Statement of Basis

Permit to Construct No. P-2011.0141
Project ID 61561

J R Simplot Co. - Caldwell Facility
Caldwell, Idaho

Facility ID 027-00131

Final

November 5, 2015
Dan Pitman, P.E.
Permit Writer

The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01.et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

CAA	Clean Air Act
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gases
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometers
lb/hr	pounds per hour
m	meters
MMBtu	million British thermal units
NAAQS	National Ambient Air Quality Standard
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
PM	particulate matter
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	*Rules for the Control of Air Pollution in Idaho*
SCL	significant contribution limits
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_x	sulfur oxides
T/day	tons per calendar day
T/yr	tons per consecutive 12 calendar month period
TAP	toxic air pollutants
TRIM	DEQ's electronic file management system known as HP TRIM
VOC	volatile organic compounds
$\mu g/m^3$	micrograms per cubic meter

FACILITY INFORMATION

Description

The J R Simplot Caldwell facility will produce par-fried French fries that will include both battered and unbatttered products, par-fried preformed potato products, and shredded potatoes using the same general process as the existing plant uses.

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. 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 frozen for packaging. Potatoes in Line 5 will not be dried or fried and emissions from the process will be negligible.

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 4 will be conveyed to the Line 1 and Line 4 fryers. Line 2 and Line 3 potatoes will be formed into preformed potato products before being conveyed to the Line 2 and Line 3 fryers. Following the frying process, the final potato products will be frozen and packaged for shipping. All of the proposed dryers (Line 1-4) and fryers (Lines 1-4) will be heated using steam from the boilers. Process emissions from the fryers and dryers will be routed to the RTO to minimize particulate matter and volatile organic compounds emitted to the atmosphere.

The 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. Simplot proposes to combust the digester biogas in two of the new boilers or in the existing flare. However, Simplot will install a sulfur removal technology to remove 98 percent of the hydrogen sulfide in the biogas prior to combustion in the new boilers. The permit does not include any specific requirements for the treatment system, though the permit does include emissions monitoring requirements to assure that the treatment system is working. The treatment system may operate with varying operating parameters provided the emissions are in compliance with emission limits. It was determined that monitoring emission rates is sufficient without a need to limit operational parameters of the treatment system. Compliance is determined by either directly monitoring SO_2 emission rates or indirectly determining emission rates through biogas flow rate and H_2S monitoring.

Permitting History

The following information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

Old Plant

December 17, 1997	PTC No. 027-00009, PTC for anaerobic digester biogas flare, Permit Status (S)
December 31, 1997	PTC No. 027-00009, PTC modification to line 5 fryer, Permit Status (S)
December 10, 2001	PTC No. 027-00009, PTC for ADI-BVF anaerobic digester with biogas flare, Permit Status (S)
October 4, 2002	Tier I Operating Permit No. 027-00009, Initial Tier I operating permit, Permit Status (S)
October 17, 2003	PTC No. P-030013, PTC for an ethanol production plant, Permit Status (Cancelled)
October 17, 2003	PTC No. P-030014, PTC revision for PTC No. 027-00009, Permit Status (S)
June 21, 2004	T1-030015, Tier I operating permit incorporating PTC No. 027-00009, PTC No. P-030013, PTC No. P-030014, and a consent order issued in 1999, Permit Status (S)

December 22, 2005	PTC No. P-050016, PTC revision to replace the wet scrubber at the Line 1 fryer with wet ESP, Permit Status (S)
June 14, 2006	PTC No. P-060025, Mandates the two Cleaver-Brooks boilers to operate using natural gas exclusively, Permit Status (S)
September 6, 2007	PTC No. P-2007.0073, PTC modification to change Line 4 fryer from processing French fries to pre-formed potato product and removal of Line 4 dryer, Permit Status (A)
January 17, 2007	T1-050013, Renewal of Tier I permit, Permit Status (S)
March 8, 2007	T1-2007.0010, Administrative amendment, Permit Status (S)
April 25, 2007	T1-2007.0042, Administrative amendment, Permit Status (S)
December 7, 2007	PTC No. P-2007.0222, PTC revision of PTC No. P-060025 for the replacement of an existing natural gas fired boiler, Permit Status (S)
July 11, 2008	PTC No. P-2008.0091, PTC modification to replace Boiler No. 10 with Boiler No. 1, Permit Status (S)
October 26, 2009	T1-2009.0119, Administrative amendment, Permit Status (S)
January 29, 2010	PTC No. P-2009.0136, PTC revision to operate an additional burner in Boiler No. 1 and remove temporary Boiler No. 11, Permit Status (S)
February 4, 2011	T1-2009.0119, Administrative amendment, Permit Status (S)
February 13, 2012	T1-2011.0117 Tier I permit renewal (S)
<u>New Plant</u>	
April 4, 2012	PTC No. P-2011.0141, Initial PTC for a new potato processing plant that allows operating of some existing equipment during the commissioning period (S)
January 6, 2014	PTC No. P-2011.0141, Modification of Initial Permit to accommodate an alternative commissioning period operating scenario (S by this permit action)

Application Scope

This PTC is for a minor modification at an existing minor facility.

The applicant has proposed to:

- Remove the commissioning period conditions from the permit because the new plant is fully operational and the existing plant has been dismantled.
- Increase allowable potato product production in Line 1 & 4 from 1,320 tons per day to 1,610 tons per day.
- Increase the allowable $PM_{2.5}$ emission rate from the RTO from 6.7 pounds per hour to 7.8 pounds per hour.
- Remove natural gas usage limits that were included in the permit solely to limit greenhouse gas emissions (GHG) below what was the major facility threshold for GHG.

Application Chronology

July 30, 2015	DEQ received an application.
July 31, 2015	DEQ received an application fee.
August 20 – September 4, 2015	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
August 28, 2015	DEQ determined that the application was complete.
October 9, 2015	DEQ made available the draft permit and statement of basis for peer and regional office review.
October 22, 2015	DEQ made available the draft permit and statement of basis for applicant review.

