2,378	1.12	0.475	0.471
Caldwell Line 1 preform line dryer	10/16/2000	0.36	0.59	0.95	8,331		0.114	
Caldwell Line 4 french fry line dryer	10/18/2000	3.14	3.11	6.25	34,095		0.183	
Caldwell Line 6 french fry line dryer	10/14/2000	3.03	4.15	7.18	36,211		0.198	
Nampa Main Line dryer	4/10/1995				35,435	7.07		0.200

Project Idaho

	Line 1 fryer 55,000 lbs/hr		Line 1 dryer 55,000 lbs/hr		Line 2 fryer 55,000 lbs/hr		Line 2 Dryer 55,000 lbs/hr		Line 3 fryer 11,000 lbs/hr		Line 3 dryer 11,000 lbs/hr		Line 4 fryer 11,000 lbs/hr		Line 4 dryer 11,000 lbs/hr	
	PM Total lbs/hr	VOC Total lbs/hr	PM Total lbs/hr	VOC Total lbs/hr	PM Total lbs/hr	VOC Total lbs/hr	PM Total lbs/hr	VOC Total lbs/hr	PM Total lbs/hr	VOC Total lbs/hr	PM Total lbs/hr	VOC Total lbs/hr	PM Total lbs/hr	VOC Total lbs/hr	PM Total lbs/hr	VOC Total lbs/hr
Aberdeen Line 1 batter french fry - fryer uncontrolled	11.06				11.06											
Aberdeen Line 2 preform fryer - fryer uncontrolled									13.38				13.38			
Nampa Main Line batter french fry - Fryerafter heat exchanger	13.55				13.55											
Caldwell Line 1 preform fryer - fryer uncontrolled									5.19				5.19			
Heyburn Line 2 french fry, Fryer Reyco air washed controlled	16.69	5.58			16.69	5.58										
Heyburn Line 3, preform fryer, fryer Rotoclone controlled									5.23	5.18			5.23	5.18		
Caldwell Line 1 preform line dryer											1.25				1.25	
Caldwell Line 4 french fry line dryer			10.08				10.08									
Caldwell Line 6 french fry line dryer			10.91				10.91									
Nampa Main Line dryer				10.97				10.97				2.19				2.19
Average	13.77	5.58	10.49	10.97	13.77	5.58	10.49	10.97	7.93	5.18	1.25	2.19	7.93	5.18	1.25	2.19

Notes:

1. lbs/M lbs for emission factor is lbs of emissions (either PM or VOC) per thousand lbs of finshed potato product
2. In the Simplot source tests, all Production rates are the actual measured finshed potato product rates during the one-hour source test
3. Even though PM and VOC are distinctly different tests, because of the nature of our emissions, they are not additive for total emissions to a control device.
4. Use the **Average** for the input to an RTO unit. The database for uncontrolled emissions from fryers and dryers is very limited.
5. Even though there is data for Heyburn Lines 2 & 3 with Reyco air wash and Rotoclone control, it has always been considered that this control for emissions is minor, the control was meant for large particles
6. There is no source test data for pre-form dryer VOC, so the french fry dryer VOC emission factor was used as a default value

J.R. Simplot Company - Project Idaho

Regenerator Thermal Oxidizer

- Controls all dryer and fryer emissions.

Operating hours	8,760 hours/year	
Maximum heat input rate (startup)	25.20 MMBtu/hr	Anguil email 10/12/2011
Annual average heat input (SFI Mode)	12.60 MMBtu/hr	Anguil email 10/12/2011
Fryer & Dryer Emissions with Control Efficiencies		
Maximum PM Emissions - Fryers and Dryers	66.9 lb PM/hr	
Maximum VOC Emissions - Fryers and Dryers	47.9 lb VOC/hr	
PM Destruction Efficiency	90% Control	
VOC Destruction Efficiency	90% Control	
Stack Exhaust Flow Information		
Exhaust Temperature	111 degree F	Burns McDonnell Option 1 - 10/10/2011
Exhaust gas volume	100,000 scfm	Burns McDonnell Option 1 - 10/10/2011
Exhaust gas volume - calculated	163,235 acfm	