November 2, 2015 DEQ received the permit processing fee.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Sources	Control Equipment
Emissions Unit Name: Line 1-4 Dryers Line 1-4 Fryers	RTO (Maximum Heat input 25.2 MMBtu/hr - NG)
Line 5	None
Boiler A Manufacturer: To be determined 98 MMBtu/hr Fuel: Natural Gas	Low NO_x Burner
Boiler B & C Manufacturer: To be determined 98 MMBtu/hr (each boiler) Fuel: Natural Gas & Biogas	Low NO_x Burner Biogas Pretreatment – H_2S Removal
Anaerobic Digester Biogas	Biogas is treated as described above prior to combustion in the boilers. Biogas is untreated when flared.
Generator (unit 4) – Emergency, Warehouse A Manufacturer: Onan 55 hp Fuel: Natural Gas	None
Generator (unit 5)– Emergency, Greenhouse Manufacturer: Olympian 68 hp Fuel: Natural Gas	None
Generator (unit 1) – Emergency, Wastewater Treatment Manufacturer: Onan 166 hp Fuel: Diesel	None
Generator (unit 3) – Emergency, Tech Center Manufacturer: Dayton 14.8 hp Fuel: Natural Gas	None
Fire Water Pump Engine (unit 2) Manufacturer: Cummins 287hp Fuel: Diesel	None

Emissions Inventories

The only emissions change at the facility is an increase in particulate matter emissions from the regenerative thermal oxidizer (RTO).

Existing Facility Potential to Emit

Table 2 provides the existing facility potential to emit (as permitted emissions). See the April 4, 2012 Statement of Basis which supports the issuance of PTC No. P-2011.0141 Project 60966 for all emissions calculations.

Table 2. Existing Facility Potential to Emit

	$PM/PM_{10}/PM_{2.5}$	SO_2	NOx	CO	VOC
Source	T/yr	T/yr	T/yr	T/yr	T/yr
Boiler A	3.2	0.25	7.8	15.9	2.3
Boiler B	3.2	1.2	7.8	15.9	2.3
Boiler C	3.2	1.2	7.8	15.9	2.3
Flare	0.4	90.0	4.0	22.0	8.3
RTO (Dryer 1-4 & Fryer 1-4)	29.4	0.06	11.0	9.1	21.0
Emergency Engines	0.1	2.8E-4	0.8	0.2	0.1
Solvent Use					2.8
Total, Point Sources	**39.5**	**92.6**	**39.3**	**78.9**	**39.1**

Post Project Potential to Emit

Table 3 provides the post project potential to emit (as permitted) for criteria air pollutants from all emissions units at the facility as determined by DEQ staff. See the April 4, 2012 Statement of Basis which supports the issuance of PTC No. P-2011.0141 Project 60966 for all emissions calculations except for particulate matter emissions from the RTO.

Simplot has requested a particulate matter emission limit of 7.77 pounds per hour and 34.05 tons per year based on their estimate of maximum emissions[1]. Simplot conducted a particulate matter emissions test on the RTO on September 30, 2014 and the particulate matter (PM10 and PM2.5) emission rate was determined to be 4.12 E-2 pounds per ton of production[2]. Using this emission factor to estimate emissions from the proposed combined production rate of 1,874[3] tons per day results in an emission estimate of 3.2 pounds per hour (or 14.6 T/yr) indicating the facility can comply with the proposed emission rates.

Table 3. Post Project Facility Potential to Emit

	$PM/PM_{10}/PM_{2.5}$	SO_2	NOx	CO	VOC
Source	T/yr	T/yr	T/yr	T/yr	T/yr
Boiler A	3.2	0.25	7.8	15.9	2.3
Boiler B	3.2	1.2	7.8	15.9	2.3
Boiler C	3.2	1.2	7.8	15.9	2.3
Flare	0.4	90.0	4.0	22.0	8.3
RTO (Dryer 1-4 & Fryer 1-4)	34.05	0.06	11.0	9.1	24.2
Emergency Engines	0.1	2.8E-4	0.8	0.2	0.1
Solvent Use					2.8
Total, Point Sources	**44.15**	**92.6**	**39.3**	**78.9**	**42.3**

1 Simplot's July 30, 2015 application for a permit modification, TRIM record number 2015AAG1195
2 DEQ's source test log, TRIM record number 2008AAF123
3 Line 1 and 4 production limit of 1,610 tons per day and Lines 2 and 3 production limit of 264 tons per

Change in Potential to Emit

The change in facility-wide potential to emit is used to determine if a public comment period may be required and to determine the processing fee per IDAPA 58.01.01.225. Table 4 presents the facility-wide change in the potential to emit for criteria pollutants.

Table 4. Change in Facility Potential to Emit

	$PM/PM_{10}/PM_{2.5}$	SO_2	NOx	CO	VOC
Source	T/yr	T/yr	T/yr	T/yr	T/yr
Boiler A	0	0	0	0	0
Boiler B	0	0	0	0	0
Boiler C	0	0	0	0	0
Flare	0	0	0	0	0
RTO (Dryer 1-4 & Fryer 1-4)	4.65	0	0	0	0
Emergency Engines	0	0	0	0	0
Solvent Use					0
Total, Point Sources	**4.64**	**0**	**0**	**0**	**3.2**

HAP Emissions

HAP emissions remain below 10 tons per year for any single HAP and below 25 tons per year for all HAPs in aggregate. There is no change in HAP emissions due to this modification.

TAP Emissions

As presented in the application, toxic air pollutant emissions do not change from previously permitted emission rates.

Ambient Air Quality Impact Analyses

The applicant has demonstrated pre-construction compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. A summary of the Ambient Air Impact Analysis for TAP is provided in Appendix A.

REGULATORY ANALYSIS

The applicant is proposing to increase the allowable production of potato processing Lines 1 and 4 and increasing the allowable particulate matter emission rate from the RTO. There are no other proposed changes. The regulatory analysis provided in the January 6, 2014 Statement of Basis for project 61304 does not change and is not repeated in this Statement of Basis. Changes to existing permit conditions are described in the following section.

Permit Conditions Review

This section describes the permit conditions that have been added, revised, modified or deleted as a result of this permitting action.

Existing Permit Condition 4 through 9 included requirements that applied during the commissioning period of the new potato processing plant. The commissioning period is over and these permit conditions are no longer relevant and have been removed from the permit.

Exiting Permit Conditions 10 through 20

These permit conditions for the potato processing lines have been renumbered and are now included in Section 2 of the permit. The only changes to these existing permit conditions is the particulate matter emission limit on the RTO, the throughput limit on potato processing Lines 1 and 4, and the source testing requirements on the RTO.

The $PM_{2.5}$ emission rate limit has been increased from 6.7 pounds per hour to 7.8 pounds per hour consistent with the emission inventory and modeling analysis submitted in the application. All other emission limits remain unchanged.