Criteria and PSD Pollutant Emissions

	RTO Burner			RTO Exhaust	
	Emission Factor [a]	Emission Rate [b]		Emission Rate [c]	
Pollutant	lb/MMBtu	lb/hr	tpy	lb/hr	tpy
NOx	0.1000	2.52	11.04	2.52	11.04
CO	0.0824	2.08	9.09	2.08	9.09
SO2	0.0006	0.015	0.06	1.5E-02	0.06
PM10 (Filt. & Cond.)	0.0075	0.188	0.82	6.71	29.38
PM2.5 (Filt.& Cond.)	0.0075	0.188	0.82	6.71	29.38
VOC	0.0054	0.136	0.60	4.80	21.02
Lead	4.9E-07	1.2E-05	5.4E-05	1.2E-05	5.4E-05

notes:

a - NOx emission factor for Maxon Kinemax burners. All other criteria pollutant emission factors based on AP-42, Section 1.4 (Natural Gas Combustion) corrected to lb/mmBtu using natural gas heat content (1,020 btu/cf)

b - RTO Burner emissions based on 25.2 MMBtu/hr, and annual emissions based on 8,760 hrs/yr.

c - RTO exhaust emissions include RTO burner, Dryer Lines 1 - 4, and Fryer Lines 1 - 4. Particulate matter and VOC emissions include 90% control (Vendor Guarantee).

Greenhouse Gas Emissions

	Fryer & Dryer Gas [a]	NG Emission Factor [b]	RTO Burner Emission Rate [c]	
Greenhouse Gas	lb/hr	lb/MMBtu	lb/hr	tpy
CO2	175	117	3,121	13,670
CH4	--	2.2E-03	5.5E-02	2.4E-01
N2O	--	2.2E-04	5.5E-03	2.4E-02
CO2e [d]			3,124	13,683

notes:

a - Greenhouse Gas emissions from converting VOC in fryer and dryer exhaust to CO2. VOC emissions assumed to be as carbon basis and conservatively assume 100 percent conversion to CO2.

b - Greenhouse Gas emission factors for natural gas combustion from 40 CFR 98, Subpart C, Table C-1.

c - Hourly emissions based on 25.2 MMBtu/hr, and annual emissions based on 8,760 hrs/yr.

d - CO2e calculated based on global warming potential (GWP) for each Greenhouse gas: CO2 = 1; CH4 = 21; and N2O = 310 (40 CFR Part 98, Subpart A).