The 1,320 ton per day production limit on Lines 1 and 4 has been increased to 1,610 tons per day consistent with the emission inventory and modeling analysis submitted in the application. All other production limits remain unchanged.

The existing permit required testing on the RTO within 180 days of startup of the new potato processing lines. That test was conducted on September 30, 2014. Emissions were measured to be less than 70% of the allowable and according the existing permit condition the next test shall be conducted within 5 years, or by September 30, 2019. The existing source testing permit condition has been amended to reflect that the next test is due by September 30, 2019. Future testing requirements are dependent on how close the most recent test is to the allowable emission limits and remains unchanged.

Exiting Permit Conditions 21 through 32

These permit conditions for the boilers have been renumbered and are now included in Section 3 of the permit.

The only change to these permit condition is to reflect that the initial source test on the boilers that was required to be completed 180 days of startup of the boilers was conducted on November 26, 2013. The permit has been amended to reflect that initial test date and the remaining testing requirements do not change in any way.

Existing Permit Conditions 33 through 36.

These permit conditions limited natural gas combustion rates to limit the facility's greenhouse gas emissions bellow major facility thresholds. Since that permit condition was issued, the US Supreme Court Ruled on June 23, 2014 that a facility cannot be a major source based on greenhouse emissions alone. The basis for these existing permit conditions was solely to prevent the facility from being a major source based on greenhouse gas emissions. Therefore, based on the Supreme Court ruling, these limitations are no longer necessary and have been removed from the permit.

Existing Permit Conditions 48 through 65

These permit conditions for the boilers have been renumbered and are now included in Section 5 of the permit.

The only change to these permit conditions is to add a limitation on the time that the firewater pump engine is allowed to operate for non-emergency purposes. The source is now limited to operate 30 minutes per hour consistent with the emission inventory and model submitted in the application.

All other permit conditions remain the same except that they have been renumbered.

PUBLIC REVIEW

Public Comment Opportunity

An opportunity for public comment period on the application was provided in accordance with IDAPA 58.01.01.209.01.c or IDAPA 58.01.01.404.01.c. During this time, there were no comments on the application and there was not a request for a public comment period on DEQ's proposed action. Refer to the chronology for public comment opportunity dates.

APPENDIX A – AMBIENT AIR QUALITY IMPACT ANALYSES

MEMORANDUM

DATE: **October 22**, 2015

TO: **Dan Pitman**, Permit Writer, Air Program

FROM: Thomas Swain, Air Quality Modeler, Analyst 3, Air Program

PROJECT: J.R. Simplot (JRS), Caldwell, Idaho potato processing facility, Permit to Construct (PTC), Facility No. 2011.0141

SUBJECT: Demonstration of Compliance with IDAPA 58.01.01.203.02 (NAAQS) and 203.03 (TAPs) as it relates to air quality impact analyses.

Contents

1.0 Summary

J.R. Simplot Company (JRS) submitted an application for a Permit to Construct (PTC) for a facility near Caldwell, Idaho. This would be a PTC for an existing facility located approximately two miles west of Caldwell, Idaho on Highway 19 in Canyon County. The facility is a potato processing plant, and is proposing to increase production limits on two fry lines.

The facility produces French-fries, including battered and unbattered products, par-fried preformed potato products, and shredded potatoes. JRS is planning on expanding its throughput limits on lines 1 and 4; no physical changes will be required for this change. The entire process is discussed in detail in the main body of the DEQ Statement of Basis supporting the issued PTC. This modeling review memorandum provides a summary and approval of the ambient air impact analyses submitted with the permit application. It also describes DEQ's review of those analyses, DEQ's verification analyses, additional clarifications, and conclusions.

Project-specific air quality impact analyses involving atmospheric dispersion modeling of estimated emissions associated with the proposed facility modification were submitted to DEQ to demonstrate that the modification would not cause or significantly contribute to a violation of any ambient air quality standard as required by (IDAPA 58.01.01.203.02 and 203.03 {Idaho Air Rules Section 203.02 and 03}).

Ramboll Environ (RE), on behalf of J.R. Simplot Company, performed the ambient air impact analyses for this project, demonstrating compliance with applicable air quality standards. The DEQ review summarized by this memorandum addressed only the rules, policies, methods, and data pertaining to the air impact analyses used to demonstrate that the estimated emissions increases at the facility associated with the proposed project will not cause or significantly contribute to a violation of any applicable air quality standard. This review did not evaluate compliance with other rules or analyses that do not pertain to the air impact analyses. Evaluation of emissions estimates was the responsibility of the permit writer and is addressed in the main body of the Statement of Basis. Emissions estimates were not reviewed as part of the modeling review described in this modeling review memorandum.

A modeling protocol was submitted to DEQ for this project on June 10, 2015. DEQ approved the protocol on July 13, with a few comments. Significantly included in these comments was an agreement to model facility-wide emissions of project-affected pollutants. RE submitted a PTC application on July 24, 2015. DEQ responded with a letter of completeness on August 28, 2015. DEQ found that the modeling analyses adequately showed compliance with NAAQS and TAPS increments.

The final submitted air quality impact analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data (review of emissions estimates was addressed by the DEQ permit writer); 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that predicted pollutant concentrations from emissions associated with the project as modeled were below Significant Impact Levels (SILs) or other applicable regulatory thresholds; or b) that predicted pollutant concentrations from emissions associated with the project as modeled, when appropriately combined with co-contributing sources and background concentrations, were below applicable National Ambient Air Quality Standards (NAAQS) at ambient air locations where and when the project has a significant impact; 5) showed that Toxic Air Pollutant (TAP) emissions increases associated with the project will not result in increased ambient air impacts exceeding allowable TAP increments.

Table 1 presents key assumptions and results to be considered in the development of the permit.

Air impact analyses are required by Idaho Air Rules to be conducted according to methods outlined in 40 CFR 51, Appendix W (*Guideline on Air Quality Models*). Appendix W requires that facilities be modeled using emissions and operations representative of design capacity or as limited by a federally enforceable permit condition. The submitted information and analyses demonstrated to the satisfaction of the Department that operation of the proposed facility will not cause or significantly contribute to a violation of any ambient air quality standard, provided the key conditions in Table 1 are representative of facility design capacity or operations as limited by a federally enforceable permit condition.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES

Criteria/Assumption/Result	Explanation/Consideration
General Emissions Rates. Emissions rates used in the modeling analyses, as listed in this memorandum, represent maximum potential emissions as given by design capacity or as limited by the issued permit for the specific pollutant and averaging period.	Compliance has not been demonstrated for emissions rates greater than those used in the modeling analyses.
Level I Modeling Thresholds for Criteria Pollutant Emissions. Maximum short-term and long-term emissions of $PM_{2.5}$ and PM_{10} associated with the proposed project are above Level I modeling applicability thresholds as found in State of Idaho Modeling Guidelines. Emissions of other criteria pollutants were below Level I Thresholds. Project-specific air impact analyses are not necessary for projects with emissions increases below Level I Thresholds.	Project-specific air impact analyses demonstrating compliance with NAAQS, as required by Idaho Air Rules Section 203.02, are required for pollutants having an emissions increase that is greater than Level I modeling applicability thresholds. These thresholds are set to assure that impacts are below significant impact levels (SILs).Compliance with NAAQS has not demonstrated for emissions that exceed the emission estimates presented in the application.
TAPS Emissions: There is no increase in emission rates for any TAPS listed in Idaho Air Rules Sections 585 and 586 that exceed specific Emissions Screening Level (EL) rates.	Air impact analyses demonstrating compliance with TAPS, as required by Idaho Air Rules Section 203.03, was not required for pollutants having an emissions rate less than ELs.

2.0 Background Information

This section provides background information applicable to the project and the site where the facility is located. It also provides a brief description of the applicable air impact analyses requirements for the project.

2.1 Project Description

The JRS Caldwell facility is a potato processing plant that produces various French-fry, shredded potato, and par-fried preformed potato products. Potatoes are transported by trucks to the facility, where they are sorted, inspected, and processed in five production lines. The products in lines 1 and 4 are conveyed to steam-heated dryers and then to fryers. After the frying process, products are frozen and packaged for shipping. Emissions from the frying process are routed to a regenerative thermal oxidizer (RTO) for emissions control.

Simplot has recognized the potential to exceed the existing throughput limit for lines 1 and 4. Initial limits were based on engineering estimates. JRS is realizing potential and is requesting an increase for lines 1 and 4 from 1,320 tons per day (tpd) to 1,610 tpd, an increase of 290 tpd. Fugitive emissions (PM) have been based on throughput limit and therefore will increase due to this throughput change. Because this is a relatively new plant DEQ required modeling of facility-wide emissions rather than the delta emissions from the modification. No other emission increases are attributed to the throughput increase.

2.2 Proposed Location and Area Classification

The JRS Caldwell facility is located two miles west of Caldwell Idaho on Highway 19. This area is designated as an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), ozone (O_3), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}), and particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers ($PM_{2.5}$). The area is not classified as non-attainment for any criteria pollutants, but is noted as being an area of concern for $PM_{2.5}$ and ozone.

2.3 Air Impact Analyses Required for All Permits to Construct

Criteria Pollutant and TAP Impact Analyses for a PTC are addressed in Idaho Air Rules Sections 203.02 and 203.03:

> *No permit to construct shall be granted for a new or modified stationary source unless the applicant shows to the satisfaction of the Department all of the following:*
>
> ***02. NAAQS.*** *The stationary source or modification would not cause or significantly contribute to a violation of any ambient air quality standard.*
>
> ***03. Toxic Air Pollutants.*** *Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.*

Atmospheric dispersion modeling, using computerized simulations, is used to demonstrate compliance with both NAAQS and TAPs. Idaho Air Rules Section 202.02 states:

> ***Estimates of Ambient Concentrations.*** *All estimates of ambient concentrations shall be based on the applicable air quality models, data bases, and other requirements specified in 40 CFR 51 Appendix W (Guideline on Air Quality Models).*

2.4 Significant Impact Level and Cumulative NAAQS Impact Analyses

The Significant Impact Level (SIL) analysis for a new facility or proposed modification to a facility involves modeling estimated criteria air pollutant emissions from the facility or modification to determine the potential impacts to ambient air. Air impact analyses are required by Idaho Air Rules to be conducted according to methods outlined in 40 CFR 51, Appendix W (Guideline on Air Quality Models). Appendix W requires that facilities be modeled using emissions and operations representative of design capacity or as limited by a federally enforceable permit condition.

A facility or modification is considered to have a significant impact on air quality if maximum modeled impacts to ambient air exceed the established SIL listed in Idaho Air Rules Section 006 (referred to as a significant contribution in Idaho Air Rules) or as incorporated by reference as per Idaho Air Rules Section 107.03.b. Table 2 lists the applicable SILs.

If modeled maximum pollutant impacts to ambient air from the emissions sources associated with a new facility or modification exceed the SILs, then a cumulative NAAQS impact analysis is necessary to demonstrate compliance with NAAQS and Idaho Air Rules Section 203.02. JRS was requested to model with facility-wide emissions for the applicable pollutants to demonstrate NAAQS compliance for this PTC. This was done because the throughput increase was requested so soon after the initial permit was issued for the new facility

DEQ has developed modeling applicability thresholds that effectively assure that project-related emissions increases below stated values will result in ambient air impacts below the applicable SILs. The threshold levels and dispersion modeling analyses supporting those levels are presented in the *State of Idaho Guideline for Performing Air Quality Impact Analyses*[l] (*Idaho Air Modeling Guideline*). Use of a modeling threshold represents the use of conservative modeling, performed in support of the threshold, as a project SIL analysis. Project-specific modeling applicability for this project is addressed in Section 3.1.1 of this memorandum.

A cumulative NAAQS impact analysis for attainment area pollutants involves assessing ambient impacts (typically the design values consistent with the form of the standard) from facility-wide emissions, and emissions from any nearby co-contributing sources, and then adding a DEQ-approved background concentration value to the modeled result that is appropriate for the criteria pollutant/averaging-period at the facility location and the area of significant impact. The resulting pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. Table 2 also lists SILs and specifies the modeled design value that must be used for comparison to the NAAQS. NAAQS compliance is evaluated on a receptor-by-receptor basis for the modeling domain.

If the cumulative NAAQS impact analysis indicates a violation of the standard, the permit may not be issued if the proposed project has a significant contribution (exceeding the SIL) to the modeled violation. This evaluation is made specific to both time and space. As an example, consider a hypothetical case where the SIL analysis indicates the project (new source or modification) has impacts exceeding the SIL and the cumulative impact analysis indicates a violation of the NAAQS. If project-specific impacts are below the SIL at the specific receptors showing the violations during the time periods when modeled violations occurred, then the facility does not have a significant contribution to the specific violations.