Toxic Air Pollutant Emissions

		Emission Factor [a]		RTO Burner Emission Rate [e]	
CAS	Compound	lb/mmscf	lb/mmBtu	lb/hr	lb/yr
7440-38-2	Arsenic	2.0E-04	2.0E-07	4.9E-06	4.3E-02
7440-39-3	Barium	4.4E-03	4.3E-06	1.1E-04	9.5E-01
71-43-2	Benzene	2.1E-03	2.1E-06	5.2E-05	4.5E-01
7440-41-7	Beryllium	1.2E-05	1.2E-08	3.0E-07	2.6E-03
7440-43-9	Cadmium	1.1E-03	1.1E-06	2.7E-05	2.4E-01
7440-47-3_Cr	Chromium-Total [b]	1.4E-03	1.4E-06	3.5E-05	3.0E-01
7440-47-3_CrIII	Chromium III	1.3E-03	1.3E-06	3.3E-05	2.9E-01
7440-47-3_CrVI	Chromium VI	5.6E-05	5.5E-08	1.4E-06	1.2E-02
7440-48-4	Cobalt	8.4E-05	8.2E-08	2.1E-06	1.8E-02
7440-50-8	Copper	8.5E-04	8.3E-07	2.1E-05	1.8E-01
50-00-0	Formaldehyde	7.5E-02	7.4E-05	1.9E-03	1.6E+01
110-54-3	Hexane	1.8E+00	1.8E-03	4.4E-02	3.9E+02
7439-96-5	Manganese	3.8E-04	3.7E-07	9.4E-06	0.08
7439-97-6	Mercury	2.6E-04	2.5E-07	6.4E-06	0.06
7439-98-7	Molybdenum	1.1E-03	1.1E-06	2.7E-05	2.4E-01
91-20-3	Naphthalene	6.1E-04	6.0E-07	1.5E-05	1.3E-01
7440-02-0	Nickel	2.1E-03	2.1E-06	5.2E-05	4.5E-01
109-66-0	Pentane	2.6E+00	2.5E-03	6.4E-02	5.6E+02
7782-49-2	Selenium	2.4E-05	2.4E-08	5.9E-07	5.2E-03
108-88-3	Toluene	3.4E-03	3.3E-06	8.4E-05	7.4E-01
10024-97-2	Nitrous Oxide	2.2E+00	2.2E-03	5.4E-02	4.8E+02
56-55-3	Benz(a)anthracene	1.8E-06	1.8E-09	4.4E-08	3.9E-04
50-32-8	Benzo(a)pyrene	1.2E-06	1.2E-09	3.0E-08	2.6E-04
205-99-2	Benzo(b)fluoranthene	1.8E-06	1.8E-09	4.4E-08	3.9E-04
207-08-9	Benzo(k)fluoranthene	1.8E-06	1.8E-09	4.4E-08	3.9E-04
218-01-9	Chrysene	1.8E-06	1.8E-09	4.4E-08	3.9E-04
53-70-3	Dibenzo(a,h)anthrancene	1.2E-06	1.2E-09	3.0E-08	2.6E-04
193-39-5	Indeno(1,2,3-cd)pyrene	1.8E-06	1.8E-09	4.4E-08	3.9E-04
91-57-6	3-Methylchloranthrene	1.8E-06	1.8E-09	4.4E-08	3.9E-04
23521-22-6	Dichlorobenzene	1.2E-03	1.2E-06	3.0E-05	2.6E-01
7440-66-6	Zinc	2.9E-02	2.8E-05	7.2E-04	6.3E+00
7664-41-7	Ammonia [c]	3.2E+00	3.1E-03	7.9E-02	6.9E+02
PAH	PAH (total) [d]	-	-	2.82E-07	2.47E-03

notes:

a - All other HAP and TAP emission factors based on AP-42, Section 1.4 (Natural Gas Combustion) corrected to lb/mmBtu using natural gas heat content (1,020 btu/cf).

b - AP-42 provides a chromium emission factor for natural gas fired external combustion, but does not include guidance for partitioning emissions between the carcinogenic chromium VI (hexavalent chromium) and the chromium III (trivalent chromium). EPA's 2002 National-Scale Air Toxics Assessment (NATA) released June 2009 includes a chromium speciation profile for natural gas-fired boilers, which indicates 4 percent of total chromium is chromium VI and 96 percent is chromium III. ENVIRON assumed 4 percent of total chromium emissions were emitted as chromium VI.

c - Ammonia emission factor from EPA's WebFIRE database (http://cfpub.epa.gov/oarweb/index.cfm?action=fire.main)

d - (Polycyclic Organic Matter) For emissions of PAH mixtures, the following PAHs and shall be considered together as one TAP, equivalent in potency to benzo(a)pyrene: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indenol(1,2,3,-cd)pyrene, benzo(a)pyrene.

e - Hourly emissions based on 25.2 MMBtu/hr and annual emissions based on 8,760 hrs/yr.