Table 2. APPLICABLE REGULATORY LIMITS

Pollutant	Averaging Period	Significant Impact Levels[a] ($\mu g/m^3$)[b]	Regulatory Limit[c] ($\mu g/m^3$)	Modeled Design Value Used[d]
PM_{10}[e]	24-hour	5.0	150[f]	Maximum 6th highest[g]
$PM_{2.5}$[h]	24-hour	1.2	35[i]	Mean of maximum 8th highest[j]
	Annual	0.3	12[k]	Mean of maximum 1st highest[l]
Carbon monoxide (CO)	1-hour	2,000	40,000[m]	Maximum 2nd highest[n]
	8-hour	500	10,000[m]	Maximum 2nd highest[n]
Sulfur Dioxide (SO_2)	1-hour	3 ppb[o] (7.8 $\mu g/m^3$)	75 ppb[p] (196 $\mu g/m^3$)	Mean of maximum 4th highest[q]
	3-hour	25	1,300[m]	Maximum 2nd highest[n]
	24-hour	5	365[m]	Maximum 2nd highest[n]
	Annual	1.0	80[r]	Maximum 1st highest[n]
Nitrogen Dioxide (NO_2)	1-hour	4 ppb (7.5 $\mu g/m^3$)	100 ppb[s] (188 $\mu g/m^3$)	Mean of maximum 8th highest[t]
	Annual	1.0	100[r]	Maximum 1st highest[n]
Lead (Pb)	3-month[u]	NA	0.15[r]	Maximum 1st highest[n]
	Quarterly	NA	1.5[r]	Maximum 1st highest[n]
Ozone (O_3)	8-hour	40 TPY VOC[v]	75 ppb[w]	Not typically modeled

a. Idaho Air Rules Section 006 (definition for significant contribution) or as incorporated by reference as per Idaho Air Rules Section 107.03.b.
b. Micrograms per cubic meter.
c. Incorporated into Idaho Air Rules by reference, as per Idaho Air Rules Section 107.
d. The maximum 1st highest modeled value is always used for the significant impact analysis unless indicated otherwise. Modeled design values are calculated for each ambient air receptor.
e. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
f. Not to be exceeded more than once per year on average over 3 years.
g. Concentration at any modeled receptor when using five years of meteorological data.
h. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
i. 3-year mean of the upper 98th percentile of the annual distribution of 24-hour concentrations.
j. 5-year mean of the 8th highest modeled 24-hour concentrations at the modeled receptor for each year of meteorological data modeled. For the SIL analysis, the 5-year mean of the 1st highest modeled 24-hour impacts at the modeled receptor for each year.
k. 3-year mean of annual concentration.
l. 5-year mean of annual averages at the modeled receptor.
m. Not to be exceeded more than once per year.
n. Concentration at any modeled receptor.
o. Interim SIL established by EPA policy memorandum.
p. 3-year mean of the upper 99th percentile of the annual distribution of maximum daily 1-hour concentrations.
q. 5-year mean of the 4th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of 1st highest modeled 1-hour impacts for each year is used.
r. Not to be exceeded in any calendar year.
s. 3-year mean of the upper 98th percentile of the annual distribution of maximum daily 1-hour concentrations.
t. 5-year mean of the 8th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of maximum modeled 1-hour impacts for each year is used.
u. 3-month rolling average.
v. An annual emissions rate of 40 ton/year of VOCs is considered significant for O_3.
w. Annual 4th highest daily maximum 8-hour concentration averaged over three years. The O_3 standard was revised (the notice was signed by the EPA Administrator on October 1, 2015) to 70 ppb. However, this standard will not be applicable for permitting purposes until it is incorporated by reference *sine die* into Idaho Air Rules.

Compliance with Idaho Air Rules Section 203.02 is generally demonstrated if: a) all modeled impacts of the SIL analysis are below the applicable SIL or other level determined to be inconsequential to NAAQS compliance; or b) modeled design values of the cumulative NAAQS impact analysis (modeling all emissions from the facility and co-contributing sources, and adding a background concentration) are less than applicable NAAQS at receptors where impacts from the proposed facility/modification exceeded the SIL or other identified level of consequence; or c) if the cumulative NAAQS analysis showed NAAQS violations, the impact of proposed facility/modification to any modeled violation was inconsequential (typically assumed to be less than the established SIL) for that specific receptor and for the specific modeled time when the violation occurred.

2.5 Toxic Air Pollutant Analyses

Emissions of toxic substances are generally addressed by Idaho Air Rules Section 161:

> *Any contaminant which is by its nature toxic to human or animal life or vegetation shall not be emitted in such quantities or concentrations as to alone, or in combination with other contaminants, injure or unreasonably affect human or animal life or vegetation.*

Permitting requirements for toxic air pollutants (TAPs) from new or modified sources are specifically addressed by Idaho Air Rules Section 203.03 and require the applicant to demonstrate to the satisfaction of DEQ the following:

Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.

Per Idaho Air Rules Section 210, if the total project-wide emissions increase of any TAP associated with a new source or modification exceeds screening emission levels (ELs) of Idaho Air Rules Section 585 or 586, then the ambient impact of the emissions increase must be estimated. If ambient impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of Idaho Air Rules Section 585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586, then compliance with TAP requirements has been demonstrated.

Idaho Air Rules Section 210.20 states that if TAP emissions from a specific source are regulated by the Department or EPA under 40 CFR 60, 61, or 63, then a TAP impact analysis under Section 210 is not required for that TAP.

3.0 Analytical Methods and Data

This section describes the methods and data used in analyses to demonstrate compliance with applicable air quality impact requirements.

3.1 Emission Source Data

Emissions rates of criteria pollutants for the proposed project at the JRS Caldwell facility were provided by RE for various averaging periods. Review and approval of estimated emissions was the responsibility of the DEQ permit writer, and is not addressed in this modeling memorandum. DEQ modeling review included verification that the application's potential emissions rates were properly used in the model. The rates listed must represent the maximum allowable rate as averaged over the specified period.

Emissions rates used in the dispersion modeling analyses submitted by RE should be reviewed by the DEQ permit writer against those in the emissions inventory of the permit application. All modeled criteria air pollutant and TAP emissions rates should be equal to or greater than the facility's emissions calculated in other sections of the PTC application or requested permit allowable emission rates.

3.1.1 Criteria Pollutant Emissions Rates and Modeling Applicability

If project-related potential to emit (PTE) values would qualify for a below regulatory concern (BRC) permit exemption as per Idaho Air Rules Section 221 if it were not for some pollutants exceeding BRC thresholds, then an air impact analysis may not be required for those criteria pollutants with project emissions below BRC. DEQ's regulatory interpretation policy of exemption provisions of Idaho Air Rules (Policy on NAAQS Compliance Demonstration Requirements, DEQ policy memorandum, July 11, 2014) is that: "A DEQ NAAQS compliance assertion will not be made by the DEQ modeling group for specific criteria pollutants having a project emissions increase below BRC levels, provided the proposed project would have qualified for a Category I Exemption for BRC emissions quantities except for the emissions of another

criteria pollutant." The interpretation policy also states that the exemption criteria of uncontrolled PTE not to exceed 100 ton/year (Idaho Air Rules Section 220.01.a.i) is not applicable when evaluating whether a NAAQS impact analyses is required. A permit will be issued limiting PTE below 100 ton/year, thereby negating the need to maintain calculated uncontrolled PTE under 100 ton/year.

Table 3 lists the criteria pollutant NAAQS compliance demonstration applicability assessment. Excluding pollutants from air impact analyses on the basis of the BRC interpretation is not applicable for the JRS Caldwell project. An impact analysis must be performed for pollutant increases that would not qualify for an exclusion such as BRC. Modeling applicability thresholds are provided in the *Idaho Air Modeling Guideline*. Modeling applicability emissions thresholds published in the *Idaho Air Modeling Guideline* were based on assuring an ambient impact of less than established SIL for that specific pollutant and averaging period. JRS is assessing project emissions with Level I modeling thresholds, and electing to show compliance with air quality modeling for those pollutants that have emissions exceeding the Level I modeling thresholds.

Table 3. CRITERIA POLLUTANT NAAQS COMPLIANCE DEMONSTRATION APPLICABILITY

Criteria Pollutant	BRC Level (ton/year)	Applicable Facility Wide PTE Emissions (ton/year)	Air Impact Analyses Required?
PM_{10}[a]	1.5	>4.7	Yes
$PM_{2.5}$[b]	1.0	4.7	Yes
Carbon Monoxide (CO)	10.0	0.0	No
Sulfur Dioxide (SO_2)	4.0	0.0	No
Nitrogen Oxides (NOx)	4.0	0.0	No
Lead (Pb)	0.06	0.0	No

a. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
b. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.

If project-specific total emissions rates are below Level I thresholds, project-specific air impact analyses are generally not necessary for permitting. Use of Level II Modeling Thresholds are conditional, requiring DEQ approval. Table 4 provides the emissions-based site specific modeling applicability summary. JRS selected to do air quality modeling analyses for all pollutants having emissions greater than the Level I Modeling Threshold. These pollutants, as shown in Table 3, are PM_{10} and $PM_{2.5}$. There are no increases for any of the other criteria pollutants (CO, NO_X,SO_2, and Lead) attributable to this project. All short term periods were modeled with the maximum short term emission rates as listed in Table 5. Emergency generators were modeled for eight hours a day, with an emission rate of one hour of possible testing spread over those eight hours. The modeling files submitted by RE had this one hour emission rate divided by twenty-four hours rather than the eight hours as modeled. The emission rates listed in Table 5 for the emergency generators and fire pump reflect these corrections made by DEQ. The modeling results listed in Table 8 of this memorandum also reflect these revised emission rates.

Table 4. SITE-SPECIFIC MODELING APPLICABILITY ANALYSIS RESULTS					
Pollutant	**Averaging Period**	**Emissions**	**Level I Modeling Thresholds**	**Level II Modeling Thresholds**	**Modeling Required**
$PM_{2.5}$	24-hour	1.1 lb/hr	0.054	0.63	Yes
	Annual	4.7 ton/yr	0.35	4.1	Yes
PM_{10}	24-hour	1.1 lb/hr	0.22	2.6	Yes

Table 5 Emissions as Modeled per Source			
Source ID	**PM_{25} (lb/hr)**	**PM_{10} (lb/hr)**	**PM_{25}ANN (tpy)**
Boiler A	0.730	0.730	3.198
Boiler B	0.730	0.730	3.198
Boiler C	0.730	0.730	3.198
RTO	7.775	7.775	34.05
Flare	0.142	0.142	0.443
EG1	2.50E-04	2.50E-04	2.30E-04
EG2	1.25E-04	1.25E-04	5.98E-05
EG3	0.02	0.02	0.016
EG4	3.75E-04	3.75E-04	2.9E-04
Fire Pump	0.043	0.043	0.034

Ozone (O_3) differs from other criteria pollutants in that it is not typically emitted directly into the atmosphere. O_3 is formed in the atmosphere through reactions of VOCs, NOx, and sunlight. Atmospheric dispersion models used in stationary source air permitting analyses (see Section 3.3.3) cannot be used to estimate O_3 impacts resulting from VOC and NOx emissions from an industrial facility. O_3 concentrations resulting from area-wide emissions are predicted by using more complex airshed models such as the Community Multi-Scale Air Quality (CMAQ) modeling system. Use of the CMAQ model is very resource intensive and DEQ asserts that performing a CMAQ analysis for a particular permit application is not typically a reasonable or necessary requirement for air quality permitting.

Addressing secondary formation of O_3 has been somewhat addressed in EPA regulation and policy. As stated in a letter from Gina McCarthy of EPA to Robert Ukeiley, acting on behalf of the Sierra Club (letter from Gina McCarthy, Assistant Administrator, United States Environmental Protection Agency, to Robert Ukeiley, January 4, 2012):

. . . footnote 1 to sections 51.166(I)(5)(I) of the EPA's regulations says the following: "No de

minimis air quality level is provided for ozone. However, any net emission increase of 100 tons per year or more of volatile organic compounds or nitrogen oxides subject to PSD would be required to perform an ambient impact analysis, including the gathering of air quality data."

The EPA believes it unlikely a source emitting below these levels would contribute to such a violation of the 8-hour ozone NAAQS, but consultation with an EPA Regional Office should still be conducted in accordance with section 5.2.1.c. of Appendix W when reviewing an application for sources with emissions of these ozone precursors below 100 TPY."

Allowable emissions estimates of VOCs and NOx are below the 100 tons/year threshold, and DEQ determined it was not appropriate or necessary to require a quantitative source specific O_3 impact analysis.