BIOGAS FLARE

Pollutant	Emission Factor (lb/MMscf)	Emission Factor (lb/MMBtu)[c]	Potential to Emit lb/hr	Potential to Emit TPY
NOx	-	0.068	1.3	4.0
CO	-	0.37	7.0	22.0
SO2[a]	908.7	-	28.8	90.0
PM-10 [b]	-	7.5E-03	0.14	0.4
PM-2.5 [b]	-	7.5E-03	0.14	0.4
VOC	-	0.14	2.7	8.3
Lead [b]	-	4.9E-07	9.3E-06	2.9E-05

Biogas Flow Rate - Hrly	0.03174	MMscf/hr
Biogas Flow Rate - Ann.	198.1	MMscf/yr
Biogas Heat Content	600	btu/scf
Flare Heat Capacity - ST	19.0	MMBtu/hr
Flare Heat Capacity - LT	118,856	MMBtu/yr

Notes:
(a) The SO2 emission factor based on permit limit of H2S in the biogas (5,391 ppmv H2S).
(b) Emission factors based on AP-42, Section 1.4 (Natural Gas Combustion) corrected to lb/mmBtu using natural gas heat content (1,020 btu/cf). Conservatively assume PM2.5 emission rates are equivalent to PM10 emission rates.
(c) Emission factors from AP-42 Section 13.5, Industrial Flares, September 1991. This Section contained emission factors for only NOx, CO and VOCs.

Greenhouse Gas Emissions

Greenhouse Gas	Emission Factor [a] lb/MMscf	Emission Factor [a] lb/MMBtu	Emission Rate [b] lb/hr	Emission Rate [b] tpy
CO2	119,256	--	3,785	11,812
CH4	--	2.2E-03	4.2E-02	1.3E-01
N2O	--	2.2E-04	4.2E-03	1.3E-02
CO2e [c]			3,787	11,819

notes:
a - CO2 emisison factor based on biogas composition, CH4 and N2O emission factors from 40 CFR 98, Subpart C, Table C-1.
b - Hourly emissions based on 19.0 MMBtu/hr and 0.032 MMscf/hr, and annual emissions based on 118,856 MMBtu/yr and 198 MMscf/yr.
c - CO2e calculated based on global warming potential (GWP) for each Greenhouse gas: CO2 = 1; CH4 = 21; and N2O = 310 (40 CFR Part 98, Subpart A).

Flare Stack Parameter Calculations [a]		short-term	long-term
Total Heat release	cal/s	1,333,950	950,380
Radiative Heat Loss	%	65.0	65.0
Net Heat Release	cal/s	466,882	332,633
Effective Stack Diameter	m	0.68	0.57
Physical Stack Height	m	6.1	6.1
Effective Stack Height	m	10.0	9.4

notes:
a - Flare release parameters calculated using EPA Guidance Document: EPA-450/4-88-010 (Screening Procedures for Estimating the Air Quality Impact of Stationary Sources).

Sulfur Dioxide Calculations - Maximum Day Emissions

Basis:	31,740	scf/hr	Biogas (based on maximum blower throughput of 500 scfm with 29 scfm safety factor)
	19,044	scf/hr	Methane @ 60% methane (PTC analysis)
	5391	ppmv	Hydrogen Sulfide in Biogas (Digester Permit Limit)

Calculation: at 5391 ppmv H2S in Biogas = 0.005391 volume fraction of total Biogas

171.11034 scf H2S/hr

(31,740 scf/hr) x (0.005391) = 171 scf H2S/hr

PV = nRT

1 P = pressure, atmospheres

171.11034 V = volume, cubic feet

n = lbmoles

0.7302 R = gas constant, atm-cf/lbmoles-deg. R

520 T = temperature, deg. R

For standard pressure and temperature (STP)

T = 32 deg. F, 0 deg. C, 492 deg. R

P = 1 atm.

$$n = \frac{PV}{RT} = \frac{(1\ atm)(171.1\ scf\ H2S/hr)}{(0.7302\ atm\text{-}cf/lbmoles\text{-}deg.\ R)(460+60\ deg.\ R)}$$

= 0.45064139 lbmoles H2S/hr

	H_2S	+	$1½O_2$	g	SO_2	+	H_2O
MW	34				64		
lbmoles/hr	0.45				0.45		
lbs/hr	15.32				28.84		

Emission Factor for sulfur dioxide

$$\frac{(28.8\ lbs\ SO2/hr)*(0.6\ scf\ CH4)*(1{,}000{,}000\ scf)}{(19{,}044\ scf\ CH4/hr)*(1\ scf\ biogas)*(1\ MMscf)} = 908.7\ lbs\ SO2/MM\ scf\ Biogas$$

18.2 lbs SO2/MM scf Biogas (controlled, 98% sulfur removal)

Sulfur Dioxide Calculations - Average Day/Annual Emissions

Basis:	23,771,141	lb COD reduced/yr	Biogas PTC Application (1999)
	542,720	scf biogas/day	Biogas (based on COD reduction, 5.0 cf methane/lb COD reduced) - average annual flow rate from 1997 flare PTC Application
	325,632	scf CH4/day	Methane @ 60% methane (PTC analysis)
	5	cf CH4/lb COD reduc	PTC analysis
Digester and Flare Permit Limits:	2000000	lb COD/month	
	90	tons SO2/year	
	5391	ppmv	Hydrogen Sulfide in Biogas (Digester Permit Limit)

Calculation:

at 5391 ppmv H2S in Biogas = 0.005391 volume fraction of total Biogas
(542,720 scf/day) x (0.005391) = 2,926 scf H2S/day
2926 scf H2S/day

PV = nRT
1 P = pressure, atmospheres
2925.8 V = volume, cubic feet
n = lbmoles
0.7302 R = gas constant, atm-cf/lbmoles-deg. R
520 T = temperature, deg. R

For standard pressure and temperature (STP)
T = 32 deg. F, 0 deg. C, 492 deg. R
P = 1 atm.

$$n = \frac{PV}{RT} = \frac{(1\ \text{atm})\ (2{,}925.8\ \text{scf H2S/day})}{(0.7302\ \text{atm-cf/lbmoles-deg. R})\ (460+60\ \text{deg. R})}$$

= 7.71 lbmoles H2S/day

	H_2S	+	$1½O_2$	g	SO_2	+	H_2O
MW	34				64		
lbmoles/d	7.7				7.7		
lbs/day	262.0				493.2		

493.2 lbs/day x 365 days = 180,000 lbs/yr SO_2

= 90.0 tons/yr SO_2

Emission Factor for sulfur dioxide

$$\frac{(493.2\ \text{lbs SO2/d})*(0.6\ \text{scf CH4})*(1{,}000{,}000\ \text{scf})}{(325{,}632\ \text{scf CH4/d})*(1\ \text{scf biogas})*(1\ \text{MMscf})} = 908.7\ \text{lbs SO2/MM scf Biogas}$$

J.R. Simplot Company - Project Idaho

EG1 - Natural Gas Generator

- 25kW Onan #30.0SR-15R/2160A, at Warehouse A (palletizer area)

	Generator Specifications	
Operating hours	100 hours/year	
Firing rate	0.46 MMBtu/hr	Generator Spec. Sheet
Testing Limited to	30 min/day	
- Limit on specific hours to test	(12pm - 7pm)	

Criteria and PSD Pollutant Emissions

Pollutant	Emission Factor (lb/MMBtu)[(a)]	Potential to Emit [(b)]		
		lb/hr	lb/hr (24-hr ave)	TPY
NOx	0.85	0.2	--	0.02
CO	0.557	0.1	--	0.01
SO2	0.000588	1.4E-04	--	1.4E-05
PM-10	0.010	0.002	9.6E-05	2.3E-04
PM-2.5	0.010	0.002	9.6E-05	2.3E-04
VOC	0.12	0.03	--	2.7E-03

a - Emission factors from AP-42 Section 3.2 for 4-Stroke Lean Burn Engines. NOx and CO emission factors based on <90% load during planned testing. Conservatively assume PM2.5 emission rates are equivalent to PM10 emission rates.

b - Hourly and 24-hour emissions based on 0.5 MMBtu/hr max input, testing engine for only 30 min/day, and annual emissions based on 100 hrs/yr.

Greenhouse Gas Emissions

Greenhouse Gas	Emission Factor [a] lb/MMBtu	Emission Rate [b] lb/hr	tpy
CO2	117	27	3
CH4	2.2E-03	5.1E-04	5.1E-05
N2O	2.2E-04	5.1E-05	5.1E-06
CO2e [c]		27	3

notes:

a - Greenhouse Gas emission factors from 40 CFR 98, Subpart C, Table C-1.

b - Hourly and 24-hour emissions based on 0.5 MMBtu/hr max input, testing engine for only 30 min/day, and annual emissions based on 100 hrs/yr.

c - CO2e calculated based on global warming potential (GWP) for each Greenhouse gas: CO2 = 1; CH4 = 21; and N2O = 310 (40 CFR Part 98, Subpart A).

J.R. Simplot Company - Project Idaho

EG2 - Natural Gas Generator

- 7kW Olympian G3OF3, Emergency Generator at Greenhouse

	Generator Specifications	
Operating hours	100 hours/year	
Firing rate	0.12 MMBtu/hr	Based on scaling EG1 to 7kW
Testing Limited to	30 min/day	
- Limit on specific hours to test	(12pm - 7pm)	

Criteria and PSD Pollutant Emissions

Pollutant	Emission Factor (lb/MMBtu)[(a)]	Potential to Emit [(b)]		
		lb/hr	lb/hr (24-hr ave)	TPY
NOx	0.85	0.05	--	0.005
CO	0.557	0.03	--	0.003
SO2	0.000588	3.5E-05	--	3.5E-06
PM-10	0.010	0.001	2.5E-05	6.0E-05
PM-2.5	0.010	0.001	2.5E-05	6.0E-05
VOC	0.12	0.01	--	7.1E-04

a - Emission factors from AP-42 Section 3.2 for 4-Stroke Lean Burn Engines. NOx and CO emission factors based on <90% load during planned testing. Conservatively assume PM2.5 emission rates are equivalent to PM10 emission rates.

b - Hourly and 24-hour emissions based on 0.1 MMBtu/hr max input, testing engine for only 30 min/day, and annual emissions based on 100 hrs/yr.

Greenhouse Gas Emissions

Greenhouse Gas	Emission Factor [a] lb/MMBtu	Emission Rate [b] lb/hr	tpy
CO2	117	7	1
CH4	2.2E-03	1.3E-04	1.3E-05
N2O	2.2E-04	1.3E-05	1.3E-06
CO2e [c]		7	1

notes:

a - Greenhouse Gas emission factors from 40 CFR 98, Subpart C, Table C-1.

b - Hourly and 24-hour emissions based on 0.1 MMBtu/hr max input, testing engine for only 30 min/day, and annual emissions based on 100 hrs/yr.

c - CO2e calculated based on global warming potential (GWP) for each Greenhouse gas: CO2 = 1; CH4 = 21; and N2O = 310 (40 CFR Part 98, Subpart A).

J.R. Simplot Company - Project Idaho

EG3 - Diesel Generator

- 100kW Onan #100DGDB, Emergency Generator at Wastewater

	Generator Specifications	
Operating hours	100 hours/year	
Firing rate	1.04 MMBtu/hr	Generator Spec. Sheet @ Full Load
Heat Value - No. 2 Distillate	0.138 MMBtu/gallon	40 CFR 98, Subpart C, Table C-1
Testing Limited to	30 min/day	
- Limit on specific hours to test	(12pm - 7pm)	

Criteria and PSD Pollutant Emissions

Pollutant	Emission Factor (lb/MMBtu)[(a)]	Potential to Emit [(b)]		
		lb/hr	lb/hr (24-hr ave)	TPY
NOx	4.41	2.28	--	0.23
CO	0.95	0.5	--	0.05
SO2 [c]	1.52E-03	7.8E-04	--	7.8E-05
PM-10	0.31	0.16	0.0067	0.02
PM-2.5	0.31	0.16	0.0067	0.02
VOC	0.36	0.19	--	0.02

a - Emission factors from AP-42, Table 3.3-1, Emission Factors for Uncontrolled Gasoline and Diesel Industrial Engines, 10/96. Conservatively assume PM2.5 emission rates are equivalent to PM10 emission rates.

b - Hourly and 24-hr average emissions based on 1.0 MMBtu/hr max firing rate, 30 min testing/day and, and annual emissions based on 100 hrs/yr.

c - SOx emission factor based on ULSD (15 ppm S) and AP-42 Section 3.4, Large Stationary Diesel Engines, Table 3.4-1 (fuel input).

Greenhouse Gas Emissions

Greenhouse Gas	Emission Factor [a] lb/MMBtu	Emission Rate [b] lb/hr	tpy
CO2	163	84	8
CH4	6.6E-03	3.4E-03	3.4E-04
N2O	1.3E-03	6.8E-04	6.8E-05
CO2e [c]		85	8

notes:

a - Greenhouse Gas emission factors from 40 CFR 98, Subpart C, Table C-1.

b - Hourly and 24-hr average emissions based on 1.0 MMBtu/hr max firing rate, 30 min testing/day and, and annual emissions based on 100 hrs/yr.

c - CO2e calculated based on global warming potential (GWP) for each Greenhouse gas: CO2 = 1; CH4 = 21; and N2O = 310 (40 CFR Part 98, Subpart A).

J.R. Simplot Company - Project Idaho

EG4 - Natural Gas Generator

- 7kW Dayton 3W057, Emergency Generator at Tech Center

	Generator Specifications	
Operating hours	100 hours/year	
Firing rate	0.12 MMBtu/hr	Based on scaling EG1 to 7kW
Testing Limited to	30 min/day	
- Limit on specific hours to test	(12pm - 7pm)	

Criteria and PSD Pollutant Emissions

Pollutant	Emission Factor (lb/MMBtu)[(a)]	Potential to Emit [(b)]		
		lb/hr	lb/hr (24-hr ave)	TPY
NOx	1.94	0.12	--	0.012
CO	0.557	0.03	--	0.003
SO2	0.000588	3.5E-05	--	3.5E-06
PM-10	0.048	0.003	1.2E-04	2.9E-04
PM-2.5	0.048	0.003	1.2E-04	2.9E-04
VOC	0.12	0.01	--	7.2E-04

a - Emission factors from AP-42 Section 3.2 (maximum of 2-Stroke and 4-Stroke Engines). NOx and CO emission factors based on <90% load during planned testing. Conservatively assume PM2.5 emission rates are equivalent to PM10 emission rates.

b - Hourly and 24-hour emissions based on 0.1 MMBtu/hr max input, testing engine for only 30 min/day, and annual emissions based on 100 hrs/yr.

Greenhouse Gas Emissions

Greenhouse Gas	Emission Factor [a] lb/MMBtu	Emission Rate [b] lb/hr	tpy
CO2	117	7	1
CH4	2.2E-03	1.3E-04	1.3E-05
N2O	2.2E-04	1.3E-05	1.3E-06
CO2e [c]		7	1

notes:

a - Greenhouse Gas emission factors from 40 CFR 98, Subpart C, Table C-1.

b - Hourly and 24-hour emissions based on 0.1 MMBtu/hr max input, testing engine for only 30 min/day, and annual emissions based on 100 hrs/yr.

c - CO2e calculated based on global warming potential (GWP) for each Greenhouse gas: CO2 = 1; CH4 = 21; and N2O = 310 (40 CFR Part 98, Subpart A).

J.R. Simplot Company - Project Idaho

FWP1 - Diesel Fire Water Pump

- 300 hp Cummins NT855F3, fire water pump

	Generator Specifications	
Operating hours	100 hours/year	
Firing rate	2.22 MMBtu/hr	Generator Spec. Sheet @ Full Load
Heat Value - No. 2 Distillate	0.138 MMBtu/gallon	40 CFR 98, Subpart C, Table C-1
Testing Limited to	30 min/day	
- Limit on specific hours to test	(12pm - 7pm)	

Criteria and PSD Pollutant Emissions

Pollutant	Emission Factor (lb/MMBtu)[(a)]	Potential to Emit [(b)]		
		lb/hr	lb/hr (24-hr ave)	TPY
NOx	4.41	4.9	--	0.49
CO	0.95	1.1	--	0.11
SO2 [c]	1.52E-03	1.7E-03	--	1.7E-04
PM-10	0.31	0.344	0.0143	3.4E-02
PM-2.5	0.31	0.344	0.0143	3.4E-02
VOC	0.36	0.40	--	4.0E-02

a - Emission factors from AP-42, Table 3.3-1, Emission Factors for Uncontrolled Gasoline and Diesel Industrial Engines, 10/96. Conservatively assume PM2.5 emission rates are equivalent to PM10 emission rates.

b - Hourly and 24-hr average emissions based on 2.2 MMBtu/hr max firing rate, 30 min testing/day and, and annual emissions based on 100 hrs/yr.

c - SOx emission factor based on ULSD (15 ppm S) and AP-42 Section 3.4, Large Stationary Diesel Engines, Table 3.4-1 (fuel input).

Greenhouse Gas Emissions

Greenhouse Gas	Emission Factor [a] lb/MMBtu	Emission Rate [b] lb/hr	tpy
CO2	163	181	18
CH4	6.6E-03	7.3E-03	7.3E-04
N2O	1.3E-03	1.5E-03	1.5E-04
CO2e [c]		182	18

notes:

a - Greenhouse Gas emission factors from 40 CFR 98, Subpart C, Table C-1.

b - Hourly and 24-hr average emissions based on 2.2 MMBtu/hr max firing rate, 30 min testing/day and, and annual emissions based on 100 hrs/yr.

c - CO2e calculated based on global warming potential (GWP) for each Greenhouse gas: CO2 = 1; CH4 = 21; and N2O = 310 (40 CFR Part 98, Subpart A).

Boiler Emissions with Limit on Natural Gas Consumption

Maximum Fuel Available to Boilers

Propose	99,000	ton CO_2e annual limit
minus	31	ton CO_2e from engine testing
minus	13,683	ton CO_2e from annual RTO operation
	85,286	tons CO_2e available to boilers
	166.4	MMBtu/hr available to boilers
	1,457,829	MMBtu/year available to boilers

compared with 3*98= 294 MMBtu disregarding proposed fuel limit
57%

Potential Annual Emissions if Boilers Limited to 1,457,829 MMBtu/year

	Boilers	Flare	RTO	Engines	Solvents	Total
NOx	13	4	11	1	-	29
CO	27	22	9	0.2	-	58
SO2	0.4	90	0.1	0.0003	-	90
PM10/PM2	5	0.4	29	0.1	-	35
VOC	4	8	21	0.1	3	36

Facility Wide Fuel Limit

Firing rate 1,692,245 MMBtu/year (HHV)

Greenhouse Gas Emissions

Greenhous	Emis.Factor [a] lb/MMBtu	Emission Rate GWP	CO2e
CO2	117	1	98,903
CH4	2.2E-03	21	39
N2O	2.2E-04	310	58
CO2e [c]			99,000

notes:
a - Greenhouse Gas emission factors from 40 CFR 98, Subpart C, Table C-1.

Appendix D: Disc Containing Modeling Files