Secondary Particulate Formation

The impact from secondary particulate formation resulting from emissions of NOx, SO_2, and/or VOCs was assumed by DEQ to be negligible on the basis of the magnitude of emissions and the short distance from emissions sources to modeled receptors where maximum PM_{10} and $PM_{2.5}$ impacts would be anticipated.

3.1.2 Toxic Air Pollutant Emissions Rates

TAP emissions regulations under Idaho Air Rules Section 220 are only applicable for new or modified sources constructed after July 1, 1995. The submitted application did not identify any TAP emissions that exceeded ELS and would require modeling analysis.

3.1.3 Emissions Release Parameters

Table 6 provides emissions release parameters, including stack height, stack diameter, exhaust temperature, and exhaust velocity for point sources as used in the final modeling assessment.

Stack parameters used in the modeling analyses were generally based on well documented data, including source tests and engine certifications. Environ was contacted for supplemental information to support the documentation referenced in the modeling report, and responded in kind. Documents and references for some of these derivations are provided in the appendices to the report submitted with the application. Some of the data for the emergency generators was taken from previous permitting projects and not supplied with this application. DEQ determined that the documentation and justification of release parameters was adequate considering the sources that were modeled.

Table 6. Source Release Parameters used in Modeling								
Source ID	Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (ft)	Stack Height (ft)	Temp (°F)	Exit Velocity (fps)	Stack Diameter (ft)
BLR_A	Boiler A	521973	4834927	2342.5	69.88	140.00	41.73	3.51
BLR_B	Boiler B	521973	4834919	2342.5	69.88	140.00	41.73	3.51
BLR_C	Boiler C	521974	4834914	2342.5	69.88	140.00	41.73	3.51
RTO	Regen. Thermal Oxidizer	522021	4834932	2342.5	85.01	271.00	58.89	6.99
FLAREST[a]	Flare Short	521178	4835615	2336.0	32.81	1831.73	65.62	2.23
FLAREAN[a]	Flare Annual	521178	4835615	2336.0	30.84	1831.73	65.62	1.87
EG1	Emerg Gen 1	521675	4835101	2342.5	43.96	1060.00	107.71	0.16
EG2	Emerg Gen 2	521819	4834846	2342.5	4.92	1080.00	107.71	0.16
EG3	Emerg Gen 3	521308	4835272	2342.5	7.87	1060.00	164.04	0.20
EG4	Emerg Gen 4	521800	4834899	2342.5	41.34	1080.00	68.93	0.20
FWP1	Fire Pump	521681	4834838	2342.5	12.14	849.99	164.04	0.43

[a]– Flare stack parameters derived differently for short term and annual averaging periods per EPA Guidance document: Screening Procesdures for Estimating the Air Quality Impact of Stationary Sources, EPA-450/4-88-010.

3.2 Background Concentrations

Background concentrations were provided by DEQ and obtained from the Northwest International Air Quality Environmental Science and Technology Consortium (NW AIRQUEST) *Lookup 2009-2011 Design Values of Criteria Pollutants*[3]. These design value air pollutant levels are based on regional scale air pollution modeling of Washington, Oregon, and Idaho, with values influenced by monitoring data as a function of distance from the monitor. DEQ has determined that the NW AIRQUEST background values are representative of the Caldwell, Idaho area. Because the modeling analyses showed maximum impacts for several criteria pollutants (PM_{10} and $PM_{2.5}$) to be greater than the Significant Impact Level (SIL) for each modeled pollutant and averaging period, background concentrations were needed for final NAAQS compliance demonstration, and are listed in
Table 8.

3.3 Impact Modeling Methodology

This section describes the modeling methods used by the applicant to demonstrate preconstruction compliance with applicable air quality standards.

3.3.1 General Overview of Analyses

JRS performed project-specific air impact analyses that were determined by DEQ to be reasonably representative of the proposed facility and proposed modification as described in the application. Results of the submitted analyses demonstrate compliance with applicable air quality standards to DEQ's satisfaction, provided the facility is operated as described in the submitted application and in this memorandum.

Table 7 provides a brief description of parameters used in the modeling analyses.

3.3.2 Modeling protocol and Methodology

JRS submitted a modeling protocol to DEQ for this project on June 10, 2015. DEQ approved the protocol on July 13, with a few comments. RE submitted a PTC application on July 30, 2015.

Project-specific modeling and other required impact analyses were generally conducted using data and methods proposed in the protocol , discussed in post-application correspondence and as specified in the *Idaho Air Quality Modeling Guideline*[1].

Table 7. MODELING PARAMETERS

Parameter	Description/Values	Documentation/Addition Description
General Facility Location	Caldwell, ID	The facility is located in an area that is attainment or unclassified for all criteria air pollutants
Model	AERMOD	AERMOD version 14134 with the PRIME downwash algorithm,.
Meteorological Data	Boise surface data and Boise upper air data	The meteorological model input files for this project were provided by and recommended as most representative for this project by IDEQ, as described in the IDEQ modeling protocol and verified by IDEQ's approval of that protocol.
Terrain	Considered	See section 3.3.5 below
Building Downwash	Considered	BPIP-PRIME was used to evaluate building dimensions for consideration of downwash effects in AERMOD.
Receptor Grid	**Significant Impact Analyses**	
	Grid 1	25-meter spacing along the ambient air boundary out to 250 meters
	Grid 2	50-meter spacing for at least 3000 meters from the grid centered on the facility
	Grid 3	200-meter spacing for at least 6,000 meters from the grid centered on the facility
	Grid 4	500-meter spacing out to 20,000 meters from grid centered on the facility

3.3.3 Model Selection

Idaho Air Rules Section 202.02 requires that estimates of ambient concentrations be based on air quality models specified in 40 CFR 51, Appendix W (Guideline on Air Quality Models). The refined, steady state, multiple source Gaussian dispersion model AERMOD was promulgated as the replacement model for ISCST3 in December 2005. AERMOD retains the single straight line trajectory of ISCST3, but includes more advanced algorithms to assess turbulent mixing processes in the planetary boundary layer for both convective and stable stratified layers.

AERMOD version 14134 was used by RE for the modeling analyses to evaluate impacts of the facility. This version was the current version at the time the application was received by DEQ.

3.3.4 Meteorological Data

DEQ provided five years of data from the Boise, Idaho airport for the years 2008-2012. This data included both surface and upper air data, and DEQ determined that these data are adequately representative of the meteorology in the Caldwell area for minor source permitting.

3.3.5 Effects of Terrain on Modeled Impacts

Terrain data were extracted from United States Geological Survey (USGS) National Elevation Dataset (NED) files in the WGS84 datum (approximately equal to the NAD83 datum). RE used 1/3 arc second data files (about 10-meter resolution), which is sufficient to adequately resolve terrain in the area for evaluating air pollution impacts resulting from emissions.

The terrain preprocessor AERMAP Version 11103 was used to extract the elevations from the NED files and assign them to receptors in the modeling domain in a format usable by AERMOD. AERMAP also determined the hill-height scale for each receptor. The hill-height scale is an elevation value based on the surrounding terrain which has the greatest effect on that individual receptor. AERMOD uses those heights to evaluate whether the emissions plume has sufficient energy to travel up and over the terrain or if the plume will travel around the terrain.

DEQ reviewed the area surrounding the facility by using the web-based mapping program Google Earth, which uses the WGS84 datum. DEQ also overlaid modeling files with a digital photograph background images acquired from the 2013 ARCGIS NAIP (National Agriculture Imagery Program) data base. The immediate area is effectively flat with regard to dispersion modeling affects. Elevations in the modeling domain matched those indicated by the background images

3.3.6 Facility Layout

DEQ verified proper identification of buildings on the site by comparing a graphical representation of the modeling input file to aerial photographs on Google Earth. The modeled layout matched well with aerial photographs in Google Earth as well as from those in the ARCGIS 2013 NAIP database.

3.3.7 Effects of Building Downwash on Modeled Impacts

Potential downwash effects on emissions plumes were accounted for in the model by using building dimensions and locations (locations of building corners, base elevation, and building heights). Dimensions and orientation of proposed buildings were used as input to the Building Profile Input Program for the Plume Rise Model Enhancements downwash algorithm (BPIP-PRIME) to calculate direction-specific dimensions and Good Engineering Practice (GEP) stack height information for input to AERMOD.

3.3.8 Ambient Air Boundary

Ambient air is defined in Section 006 of the Idaho Air Rules as "that portion of the atmosphere, external to buildings, to which the general public has access. JRS Caldwell has fence-lines, no-trespassing signs, and security guards; the existence of these features clearly precludes public access to the facility and defines the ambient boundary for the facility.

3.3.9 Receptor Network

Table 7 describes the receptor grid used in the submitted analyses. The receptor grid met the minimum recommendations specified in the *Idaho Air Quality Modeling Guideline*[1]. DEQ determined this grid assured maximum impacts were reasonably resolved by the model considering: 1) types of sources modeled; 2) modeled impacts, and the modeled concentration gradient; 3) conservatism of the methods and data used as inputs to the analyses; 4) potential for continual exposures or exposure to sensitive receptors.

3.3.10 Good Engineering Practice Stack Height

An allowable good engineering practice (GEP) stack height may be established using the following equation in accordance with Idaho Air Rules Section 512.03.b:

$H = S + 1.5L$, where:

H = good engineering practice stack height measured from the ground-level elevation at the base of the stack.

S = height of the nearby structure(s) measured from the ground-level elevation at the base of the stack.

L = lesser dimension, height or projected width, of the nearby structure.

All point sources were below GEP stack height. Therefore, consideration of downwash caused by nearby buildings was required.

4.0 Impact Modeling Results

4.1 Results for NAAQS Significant Impact Level Analyses

All criteria pollutants whose emission increases associated with the proposed project were above the Level I Modeling Applicability Thresholds were modeled to show compliance with the NAAQS. This included facility-wide emissions of both $PM_{2.5}$ and PM_{10}.These modeling applicability thresholds, based on modeling of a single emissions stack with specified release parameters, were established to assure that impacts of projects when emissions equal to or less than these levels will not cause impacts exceeding the SILs. Since the emission increases associated with the proposed project are above these threshold values, a project-specific air impact analysis is required to demonstrate NAAQS compliance for issuance of the PTC. Because the modeling analyses were done for the entire facility-wide inventory and not just the proposed project increase, modeling was not performed to determine whether impacts were above the SIL for each modeled pollutant. Results of the NAAQS modeling analyses are listed in Table 8, and show that compliance has been demonstrated with the NAAQS for all modeled pollutants.

Table 8. RESULTS FOR NAAQS ANALYSES

Pollutant	Averaging Period	Modeled Design Concentration ($\mu g/m^3$)[a]	Background Concentration ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
$PM_{2.5}$	24-hour	3.8 [b]	26.0	29.8	35
	Annual	1.2 [c]	10	11.2	12
PM_{10}[c]	24-hour	5.6	79	84.6	150

[a] Micrograms per cubic meter
[b] Mean of the Maximum eighth-highest value over a five year period.
[c] Maximum annual average over a five year period.

4.2 Results for TAPs Impact Analyses

Dispersion modeling is required to demonstrate compliance with TAP increments specified by Idaho Air Rules Section 585 and 586 for those TAPs with project-specific emission increases exceeding emissions screening levels (ELs). The application did not identify any TAPs that required air impact modeling analysis because there are no substantial increases in TAPS emissions. Therefore, a modeling assessment was not done to demonstrate compliance with the TAPS AAC or AACC.

5.0 Conclusions

The ambient air impact analyses and other air quality analyses submitted with the JRS Caldwell application demonstrated to DEQ's satisfaction that emissions from the proposed project will not cause or significantly contribute to a violation of any ambient air quality standard.

References:

1. *State of Idaho Guideline for Performing Air Quality Impact Analyses.* Idaho Department of Environmental Quality. September 2013. State of Idaho DEQ Air Doc. ID AQ-011. Available at http://www.deq.idaho.gov/media/1029/modeling-guideline.pdf.

APPENDIX B – PROCESSING FEE

PTC Fee Calculation

Instructions:
Fill in the following information and answer the following questions with a Y or N. Enter the emissions increases and decreases for each pollutant in the table.

Company: JR Simplot Co. - Caldwell Facility
Address: 2 Miles West of Caldwell HWY 10
City: Caldwell
State: Idaho
Zip Code: 83607
Facility Contact: John Prigge
Title: Permitting Contact
AIRS No.: 027-00131

N Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N

Y Did this permit require engineering analysis? Y/N

N Is this a PSD permit Y/N (IDAPA 58.01.01.205.04)

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO_X	0.0	0	0.0
SO_2	0.0	0	0.0
CO	0.0	0	0.0
PM10	4.7	0	4.7
VOC	0.0	0	3.2
TAPS/HAPS	0.0	0	0.0
Total:	0.0	0	**7.9**
Fee Due	**$ 2,500.00**		

Comments: