SIMPLOT AGRIBUSINESS DON PLANT

Permit to Construct Application for No. 400 Sulfuric Acid Plant

Submitted to:

Air Quality Program Office – Application Processing
Idaho Department of Environmental Quality
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TABLE OF CONTENTS

1.0 INTRODUCTION 1-1
2.0 PROJECT DESCRIPTION 2-1
2.1 Process Description 2-1
2.2 Project Description 2-1
3.0 REGULATORY REVIEW 3-1
3.1 Prevention of Significant Deterioration (PSD) 3-1
3.1.1. Applicability Analysis 3-1
3.1.2. Source Obligation Requirements 3-3
3.2 New Source Performance Standards (NSPS) 3-4
3.3 Permit to Construct 3-5
3.4 Ambient Impacts 3-8
3.4.1. NAAQS 3-8
3.4.2. Toxic Air Pollutants 3-8
3.5 Compliance Assurance Monitoring (CAM) 3-9
3.6 Tier I Operating Permit 3-9
4.0 PROPOSED PERMIT CONDITIONS 4-1

APPENDIX A: Permit Application Forms & Compliance Certification
APPENDIX B: Plot Plan & Process Flow Diagram
APPENDIX C: Emissions Calculations
APPENDIX D: Air Quality Impacts Correspondence

LIST OF TABLES

Table 3-1. Summary of Project Emissions Increases 3-3
Table 3-2. PTC Requirements Summary and Application Cross-reference 3-5
Table 3-3. Summary of TAP Emissions 3-9
Table 3-4. Tier I Operating Permit Requirements and Application Cross-reference 3-10
Table 4-1. Proposed PTC & Revised Tier I Permit Conditions 4-2

1.0 INTRODUCTION

Simplot Agribusiness (Simplot) owns and operates the Don Plant located in Power County near Pocatello, Idaho. The Don Plant is an integrated fertilizer manufacturing facility that produces nitrogen, phosphate and sulfate commercial fertilizer products. A scaled plot plan of the Don Plant is presented Appendix B.

Operations at the Don Plant include the No. 300 and No. 400 Sulfuric Acid Plants, an ammonium sulfate plant, a wet process phosphoric acid plant, a superphosphoric acid plant, three granulated fertilizer plants, and several natural gas fired steam generators. Simplot is in discussions with U.S. EPA regarding a settlement of clean air act liabilities related to the No. 300 and No. 400 acid plants at the Don Plant. If consummated, this settlement is anticipated to result in significant reductions in sulfur dioxide (SO_2) emissions from the No. 300 and No. 400 plants. In the course of settlement discussions, Simplot has proposed specific SO_2 emissions reduction targets and a corresponding schedule to U.S. EPA. To meet the proposed targets and schedule, Simplot must implement certain changes to the No. 400 Plant beginning in June, 2012. These changes may occur before the settlement discussions are concluded.

Other changes to the No. 400 Plant are planned for 2014 and 2016. The overall result of the planned changes (beginning in 2012 and concluding in 2016) will be a reduction in allowable SO_2 emissions from the current level of 4 pounds per ton of 100% H_2SO_4 produced to a level of 1.7 pounds per ton or less.[1] The planned changes will also increase the production capability of the No. 400 Plant to 2,500 tons per day (annual average basis). The net result of these changes is a projected decrease in allowable SO_2 emissions of nearly 700 tons per year and a decrease in actual emissions of more than 200 tons per year.[2]

With this PTC application, Simplot requests IDEQ's authorization to make specific changes to the No. 400 plant as outlined in Section 2. These changes include those planned for 2012 as well as those planned for 2014 and 2016. This application contains a complete PSD applicability analysis for the proposed changes which demonstrates that projected emissions increases of all regulated NSR pollutants are below their respective PSD significant emission rate thresholds. Therefore, the project is a minor modification to an existing major source and is not subject to PSD review.[3]

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[1] Simplot has proposed to reduce emissions from the No. 400 Plant in two steps. The first step will be a reduction to an annual average emissions rate of 2.0 lb SO_2 per ton of 100% H_2SO_4 and the second step will be to an annual average rate of 1.7 lb/ton. The PSD applicability analysis in this application is based on only the first step which is the most conservative approach to determining applicability.

[2] The estimated allowable emissions decrease is based on post-project allowable emissions of 1.7 pounds per ton on an annual average basis. The estimated actual emissions decrease is based on projected actual emissions of 2.0 pounds per ton (annual average basis) minus baseline actual emissions and does not account for projected emissions that are "excludable" pursuant to the definition of "projected actual emissions" found at IDAPA 58.01.01. 007.08.

[3] PSD refers to the Prevention of Significant Deterioration preconstruction permitting requirements found in IDAPA 58.01.01.205 incorporating 40 CFR 52.21 by reference.

Simplot also requests that emission limits and related requirements from the PTC for the planned changes to the No. 400 Plant be incorporated into the Don Plant Tier I operating permit in accordance with the administrative permit amendment procedures in IDAPA 58.01.01.381.01.e, referring to IDAPA 58.01.01.209.05.c. Accordingly, the requirements of IDAPA 58.01.01.200 through 219 for a PTC and 300 through 381 for a Tier I operating permit modification are addressed herein.

The remainder of this permit application is organized as follows:

- Section 2.0 – Project Description
- Section 3.0 – Regulatory Analysis
- Section 4.0 – Proposed Permit Conditions and Monitoring
- Appendix A – Permit Application Forms & Compliance Certification
- Appendix B – Plot Plan & Process Flow Diagram
- Appendix C – Emissions Calculations
- Appendix D – Air Quality Impacts Correspondence

2.0 PROJECT DESCRIPTION

2.1 Process Description

A simplified process flow diagram of the No. 400 Plant is shown in Figure 2-1. The No. 400 Plant uses a double-absorption contact process to produce sulfuric acid (H_2SO_4) from elemental sulfur. The elemental sulfur is burned in a furnace to produce an SO_2-rich gas stream. The SO_2-rich gas stream is then cooled in a waste heat boiler before being routed to a multi-pass, four-bed catalytic converter where it reacts with oxygen to form sulfur trioxide (SO_3). After the third catalyst bed, the now SO_3-rich gas stream is cooled and sent to an intermediate absorbing tower where much of the SO_3 is absorbed into a concentrated sulfuric acid solution. The exhaust gas from the intermediate absorbing tower is reheated and returned to the catalytic converter where it passes through the fourth and final catalyst bed where most of the remaining SO_2 is converted to SO_3. This gas stream exits the converter, is cooled, and is then routed to the final absorbing tower where virtually all of the remaining gas-phase SO_3 is absorbed into a concentrated sulfuric acid solution. The gas exiting the final absorbing tower passes through a set of mist eliminators which collect most of the residual H_2SO_4 mist. This gas stream, which contains nitrogen, oxygen, a small amount of unreacted SO_2, and NOx produced from the combustion of sulfur in the furnace, is exhausted through the No. 400 Plant stack. Based on available emissions factor data, it appears there may also be some CO_2 in this gas stream. Much of the energy released through combustion of sulfur and the subsequent oxidation of SO_2 to SO_3 is recovered as steam for use in other areas of the Don Plant.

2.2 Project Description

When completed, the planned changes to the No. 400 Plant will accomplish two objectives. The first will be to reduce SO_2 emissions to a rate of 1.7 pounds per ton (annual average basis) or less. The second objective of the planned changes is to increase the capacity of the No. 400 Plant to 2,500 tons per day (on an annual average basis). Simplot's current plans call for these objectives to be accomplished by making changes to the No. 400 Plant during scheduled plant turnarounds in 2012, 2014 and 2016. The reduction in SO_2 emissions will occur in two steps. During the 2012 turnaround, changes will be made that are projected to reduce SO_2 emissions to an annual average rate of 2.0 pounds per ton or less. During the 2016 turnaround, changes will be made that are projected to further reduce SO_2 emissions to an annual average rate of 1.7 pounds per ton or less. The increase in production capability will be enabled by the changes planned for 2012, 2014 and 2016. For purposes of this application, it is assumed that the production increase will occur at the time the SO_2 emissions rate is reduced to 2.0 lb/ton. The actual production increase may occur at a later date.

Simplot has completed engineering work on the 2012 planned changes with preliminary engineering done for the out-year changes. The scope of the planned changes as currently envisioned is outlined below.

<u>2012 Changes:</u>

- Replace the final absorbing tower (FAT) including the mist eliminators.

- Install a new final absorber acid feed cooler.
- Upgrade the capacity of the final absorber acid feed and product pumps.
- Replace the product dilution cooler with larger unit.
- Install a new cooling tower.
- Install cesium promoted catalyst in the converter.
- Make various improvements to infrastructure, electrical, and instrumentation systems.

2014 – 2016 Changes:

- Replace Economizers.
- Replace Drying Tower.
- Replace Converter.
- Replace Superheater.
- Replace Gas Heat Exchanger.

As can be seen from the above list, virtually all of these changes represent modifications to a single existing emissions unit – the No. 400 Plant. Only the new cooling tower represents construction of a new emissions unit.

Simplot anticipates that additional changes may be needed beyond those listed above and expects to update this application as necessary once final engineering is completed on the out-year changes.[4] A conservative approach has been used to estimate the emissions impacts from these changes. Thus, any additional changes that may be needed to accomplish the project objectives are not expected to affect the emissions change analysis or the PSD applicability determination presented in this application in any meaningful way.

[4] Simplot has not completed the engineering analysis of all changes that may be needed to achieve the project objectives. Such other changes may include changes to the blower, sulfur pumps, transfer piping, furnace, main cooler, and other pumps.

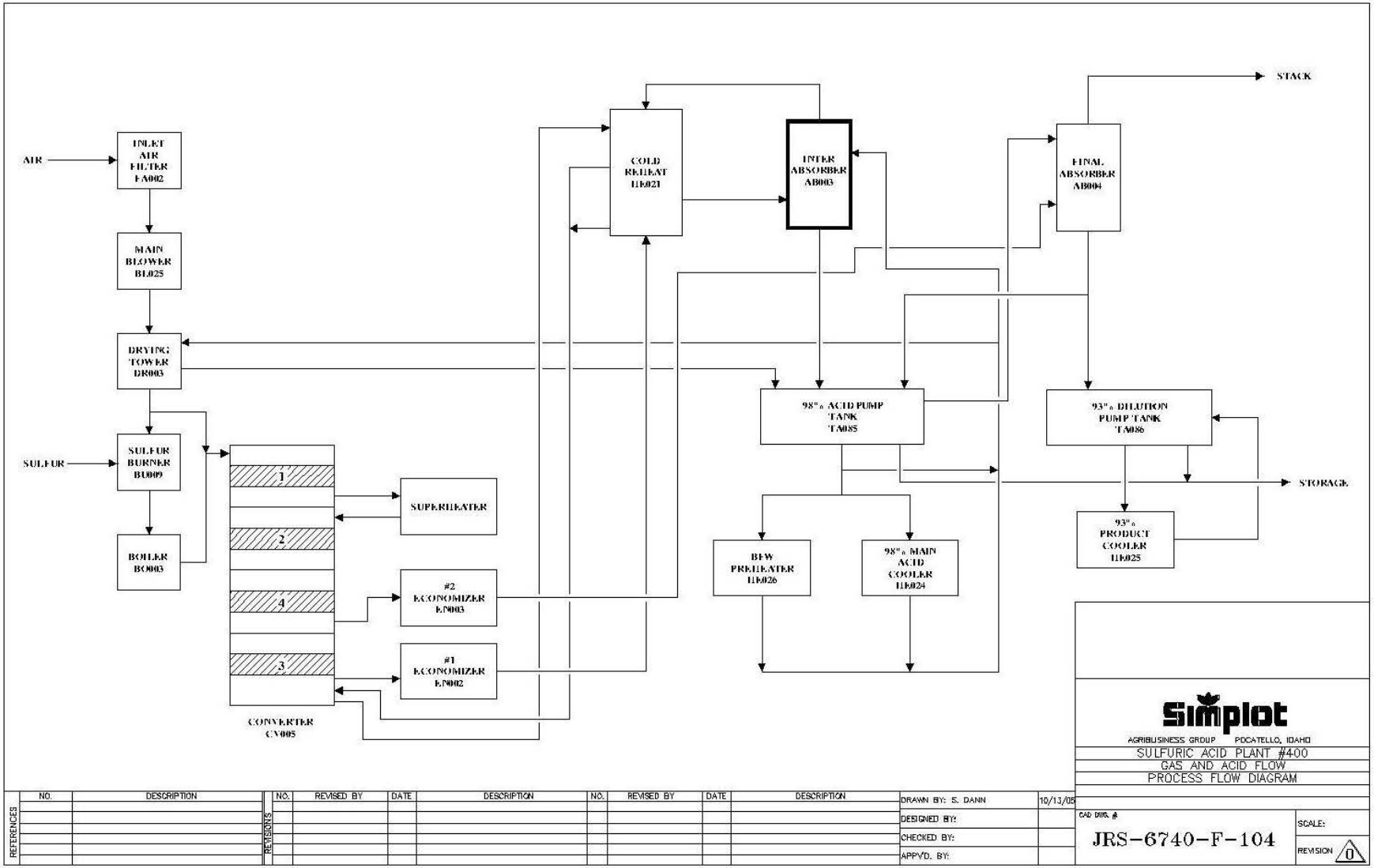


Figure 2-1. No. 400 Plant Process Flow Diagram

3.0 REGULATORY REVIEW

Simplot performed a review of federal and Idaho air quality regulations potentially applicable to the proposed No. 400 Plant changes. The results of this regulatory review and conclusions are presented in Sections 3.1 through 3.8.

3.1 Prevention of Significant Deterioration (PSD)

The Don Plant is located in Power County in an area classified as attainment or unclassifiable for all criteria air pollutants.[5] IDAPA 58.01.01.205: 'Permit Requirements for New Major Facilities or Major Modifications in Attainment or Unclassifiable Areas', incorporates (with certain modifications) the provisions of 40 CFR 52.21 (i.e., the federal PSD rules) by reference. The Don Plant is a major stationary source for the purposes of the Idaho PSD permitting program. Simplot's planned changes to the No. 400 Plant constitute a 'physical change' to the No. 400 Plant. Therefore, a PSD applicability analysis was performed in accordance with the procedures found at 40 CFR 52.21(a)(2). The PSD applicability analysis methodology and a summary of the analysis results are presented in Section 3.1.1. Detailed emission increase calculations and supporting documentation are contained in Appendix C. A review of the source obligation provisions in 40 CFR 52.21(r)(4) and (r)(6) and are provided in Section 3.1.2.

3.1.1. Applicability Analysis

Emissions increases associated with the planned No. 400 Plant changes (i.e., project emissions increases) were calculated in accordance with the procedures in 40 CFR 52.21(a)(2)(iv)(f): "Hybrid test for projects that involve multiple types of emissions units." The hybrid test uses the actual-to-projected-actual (ATPA) applicability test to evaluate emissions increases at existing units and the actual-to-potential test to evaluate emissions increases at new units.

The hybrid test involves the following procedure for determining whether a given physical change or change in the method of operation (i.e., project) results in a significant emissions increase:

> *"A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the difference between the projected actual emissions (as defined in paragraph (b)(41) of this section) and the baseline actual emissions (as defined in paragraphs (b)(48)(i) and (ii) of this section), for each existing emissions unit, equals or exceeds the significant amount for that pollutant (as defined in paragraph (b)(23) of this section)."*

Simplot evaluated the emissions units associated with the No. 400 Plant, including upstream and downstream processes and support facilities, to identify those units and activities that will be affected by the planned changes to the No. 400 Plant. The following emission units were

[5] See 40 CFR 81.313. The Portneuf Valley PM_{10} nonattainment area was redesignated attainment effective August 14, 2006 (71 FR 39574; July 13, 2006). A PM_{10} maintenance plan is currently in effect.

determined to potentially be affected by the project and were therefore included in the PSD applicability emissions increase analysis:

- The No. 400 Plant stack emissions;
- The No. 400 Plant 'fugitive' sources;
- The No. 400 Plant sulfuric acid process/storage tanks and loadout operations; and
- A new cooling tower.

Baseline actual emissions (BAE) and projected actual emissions (PAE) are calculated for each affected emissions unit in accordance with the regulatory definitions at IDAPA 58.01.01.007.02 and IDAPA 58.01.01.007.08 respectively. Fugitive emissions, to the extent quantifiable, were included in the analysis.[6] Emissions associated with startups, shutdowns, and malfunctions will not be affected by the project, and were therefore not separately quantified for the purpose of determining BAE or PAE.

Table 3-1 presents a summary of the PSD applicability analysis, including baseline actual emissions, projected actual emissions, and calculated increases or decreases. Detailed calculations and supporting documentation for the emissions analysis are contained in Appendix C. As documented in Table 3-1 and Appendix C, emissions increases resulting from the proposed No. 400 Plant changes are below PSD significant emission rate thresholds for all regulated NSR pollutants. Therefore, project does not constitute a PSD major modification and is not subject to PSD permitting requirements.

[6] There are no generally accepted means of estimating fugitive emission from the sources in question so Simplot has elected to use very conservative material balance and chemical equilibrium calculations to estimate fugitive emissions associated with the No. 400 Plant including emissions from upstream and downstream activities such as sulfur receiving and handling as well as product acid storage and handling (including loadout).

Table 3-1. Summary of Project Emissions Increases[7]

Emission Source/Group	PM	PM_{10}	$PM_{2.5}$	NOx	SO_2	H_2SO_4	GHGs	H_2S / TRS [a]
Baseline Actual Emissions (tons/yr)								
No. 400 Plant Stack	24.7	29.8	17.7	37.1	1,157	13.1	106	[b]
Fugitive Sources	[b]	[b]	[b]	[b]	1.5	[b]	[b]	25.9
H_2SO_4 Tanks	0.34	0.34	0.34	[b]	[b]	0.34	[b]	[b]
Cooling Tower	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Projected Actual / Potential Emissions (tons/yr) [c]								
No. 400 Plant Stack	27.2	33.3	20.2	41.1	611.6	19.8	115.8	[b]
Fugitive Sources	[b]	[b]	[b]	[b]	0.3	[b]	[b]	28.3
H_2SO_4 Tanks	0.4	0.4	0.4	[b]	[b]	0.4	[b]	[b]
Cooling Tower	0.8	0.2	0.0	[b]	[b]	[b]	[b]	[b]
Project Emissions Increase (tons/yr)								
All Sources	3.3	3.7	2.5	4.0	0	6.7	10	2.4
PSD SER (tpy)	25	15	10	40	40	7	75,000	10
Significant?	NO	NO	NO	NO	NO	NO	NO	NO
Reasonable Possibility?[d]	NO	YES	YES	NO	NO	YES	NO	NO

[a] Estimated H_2S emissions are worst case. Actual emissions will be only a fraction of these estimates since less than 100% of H_2S will evolve prior to combustion.

[b] No data are available on emissions of other regulated NSR pollutants from sulfuric acid plants (e.g., CO, VOC, Pb, F, TRS). Emissions of regulated NSR pollutants not quantified are considered to be either zero or negligible/non-quantifiable.

[c] For existing units, projected actual emissions exclude those emissions that the unit was capable of accommodating during the baseline period and that are unrelated to the project. See Appendix C for details.

[d] See Appendix C for details.

3.1.2. Source Obligation Requirements

The PSD source obligation provisions are codified in 40 CFR 52.21(r) and incorporated by reference at IDAPA 58.01.01.205.01. The provisions of 40 CFR 52.21(r)(6) apply to projects at existing emissions units in circumstances where there is a 'reasonable possibility' that a project that is not a part of a major modification may result in a significant emissions increase of one or more regulated NSR pollutants and the owner or operator elects to use the method specified in paragraphs 40 CFR 52.21(b)(41)(ii)(a) through (c) for calculating projected actual emissions. A 'reasonable possibility' occurs when the owner or operator calculates the project to result in either:

> *"(a) A projected actual emissions increase of at least 50 percent of the amount that is a 'significant emissions increase,' as defined under paragraph (b)(40) of this section*

[7] The 'project' will not affect emissions of any other regulated NSR pollutants including VOC, CO, and Fluorides. For SO_2, the project will result in a significant decrease in emissions. This decrease is shown as a zero increase for purposes of evaluating PSD applicability.

(without reference to the amount that is a significant net emissions increase), for the regulated NSR pollutant; or

(b) A projected actual emissions increase that, added to the amount of emissions excluded under paragraph (b)(41)(ii)(c) of this section, sums to at least 50 percent of the amount that is a 'significant emissions increase,' as defined under paragraph (b)(40) of this section (without reference to the amount that is a significant net emissions increase), for the regulated NSR pollutant. For a project for which a reasonable possibility occurs only within the meaning of paragraph (r)(6)(vi)(b) of this section, and not also within the meaning of paragraph (r)(6)(vi)(a) of this section, then provisions (r)(6)(ii) through (v) do not apply to the project."[8]

In the case of the No. 400 Plant changes, Simplot evaluated "excludable emissions" which means that paragraph (b) above yields the highest percentage value for evaluating whether a "reasonable possibility" occurs. For PM_{10}, $PM_{2.5}$, and H_2SO_4, the difference between projected actual emissions plus excludable emissions minus baseline actual emissions exceeds 50% of the applicable PSD significant emission rate increase thresholds. As such, the requirements in 40 CFR 52.21(r)(6) are applicable to these three pollutants. Emissions of all other regulated NSR pollutants are not subject to the requirements of this provision of the PSD rule.

This PTC application contains all of the information specified under 40 CFR 52.21(r)(6)(i). In addition, Simplot will monitor the emissions of PM_{10}, $PM_{2.5}$ and H_2SO_4 from the units affected by this project and calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of 10 years following resumption of regular operations after planned changes to the No. 400 Plant are completed. In addition, Simplot will provide IDEQ with any reports required pursuant to the procedures set out in 40 CFR 52.21(r)(6)(c)(v).

3.2 New Source Performance Standards (NSPS)

The Federal NSPS provisions in 40 CFR Part 60 are incorporated by reference in IDAPA 58.01.01.107.03. NSPS generally apply to new, modified, or reconstructed facilities in designated source categories. The No. 400 Plant is an affected facility under NSPS Subpart H – "Standards of Performance for Sulfuric Acid Plants" (40 CFR 60.80 – 60.85). The proposed permit revisions will not affect NSPS applicability to the No. 400 Plant and Simplot will continue to comply with the Subpart H applicable requirements as defined in the Tier I Operating Permit for the Don Plant (Section 17 of the Tier I permit). Since NSPS applicability is not affected by this project, the applicable provisions of this rule have previously been addressed by Simplot and they are not specifically reviewed herein.

[8] See 40 CFR 52.21(r)(c)(vi).

3.3 Permit to Construct

The procedures and requirements applicable to applying for and issuing permits to construct (PTC) are contained in IDAPA 58.01.01.200 – 228. Simplot is requesting a PTC for modification of a Tier I source. As demonstrated in Section 3.1 and Appendix C, the proposed project is a minor modification for the purpose of PSD applicability. Therefore, the requirements of IDAPA 58.01.01.205 for major modifications are not applicable. This permit application addresses the requirements of Rule 202 – "Application Procedures" and Rule 203 – "Permit Requirements for New and Modified Stationary Sources" as applicable to minor modifications. Ambient air quality standards (i.e., NAAQS and toxic air pollutants) are addressed in Section 3.5.

Because the requested permit revision will require modification of the Don Plant Tier I permit, Simplot requests that this application be processed in accordance with IDAPA 58.01.01.209.05.c. Accordingly, this application addresses all of the applicable requirements in IDAPA 58.01.01.200 – 219 and IDAPA 58.01.01.300 – 381. Applicable PTC requirements are addressed in Table 3-2. See Section 3.6 for a discussion of applicable Tier I operating permit requirements and how those requirements are addressed in this PTC application.

Table 3-2 also addresses application fees. IDAPA 58.01.01.224 and 225 specify PTC application and processing fees. In accordance with Section 224, Simplot has included a $1,000 PTC application fee with this submittal. According to Rule 225, an additional PTC processing fee will be assessed by the Department.

Table 3-2. PTC Requirements Summary and Application Cross-reference

Section	Description	Applicable?	Application Cross-reference and/or Discussion
200	Procedures and Requirements for Permits to Construct	Yes	This section contains no specific applicable requirements.
201	Permit to Construct Required	Yes	Simplot will not commence construction of the planned changes to the No. 400 Plant until a PTC is issued.
202	Application Procedures	Yes	See 202.01 – 202.03 below:
202.01.a	Required Information	Yes	Sections 1 – 3 and Appendices A – C
202.02	Estimated of Ambient Concentrations	Yes	Section 3.4
202.03	Additional Information	Yes	No specific requirements at this time.
203	Permit Requirements for New and Modified Stationary Sources	Yes	See 203.01 – 203.03 below:
203.01	Emission Standards	Yes	Sections 3 and 4 and Appendix A
203.02	NAAQS	Yes	Section 3.4
203.03	Toxic Air Pollutants	Yes	Section 3.4

Table 3-2. PTC Requirements Summary and Application Cross-reference

Section	Description	Applicable?	Application Cross-reference and/or Discussion
204	Permit Requirements for New Major Facilities or Major Modifications in Nonattainment Areas	No	The Don Plant is located in an area classified as attainment or unclassifiable for all criteria pollutants
205	Permit Requirements for New Major Facilities or Major Modifications in Attainment or Unclassifiable Areas	No	The planned changed to the No. 400 Plant are not a major modification; see Section 3.1 and Appendix C.
206	Optional Offsets for Permits to Construct	No	No offsets are needed.
207	Requirements for Emission Reduction Credit	No	No emission reduction credits are needed.
208	Demonstration of Net Air Quality Benefit	No	No emissions trades are needed.
209	Procedures for Issuing Permits	Yes	See 209.01 – 209.05 below:
209.01	General Procedures	Yes	IDEQ responsibility
209.02	Additional Procedures for Specified Sources	No	Applies only to major new sources or major modifications.
209.03	Establishing a Good Engineering Stack Height	No	IDEQ responsibility; no new stack height being established as part of this application.
209.04	Revisions of Permits to Construct	No	Simplot is requesting a new PTC for the planned changes and not a revision.
209.05	Permit to Construct Procedures for Tier I Sources	Yes	Sections 3.3 and 3.6; Simplot requests that this PTC be processed in accordance with 2099.05.c.
210	Demonstration of Preconstruction Compliance with Toxic Standards	Yes	Section 3.4
211	Conditions for Permits to Construct	Yes	See 211.01 – 211.04 below:
211.01	Reasonable Conditions	Yes	IDEQ responsibility; see Section 4 for proposed permit conditions. Simplot already has stack testing facilities and monitoring equipment in place.
211.02	Cancellation	Yes	IDEQ responsibility; Note that there will be gaps in construction of approximately two years between phases of the No. 400 Plant project and Simplot requests that IDEQ issue a PTC consistent with the planned construction schedule.
211.03	Notification to the Department	Yes	Simplot will notify the Department in a timely manner consistent with the requirements of this Subsection.

Table 3-2. PTC Requirements Summary and Application Cross-reference

Section	Description	Applicable?	Application Cross-reference and/or Discussion
211.04	Performance Test	Yes	Simplot will conduct any required performance tests in a timely manner consistent with the requirements of this Subsection.
212	Obligation to Comply	Yes	See 212.01 – 212.02 below:
212.01	Responsibility to Comply with All Requirements	Yes	Section 4; Simplot will continue to comply with all applicable requirements
212.02	Relaxation of Standards or Restriction	No	The planned changes to the No. 400 Plant constitute a minor modification to a major source. These changes do not involve relaxation of any synthetic minor restriction and therefore this rule is not applicable.
213	Pre-Permit Construction	No	At this time, Simplot does not intend to request approval for pre-permit construction activities. Depending on the processing time for this application, the situation could change as the timing for the 2012 changes is critical to Simplot's overall compliance schedule.
214	Demonstration of Preconstruction Compliance for New and Reconstructed Sources of Hazardous Air Pollutants	No	The planned changes to the No. 400 Plant do not involve construction or reconstruction of a major source of HAPs.
220 - 223	Exemptions	No	The planned changes when taken as a whole constitute a non-exempt modification to the No. 400 Plant.
224	Permit to Construct Application Fee	Yes	Section 3.3; Simplot has included the application fee of $1,000 with this PTC application.
225	Permit to Construct Processing Fee	Yes	Section 3.3; Simplot will pay the applicable fee upon assessment by the Department. Note that this project is projected to result in an emissions decrease.
226	Payment of Fees for Permits to Construct	Yes	Section 3.3; Simplot has included the application fee of $1,000 with this PTC application.
227	Receipt and Usage of Fees	Yes	IDEQ Responsibility
228	Appeals	See comment	Generally applicable to all applications including this one.

3.4 Ambient Impacts

In accordance with IDAPA 58.01.01.203, the issuance of a PTC requires an adequate demonstration by the applicant that the proposed source or modification will not: (1) cause or significantly contribute to a violation of any ambient air quality standard (i.e., NAAQS) or (2) injure or unreasonably affect human or animal life or vegetation due to Toxic Air Pollutant (TAP) emissions. The following subsections address these issues as they relate to the proposed changes to the No. 400 Plant.

3.4.1. NAAQS

Note that no increases in the current permitted allowable emission rates are being proposed as part of this PTC application, and project emissions increases are below PSD significant emission rate thresholds for all regulated pollutants. Thus, the project does not trigger PSD ambient impact analysis requirements.

The State of Idaho Air Quality Modeling Guideline contains modeling thresholds for criteria pollutants.[9] Current project increases and prior modeling demonstrations for the No. 400 Plant were reviewed, and based on this review, Simplot concluded that no new ambient impact analyses are required to demonstrate NAAQS protection. Calculated emission increases of NOx and $PM_{2.5}$ exceed the Level I thresholds in Table 2 of the Modeling Guideline but are below the Level II thresholds indicating that the project emissions changes in these pollutants will not significantly impact NAAQS attainment in the vicinity of the Don Plant. DEQ has examined the project emissions changes (as documented in a letter to DEQ submitted on November 22, 2011) and has concluded that modeling is not needed to demonstrate NAAQS compliance.[10]

3.4.2. Toxic Air Pollutants

TAP emissions were evaluated in accordance with IDAPA 58.01.01.210, "Demonstration of Preconstruction Compliance with Toxic Standards." Two TAPs (i.e., H_2SO_4 and H_2S) are emitted from the No. 400 Plant and other project-affected units. Calculated maximum 24-hr average TAP emissions increases are presented in Table 3-3 and compared to the applicable screening emissions levels (EL) from IDAPA 58.01.01.585. As shown, the emissions increases of these pollutants are below the applicable EL. Detailed calculations and supporting documentation regarding these pollutants are contained in Appendix C. The TAP Preconstruction Compliance Application Completeness Checklist is contained in Appendix A.

[9] State of Idaho Air Quality Modeling Guideline, Idaho Department of Environmental Quality, December, 2002.

[10] See November 22, 2011 letter from Jack Burke of RTP Environmental Associates, Inc. to Darrin Mehr of IDEQ and December 1, 2011 email from Kevin Schilling of IDEQ to Jack Burke of RTP Environmental Associates, Inc. Both of these documents are included as Appendix D of this PTC application.

Table 3-3. Summary of TAP Emissions

TAP	Controlled/ Uncontrolled	Emissions Increase	Screening EL	Above EL?
		(lb/hr, 24-hr average)		
H_2SO_4 [a]	Controlled	0.00	0.067	No
H_2S [b]	Uncontrolled	0.61	0.933	No

[a] Project will not result in any increase in allowable H_2SO_4 emissions.

[b] The 24-hour increase is estimated to be 110% of annual average increase. No actual increase in short-term emissions is expected as the project will only result in increase use of the existing equipment which can already be utilized at 100% capacity on a short-term (e.g., daily) basis.

3.5 Compliance Assurance Monitoring (CAM)

The federal CAM requirements codified in 40 CFR Part 64 are incorporated by reference at IDAPA 58.01.01.107.k. There are no CAM requirements applicable to the No. 400 Plant. Emissions of SO_2, PM, PM_{10}, $PM_{2.5}$ and H_2SO_4 from this plant are limited by inherent process equipment. Emissions of all other pollutants from this plant are below the CAM applicability thresholds and there are no control devices employed to maintain emissions below those thresholds.[11]

3.6 Tier I Operating Permit

The Don Plant is a Tier I source currently operating under Permit No. T1-040313. Although this permit expired on December 24, 2007, Simplot submitted a timely and complete application for Tier I permit renewal on June 29, 2007 and is therefore operating under an application shield in accordance with the expired permit. To incorporate the No. 400 Plant PTC revisions, Simplot requests that IDEQ utilize the procedures for Tier I administrative amendments contained in IDAPA 58.01.01.381.e, which provide for incorporation of the requirements of a PTC issued in accordance with Subsection 209.05.c. Rule 209.05.c stipulates that all information required by Sections 200 through 219 for a PTC and Sections 300 through 381 for a Tier I operating permit modification must be submitted with the PTC application.

Table 3-4 documents the Tier I permit application requirements in IDAPA 58.01.01.300 through 381 relevant to permit amendments and how each of those requirements is addressed in this permit application. Table 3-4 is focused on Tier I permit application requirements that are the responsibility of the applicant rather than the Departmental and/or general procedural requirements.

[11] As previously determined by Simplot and DEQ, the mist eliminators in the final absorbing tower are considered to be “inherent process equipment” as this term is defined at 40 CFR §64.1.

Table 3-4. Tier I Operating Permit Requirements and Application Cross-reference

Citation	Description	Applicable?	Application Cross-reference
314	Required Standard Application Form and Required Information	Yes	Completed relevant sections of the standard application form are included in Appendix A
314.01	General Requirements	Yes	Throughout
314.02	General Information for the Facility	Yes	Appendix A
314.03	Specific Information for Each Emissions Unit	Yes	See 314.04 – 314.11 below:
314.04	Emissions	Yes	Appendix C
314.05	Applicable Requirements	Yes	Sections 3 and 4
314.06	Other Requirements	Yes	Sections 3 and 4
314.07	Proposed Determinations of Nonapplicability	Yes	Sections 3 and 4
314.08	Alternative Operating Scenarios	No	There are no alternative operating scenarios for the equipment involved in the planned changes to the No. 400 Plant.
314.09	Compliance Certifications	Yes	Appendix A
314.10	Compliance Plans	Yes	Appendix A
314.11	Trading Scenarios	No	There are no trading scenarios for the equipment involved in the planned changes to the No. 400 Plant.
314.12	Additional Information	Yes	Throughout
315	Duty to Supplement or Correct Application	Yes	Simplot will submit additional information per the requirements of Section 315 as applicable.
317	Insignificant Activities	No	The planned changes to the No. 400 Plant do not involve construction of any insignificant activities.
381	Administrative Permit Amendments	Yes	See 381.01 – 381.02 below:
381.01	Criteria	Yes	Pursuant to 381.01.e, Simplot requests that the Don Plant Tier I operating permit be amended administratively by incorporation of the PTC issued in accordance with 209.05.c. This PTC application contains all information required by Sections 200 - 209 and 300 - 381.
381.02	Administrative Permit Amendment Application Procedures	Yes	See subsections below:

Citation	Description	Applicable?	Application Cross-reference
381.02.a.i	Request for administrative amendment	Yes	A statement requesting administrative permit amendment is contained in Sections 1 and 3.6 of this PTC application
381.02.a.ii	Description	Yes	Sections 2, 3.6, and 4.
381.02.a.iii	Date of administrative amendment	Yes	Simplot expects that the administrative amendment will be processed during Tier I permit renewal.
381.02.a.iv	Identify Tier I condition(s) no longer applicable	No	Simplot is not requesting any change to existing Tier I permit conditions as part of this application.
381.02.a.v	Identify applicable requirement(s)	Yes	Sections 3 and 4

4.0 PROPOSED PERMIT CONDITIONS

Proposed permit conditions for the No. 400 Plant are summarized in Table 5-1. Permit conditions that differ from the current Tier I permit are noted in ***bold-italic*** typeface. Note that the NOx and PM_{10} limits are derived from RACT limits established pursuant to Voluntary Order signed April 16, 2004 in a letter from DEQ dated January 6, 2009. The NOx limits are increased relative the RACT NOx limits to account for increased firing rates at a capacity of 2,500 tpd (annual average basis).

Table 4-1. Proposed PTC & Revised Tier I Permit Conditions

Parameter	Permit Limit / Standard Summary	Applicable Requirements Reference	Testing / Monitoring
SO_2	999 lb/3-hr period 1,458 tons/yr	Tier II Permit No. 077-00006	No change in the testing and monitoring requirements of the current Tier I permit as described in Sections 17.7 through 17.11.
	4 lb/ton of 100% H_2SO_4 produced	40 CFR 60.82	
	2 lb/ton of 100% H_2SO_4 produced on a 365-day rolling average basis.	Present application. Addresses Phase I reductions proposed to U.S. EPA.	
H_2SO_4 mist	12.5 lb/hr 54.8 tons/yr	Tier II Permit No. 077-00006	No change from current Tier I permit.
	0.15 lb/ton of 100% H_2SO_4 produced	40 CFR 60, Subpart H	
NOx	***12.3 lb/hr*** ***49.1tons/yr***	RACT limit established pursuant to Voluntary Order signed April 16, 2004. Limits revised upward to reflect increase in capacity of plant.	Annual compliance test in accordance with IDAPA 58.01.01.157 and EPA Method 7 (or approved alternate) Calculate annual NOx emissions as the product of the average hourly emissions rate measured during the compliance test (lb/hr) and the annual hours of operation.
PM	Process weight rate	IDAPA 58.01.01.701	None
PM_{10}	***13.6 lb/hr*** ***59.6 tons/yr***	RACT limit established pursuant to Voluntary Order signed April 16, 2004.	Annual compliance test in accordance with IDAPA 58.01.01.157 Calculate annual PM_{10} emissions as the product of the average hourly emissions rate measured during the compliance test (lb/hr) and the annual hours of operation.
Opacity	10% for more than six minute average	40 CFR 60, Subpart H	No change from current Tier I permit.

APPENDIX A
Application Forms & Compliance Certification

Compliance Certification

IDAPA 58.01.01.314.09

See attached compliance certification forms AQ-C1 and AQ-C2.

IDAPA 58.01.01.314.10

The No. 400 Sulfuric Acid Plant will continue to comply with all applicable requirements identified in Tier I permit No. T1-040313. For each applicable requirement that will become effective during the term of the Tier I operating permit, including requirements associated with the requested permit limit revision PTC, the No. 400 Sulfuric Acid Plant will comply in accordance with PTC and/or regulatory schedules.

John Bob	Plant Manager	1-4-12
Responsible Official Signature	Responsible Official Title	Date

John Bob

Print or Type Responsible Official Name

J.R. SIMPLOT COMPANY P.O. BOX 912 POCATELLO, IDAHO 83204
(208) 232-6620

AGRIBUSINESS

HAND DELIVERED

January 21, 2011

RECEIVED
JAN 21 2011
IDAHO DEPARTMENT OF
ENVIRONMENTAL QUALITY

Air Quality Permit Compliance
Department of Environmental Quality
Pocatello Regional Office
444 Hospital Way, Suite 300
Pocatello, ID 83201

RE: J.R. Simplot Co. – Don Siding Plant – Facility ID (AIRS No.): 077-00006 – TIER I Annual Compliance Certification, TIER I Annual Compliance Certification Table, TIER I Semiannual Deviation Summary Report, Chronology of Events, and Attachments – For Reporting Period Ending December 23, 2010

DEQ:

Find enclosed the Tier I Annual Compliance Certification, FORM AQ-C1, the TIER 1 Annual Compliance Certification Table, FORM AQ-C2, and the Tier I Semiannual Deviation Summary Table, FORM AQ-C3, Chronology of Events, and Attachments. The report and tables are submitted to meet the requirements set forth in Tier I Operating Permit No. 007-00006 issued on December 24, 2002, Tier I Operating Permit No. T1-9507-114-1 issued April 5, 2004 and Tier I Operating Permit No. T1-040313 issued November 08, 2005 for the J.R. Simplot Company, Don Siding Plant. This submittal includes the reporting period ending December 23, 2010.

If you have any questions, please contact me at (208) 234-5470 or Bob Willey at (208) 234-5352.

Sincerely,

Kirk Adkins
Environmental Manager
J.R. Simplot Company
Don Siding Plant

C. File: TIER I Operating Permit – Annual Compliance Certification – 12/23/10

TIER I ANNUAL COMPLIANCE CERTIFICATION

FORM AQ-C1

FACILITY INFORMATION

Facility/Permittee Name: J.R. Simplot Company

Co-Permittee Name(s):

Facility Location: 1150 W. Highway 30, Pocatello, Idaho

AIRS Facility No.: 077-00006

Facility Contact: Kirk Adkins **Ph:** 208-234-5470 **Fax:** 208-234-5305

PERMIT AND COMPLIANCE INFORMATION

Tier I Operating Permit No.: 077-00006 **Issuance Date:** 12/24/2002

Tier I Operating Permit No.: T1-9507-114-1 **Issuance Date:** 04/05/2004

Tier I Operating Permit No.: T1-040313 **Issuance Date:** 11/08/2005

Compliance Reporting Period: From: 12/24/2009 To: 12/23/2010

Is This Intended To Be A Semiannual Report Also? X Yes ☐ No

Deviations Reported This Period? X Yes ☐ No

List of Attachments:

X	Annual Compliance Certification Table (Form AQ-C2)	No. of Pages:	17
X	Semiannual Deviation Summary Table (Form AQ-C3)	No. of Pages:	02
X	Other: Attachment A	No. of Pages:	1
	Attachment B	No. of Pages:	1
	Attachment C	No. of Pages	1
	Attachment D	No. of Pages:	1
	Attachment AA	No. of Pages:	1
	Attachment BB	No. of Pages:	1
	Attachment CC	No. of Pages:	1
	Attachment DD	No. of Pages:	1
	Attachment EE	No. of Pages:	1
	Attachment FF	No. of Pages:	1
	Semiannual Monitoring Table (Form AQ-C5)	No. of Pages:	51
	Chronology of Events	No. of Pages:	1

TIER I ANNUAL COMPLIANCE CERTIFICATION

FORM AQ-C1

Certification of Truth, Accuracy, and Completeness (by Responsible Official) – Ending 12/23/2009

I hereby certify that based on information and belief formed after reasonable inquiry, the statements and information contained in this and any attached and/or referenced document(s) are true, accurate, and complete in accordance with IDAPA 58.01.01.123-124.

Responsible Official Signature	Plant Manager *Responsible Official Title*	1-21-11 *Date*
John Bob *Print or Type Responsible Official Name*		

Chronology of Events at the J.R. Simplot Company – Don Plant

Reporting Period 12/24/2009 to 12/23/2010

Deviation Date	Description	Is This an Excess Emissions Event In Accordance with Sections 130-136	Was this Reported as a Deviation in the First Semi-Annual Report	Was this Reported in the Annual Compliance Certification	Was a Deviation Report Submitted as Part of the Annual compliance Certification
First Semiannual Reporting Period					
4/10/10 – 4/10/10	400 Phosphoric Acid Plant. Did not operate within established flow range for Digester Scrubber See Attachment A. P.C. 12.6	No	Yes	Yes	No[1]
3/16/10- 3/17/10	300 Sulfuric Acid Plant. Exceeded Throughput limit –See attachment B. P.C. 16.8	No	Yes	Yes	No[1]
01/24/10 – 1/24/10	400 Sulfuric Acid Plant. Exceeded Throughput limit –See attachment C. P.C. 17.5	No	Yes	Yes	No[1]
12/24/08- 06/23/09	Sulfuric Acid Plant No. 400. Ambient SO_2 sights not in locations identified in 40 CFR 50 and 40 CFR 58. P.C. 17.8.2. See Attachment D	No	Yes	Yes	No[1]
Second Semiannual Reporting Period					
10/29/10 – 01/21/11	Facility Wide. Stack test Report for Granulation I compliance test not submitted to DEQ within 30 days of completing the test. Attachment AA P.C. 2.16	No	N/A	Yes	Yes
7/21/10 – 9/21/10	Ammonium Sulfate. Natural gas fired in dryer not continuously monitored See Attachment BB. P.C. 4.12	No	N/A	Yes	Yes
11/22/10 – 12/23/10	Granulation I. Natural gas fired in dryer not continuously monitored. See Attachment CC. P.C. 7.20	No	N/A	Yes	Yes
9/11/10- 9/11/10	Granulation II. Did not operate within established delta P range for T/G Scrubber. See Attachment DD. P.C. 8.10	No	N/A	Yes	Yes
10/24/10 – 10/24/10	300 Sulfuric Acid Plant. SO2 lb/hr emission limit exceeded. See Attachment EE. P.C. 16.1	No	N/A	Yes	Yes
6/24/10- 12/23/10	Sulfuric Acid Plant No. 400. Ambient SO_2 sights not in locations identified in 40 CFR 50 and 40 CFR 58. P.C. 17.8.2. See Attachment FF.	No	N/A	Yes	Yes

[1] The ACC is only required to contain deviation reports associated with the second semiannual reporting period

Attachment C – 400 Sulfuric Acid Plant – Permit Conditions 17.5

1. The hourly production rate limit established during stack testing in November 2009 was exceeded on January 24, 2010. The new production limit that was implemented in January 2010 was discussed with the Control Room Operators. The fact the production rate was lower than previous years was emphasized.

   (Attachment for Semiannual Reporting Period 12/24/09 – 06/23/10)

Attachment D – Sulfuric Acid Plant No. 400 – Permit Conditions 17.8.2

1. Ambient SO2 sites are not in the location identified in 40CFR50 and 40CFR58. DEQ and Simplot are working together to resolve the matter.

   (Attachment for Semiannual Reporting Period 12/24/09 – 06/23/10)

Attachment FF – Sulfuric Acid Plant No. 400 – Permit Conditions 17.8.2

1. Ambient SO2 sites are not in the location identified in 40CFR50 and 40CFR58. DEQ and Simplot are working together to resolve the matter.

TIER I SEMIANNUAL DEVIATION SUMMARY TABLE

Facility Name: J.R. Simplot Company

Facility Location: Don Siding Plant

Facility ID (AIRS No.): 077-00006

Permit No.: 077-00006
(T1-9507-114-1)(T1-040313)
Issuance Date: December 24, 2002
(April 5, 2004)(November 8, 2005)
Compliance Reporting Period:
June 24, 2010 – December 23, 2010

1	2	3	4	5		6		7	8	9	10
No	Permit Condition	Emissions Unit	Deviation	Time Began		Time Ended		Date DEQ Notified	Cause	Corrective Action & Preventative Measures	Attachment
				Date	Hr	Date	Hour				
1	2.16	Facility Wide	Stack test report for Granulation I not submitted within 30 days of completing the test	10/29/10		01/21/11		1/20/11 (by phone)	Oversight	System to be developed that ensures timely submittal of stack test reports	AA
2	4.12	Ammonium Sulfate Plant	Natural gas fired in dryer not continuously monitored	7/21/10		9/21/10		This Report	Flow meter to monitor gas fired in dryer did not function properly	Develop program to monitor flow meter data and identify periods of inconsistent data	BB
3	7.20	Granulation I	Natural gas fired in dryer not continuously monitored	11/22/10		12/23/10		This Report	Flow meter to monitor gas fired in dryer did not function properly	Develop program to monitor flow meter data and identify periods	CC

1

										of inconsistent data	
4	8.10	Granulation II	Did not operate within established delta P range for T/G scrubber	9/11/10	0001	9/11/10	2359	10/29/10	Adequate delta P not re-established in a timely manner.	Procedures reviewed with operators	DD
5	16.1	Sulfuric Acid Plant No. 300	170 lb/hr three-hour rolling average emission limit exceeded	10/24/10	1800	10/24/10	1841	10/28/10	Procedures followed while switching to alternate ammonia supply to scrubbing system	Discussions with staff and review of procedures	EE
6	17.8.2	Sulfuric Acid Plant No. 400	Ambient SO2 monitors not in locations identified in 40CFR50 and 40CFR58	06/24/10		12/23/10		This Report	Relocation of ambient SO2 sites.	This item is under discussion.	FF

	representatives upon request.	
16.13	The permittee shall monitor and record the production rate of the Sulfuric Acid Plant No. 300 in tons per hour and tons per any consecutive 12-month period. The permittee shall monitor and record any deviations of scrubber operations from the standard operating procedures recorded in the O&M manual.	The production rate of the sulfuric acid plant No. 300 is monitored and recorded in tons per hour and tons per any consecutive 12-month period. Scrubber deviations are recorded in a log book.
16.14.	The permittee shall submit reports of the results of the performance tests required in Permit Condition 16.11, including all required process data, to the Department within 30 days after the date on which the performance tests are concluded.	This condition was met prior to implementation of the Title V permit. Records available upon request.
SECTION 17. EMISSIONS UNIT GROUP 15: SULFURIC ACID PLANT NO. 400		
17.5	The production rate of sulfuric acid plant No. 400 processes shall be determined during the tests required in Permit Condition 17.10. The maximum production during the following year shall not exceed 105% of the rate achieved during the tests unless Permit Conditions 17.5.1 through 17.5.5 are met.	This condition was met. Records available upon request.
17.8	Monitoring Ground Level Ambient SO_2 Concentrations	
17.8.1	The permittee shall, by September 30, 1976, install, calibrate, maintain and operate a network for continuously monitoring ground-level ambient SO_2 concentrations along with wind speed and direction in accordance with 40 CFR 52.675(b)(7).	Ambient SO2 monitoring systems are in place.
17.8.2	The permittee shall operate the SO_2 monitors in their present locations, as specified in 40 CFR 50 and 40 CFR 58. For specific methods and quality control, follow EPA's "*Quality Assurance Handbook for Air Pollution Measurement Systems*".	SO2 monitors are in place.

17.8.3	Annual audits of the monitor's performance will be conducted by the Department or other auditors approved by the Department. Audit results will be sent in writing to the Department within 45 days after the audit and will be performed in accordance with 40 CFR 58.	Audits of the ambient SO2 sites were conducted. Records available upon request. (Audits conducted 03/17/10, 6/23/10, 9/23/10 & 12/21/10.) Reports submitted 7/29/10 & 10/29/10 for this reporting period
17.9	Opacity shall be determined using the Method 9 procedures contained in IDAPA 58.01.01.625. On a monthly basis, the permittee shall monitor and record the visible emissions observations complete with conditions at the time of observation. The records shall be kept at the facility for the most recent five-year period and shall be made available to Department representatives upon request.	This permit condition was met.
17.10	Annual SO_2 and H_2SO_4 mist emissions tests shall be performed. All emission tests shall be performed at the process equipment's maximum operating rate.	Annual SO2 and H2SO4 emissions test conducted during this permit term. (week of 11/8/2010)
17.13	The result of all emission tests, visible emission data, and cylinder gas audits on the CEMS shall be reported to the Department in the quarterly report. The quarterly report shall be received by the Department no later than 30 days after each calendar quarter. The CEMS data and the production rates determined during the tests shall be reported to the Department with the emission test data.	Quarterly audit were conducted this reporting period. (6/23/10, 9/23/10 & 12/21/10). Reports submitted 7/29/10 & 10/29/10. Records available upon request.
17.14	All three-hour block average SO_2 emissions shall be reported in a quarterly report. The quarterly report shall be received by Department no later than 30 days after each calendar quarter.	Quarterly reports submitted. (7/29/10 & 10/29/10) Records available upon request.
17.15	All repairs or changes to the SO_2 CEMS, and any calibration problems, shall be reported within seven	Notification provided in appropriate time period. Records available upon request.

	days and in the quarterly report.	
17.16	The permittee shall maintain records for five years of all ambient air pollution and meteorological monitoring data collected in the facility's vicinity.	These records are available upon request.

TIER I ANNUAL COMPLIANCE CERTIFICATION TABLE

FORM AQ-C2

Facility/Permittee Name: J.R. Simplot Company - Don Plant
Facility Location: 1150 W. Highway 30, Pocatello, Idaho
AIRS Facility No.: 077 - 00006

Tier I Operating Permit No.: 077 - 00006 (T1-9507-114-1)(T1-040313)
Issuance Date: 12/24/2002 (04/05/2004)(11/08/05)
Compliance Reporting Period: 12/24/2009 through 12/23/2010

1 Permit Condition	2 Compliance Determination Method	3 Monitoring Frequency C, I, or N/A	4 Deviations and Excess Emissions Events	5 Permit Condition Compliance Status C / I	6 Attachment
2.1	Permit Conditions 2.2 - 2.4	I		C	
2.2	Roads watered. Records available upon request	I		C	
2.3	No complaints this period. Complaint log maintained at facility; available upon request	I		C	
2.4	Facility wide inspections conducted. No fugitive emissions problems. Log maintained at facility; available upon request.	I		C	
2.5	Permit Condition 2.6	C		C	
2.6	Complaints received this period. Log maintained at facility; available upon request.	C		C	
2.7	Permit Condition 2.8	I		C	
2.8	Facility wide inspections conducted. Log maintained at facility; available upon request.	I		C	
2.9	See compliance with 2.9.1 - 2.9.5.2	N/A		C	
2.9.1	No known excess emission events this period	N/A		C	
2.9.2	Startup/shutdown reports submitted to DEQ. Available up request	I		C	
2.9.2.1	Atmospheric Stagnation Advisory and/or a Wood Stove Curtailment Advisory occurred during this reporting period.	I		C	
2.9.2.2	Start up notifications submitted to DEQ.	I		C	
2.9.2.3	Startup, shutdown, maintenance notification provided to DEQ.	I		C	
2.9.3	Notification	I		C	

C = Continuous I = Intermittent N/A = Not Applicable

1 Permit Condition	2 Compliance Determination Method	3 Monitoring Frequency C, I, or N/A	4 Deviations and Excess Emissions Events	5 Permit Condition Compliance Status C / I	6 Attachment
16.10	40 CFR 60.13 and 40 CFR 60.7. Audits conducted 03/17/2010, 6/22/2010 & 06/23/2010, 09/22/2010 & 9/23/2010, and 12/21/2010	C		C	
16.11	Permit Conditions 16.11.1 - 16.11.6	I		C	
16.11.1	Performance Test Conducted in 5/11/2010&5/12/2010	I		C	
16.11.2	Performance Test Conducted in 5/11/2010&5/12/2010	I		C	
16.11.3	Performance Test Conducted in 5/11/2010&5/12/2010	I		C	
16.11.4	Performance Test Conducted in 5/11/2010&5/12/2010	I		C	
16.11.5	Performance Test Conducted in 5/11/2010&5/12/2010	I		C	
16.11.6	`	I		C	
16.12	Visible emissions inspection	I		C	
16.13	Monitor and record the production rate of sulfuric acid in tons per hour and tons per any consecutive 12-month period	C		C	
16.14	Submit performance test reports. Submitted 06/10/2010	I		C	
16.15	Permit Condition 17.8	C		C	
17.1	Permit Conditions 17.5 to 17.17	C		C	
17.2	Permit Conditions 17.5, 17.6, 17.10, & 17.11	C		C	
17.3	Permit Conditions 17.3, 17.6, & 17.9 to 17.17	C		C	
17.4	Permit Condtion 17.2	I		C	
17.5	Monitor production rate	C	Throughput rate exceeded	I	C
17.5.1	Permit Condition 17.5	C		C	
17.5.2	Permit Condition 17.5	C		C	
17.5.3	Permit Condition 17.5	C		C	
17.5.4	Permit Condition 17.5	C		C	
17.5.5	Permit Condition 17.5	C		C	
17.6	40 CFR 60.11(d)	C		C	
17.7	40 CFR 60.13 Audits conducted 03/17/2010, 6/22/2010 & 06/23/2010, 09/22/2010 & 9/23/2010, and 12/21/2010	C		C	
17.8	Permit Conditions 17.8.1 to 17.8.3	C		C	
17.8.1	40 CFR 52.675(b)(7)	C		C	
17.8.2	40 CFR 50 and 40 CFR 58	C	Ambient SO2 sites not in locations identified in 40 CFR 50 and 40 CFR 58	I	D, FF

1 Permit Condition	2 Compliance Determination Method	3 Monitoring Frequency C, I, or N/A	4 Deviations and Excess Emissions Events	5 Permit Condition Compliance Status C / I	6 Attachment
17.8.3	Conduct audits and submit written report within 45 days. Submitted 01/28/2010, 04/29/2010, 07/29/2010 & 10/29/2010.	I		I	
17.9	Visible emissions inspection	I		C	
17.10	Conduct performance test. Conducted on 11/09/2010 & 11/11/2010. Submitted 12/10/2010	I		C	
17.11	Appendix A of 40 CFR 60	I		C	
17.12	Monitor and record SO2 emissions	C		C	
17.13	Submit quarterly report. Submitted 01/28/2010, 04/29/2010, 07/29/2010 & 10/29/2010.	I		C	
17.14	Submit quarterly report within 30 days after each calendar quarter	I		C	
17.15	Report repairs or changes to CEMS within 7 days and in quarterly report	I		C	
17.16	Maintain ambient monitoring data for 5 years	C		C	
17.17	Keep standard operating procedure on site.	I		C	
18.1	Compliance issues	N/A		C	
18.2	Reserved	N/A		C	
18.3	Submit information as requested	N/A		C	
18.4	Reserved	N/A		C	
18.5	May extend submittal dates	N/A		C	
18.6	Reserved	N/A		C	
18.7	Reserved	N/A		C	
18.8	Reserved	N/A		C	
19 - 1	Comply with all permit conditions	C	Deviations already noted	I	
19 - 2	Not a defense in enforcement action to halt or reduce activity to maintain compliance	N/A		C	
19 - 3	Submit corrected information promptly	I		C	
19 - 4	Permit may be revised, reopened, revoked and reissued, or terminateed for cause.	I		C	
19 - 5	Request by permittee for permit revision, etc. does not stay any permit condition.	I		C	
19 - 6	This permit does not convey any property rights.	N/A		C	

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

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

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

COMPANY NAME, FACILITY NAME, AND FACILITY ID NUMBER			
1. Company Name	J.R. SImplot Company		
2. Facility Name	Don Siding Plant	3. Facility ID No.	077-00006
4. Brief Project Description - One sentence or less	Modify #400 Sulfuric Acid Plant to reduce SO2 emisisons and increase production capability. See Section 2 of Application for additional details.		

PERMIT APPLICATION TYPE

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

6. ☒ Minor PTC ☐ Major PTC

FORMS INCLUDED

Included	N/A	Forms		DEQ Verify
☒	☐	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: _____	☐
☐	☒	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 (SEE SECTION 3 AND APPENDIX C)		☐
☒	☐	PP – Plot Plan (SEE APPENDIX B)		☐
☐	☒	Forms MI1 – MI4 – Modeling	(Excel workbook, all 4 worksheets)	☐
☒	☐	Form FRA – Federal Regulation Applicability		☐

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

General Information **Form GI**
Revision 7
2/18/10

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

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

IDENTIFICATION

1. Company Name	2. Facility Name:
J.R. SImplot Company	Don Siding Plant

3. Brief Project Description:	Modify #400 Sulfuric Acid Plant to reduce SO2 emisisons and increase production capability. See Section 2 of Application for additional details.

FACILITY INFORMATION

4. Primary Facility Permit Contact Person/Title	Mr. Kirk Adkins		Environmental Manager	
5. Telephone Number and Email Address	208-234-5470		Kirk.Adkins@simplot.com	
6. Alternate Facility Contact Person/Title	Mr. Robert Willey		Environmental Engineer	
7. Telephone Number and Email Address	208-234-5352		Bob.Willey@simplot.com	
8. Address to Which the Permit Should be Sent	P.O. Box 912			
9. City/County/State/Zip Code	Pocatello	Power	ID	83204
10. Equipment Location Address (if different than the mailing address above)	1150 West Highway 30			
11. City/County/State/Zip Code	Pocatello	Power	ID	83204
12. Is the Equipment Portable?	☐ Yes ☒ No			
13. SIC Code(s) and NAICS Code	Primary SIC: 2874	Secondary SIC: 2819	NAICS: 325312	
14. Brief Business Description and Principal Product	Manufacture sulfuric acid, anhydrous ammonia, phosporic acid, and nitrogen, phosphate, and sulfate fertilizers			
15. Indentify any adjacent or contiguous facility that this company owns and/or operates				
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 (R**ules for the **C**ontrol of **A**ir **P**ollution in **I**daho**), 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	Mr. John Bob	Plant Manager	
18. Responsible Official's Signature	John Bob	Date:	1-4-12

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

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

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

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

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
J.R. SImplot Company	Don Siding Plant	077-00006

4. Brief Project Description:	Modify #400 Sulfuric Acid Plant to reduce SO2 emisisons and increase production capability.

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5. Emissions Unit (EU) Name:	SULFURIC ACID PLANT NO. 400
6. EU ID Number:	EMISSION UNIT GROUP 15
7. EU Type:	☐ New Source ☐ Unpermitted Existing Source ☒ Modification to a Permitted Source -- Previous Permit #:077-00006 Date Issued:
8. Manufacturer:	CHEMETICS
9. Model:	
10.. Maximum Capacity:	2431 TONS PER DAY (SHORT-TERM MAXIMUM RATE)
11. Date of Construction:	1986
12. Date of Modification (if any):	1992, 1993
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:	Mist Eliminator		
15. Date of Installation:	1986	16. Date of Modification (if any):	
17. Manufacturer and Model Number:	CHEMETICS		
18. ID(s) of Emission Unit Controlled:	EU Group 15		
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 ☐ No (If Yes, attach and label manufacturer guarantee)		

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency	0.15 lb/ton	0.15 lb/ton				

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. Past emissions testing has demonstrated compliance with cited efficiency values.

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

22. Actual Operation:	24 HR/DAY, 8760 HR/YR
23. Maximum Operation:	24 HR/DAY, 8760 HR/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:	SEE SECTION 4 OF PERMIT APPLICATION
25. Rationale for Requesting the Limit(s):	PROJECT EMISSIONS INCREASED BASED ON PROJECTED ACTUAL PRODUCTION RATE OF 913,000 TONS PER YEAR.

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

Emissions Units - Cooling Towers Information **Form EU4**
Revision 5
08/28/08

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

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
J.R. SImplot Company	Don Siding Plant	077-00006
4. Brief Project Description:	Modify #400 Sulfuric Acid Plant to reduce SO2 emisisons and increase production capability.	

COOLING TOWER IDENTIFICATION AND DESCRIPTION

	Tower 1	Tower 2	Tower 3	Tower 4
5. Emission Unit Name	New #400 Plant Cooling Tower			
6. Emission Unit ID Number	To Be Determined			
7. Stack/Vent ID Number	To Be Determined			
8. Tower Type (N: New, U: Unpermitted, M: Modification)	☒ N, ☐ U, ☐ M	☐ N, ☐ U, ☐ M	☐ N, ☐ U, ☐ M	☐ N, ☐ U, ☐ M
9. Current Permit Number				
10. Tower Construction Date	2012			
11. Tower Manufacturer	To Be Determined			
12. Tower Model Number	To Be Determined			
13. Number of Cells in Tower	1			
14. Tower Maximum Water Flow Rate	6000 gpm			
15. Measured TDS Content (if known)	6,000 ppm est. max.			
16. Do you use additives in the water? If Yes, provide an MSDS form for each additive	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes

CONTROL EQUIPMENT INFORMATION

17. Control Equipment	☐ No ☒ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
18. Control Equipment ID Number				
19. Control Equipment Efficiency				

OPERATING SCHEDULE

20. Actual Operation (hours per year)	8760			
21. Maximum Operation (hours per year)	8760			

REQUEST FOR PERMIT LIMITATIONS

22 Are you requesting any permit limits? ☒ No ☐ Yes. If Yes, fill in all that apply below.

Tower Served	Operation Hour Limits:	TDS Limits (ppm):	Material Usage Limits:	Other:
Tower 1				
Tower 2				
Tower 3				
Tower 4				

23. Rationale for Requesting the Limit(s):

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

AIR PERMIT APPLICATION

Revision 6
10/7/09

For each box in the table below, CTRL+click on the blue underlined text for instructions and information.

IDENTIFICATION	
1. Company Name:	2. Facility Name:
J. R. Simplot Company	Don Siding Plant
3. Brief Project Description:	Modify #400 Sulfuric Acid Plant to reduce SO2 emisisons and increase production capability. See Section 2 of Application for additional details.

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 – General Provisions Subpart H – Standards of Performance for Sulfuric Acid Plants ☐ 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.	☑ A detailed regulatory review is provided (Follow instructions and example). ☐ DEQ has already been provided a detailed regulatory review. Give a reference to the document including the date.

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 prior to the application being submitted but that DEQ will not perform the required technical or regulatory analysis on the applicant's behalf.

Department of Environmental Quality - Air Quality Division

Toxic Air Pollutant (TAP) Preconstruction Compliance Application Completeness Checklist

This checklist is designed to aid the applicant in submitting a complete preconstruction compliance demonstration for toxic air pollutants (TAPs) in permit to construct applications. The applicant must place a check mark in the box for each section below that applies.

I. Actions Needed Before Submitting Application

☒ Refer to the Rule. Read the Demonstration of Preconstruction Compliance with Toxic Standards contained in IDAPA 58.01.01.210 (Rules Section 210) Rules for the Control of Air Pollution in Idaho (Rules). Toxic air pollutants (TAPs) are regulated in accordance with Rules Section 210 only from emission units constructed or modified on or after July 1, 1995.

Determine if a new (constructed after June 30, 1995) emission unit has the potential to emit a TAP listed in IDAPA 58.01.01.585 (Rules Section 585) or IDAPA 58.0101.586 (Rules Section 586). Potential toxic air pollutants can be determined by reviewing commonly available emission factors, such as EPA's AP-42, or calculating emissions using a mass balance. For TAPs that are emitted but not listed in Rules Section 585 and 586, contact the Air Permit Hotline at 877-5PERMIT.

Determine if the proposed construction or modification is exempt from the need to obtain a permit to construct in accordance with IDAPA 58.01.01.220-223. Use the Exemption Criteria and Reporting Requirements for TAPs IDAPA 58.01.01.223 checklist to assist you in the exemption determination. If the source does not qualify for an exemption in accordance with IDAPA 58.01.01.220-223 complete the following checklist and submit it with the permit application. Please note that fugitive TAP emissions are not included in the IDAPA 58.01.01.223 exemption determination, but fugitive TAP emissions are included in the analysis if a permit is required. Stated another way: if a source is required to obtain a Permit to Construct because it does not meet the exemption criteria for any reason all TAP emissions, including fugitive TAPs, are included in the compliance demonstration in the application for the permit to construct. Should you have any questions regarding the fact that all TAPs, including fugitive TAPs, are included in the TAP preconstruction compliance demonstration submitted with a permit to construct application you may call the Air Permit Hotline at 877-5PERMIT.

Will the new or modified source result in new or increased potential emissions of TAPs?

☒ Yes. If yes, continue to section II.

☐ No. If no, no further action is required.

II. Application Content

If a new source has the potential to emit a TAP, or if a modification to an existing source increases the potential to emit of a TAP, then one of the following methods (A-J) of demonstrating TAP preconstruction compliance must be documented for each TAP. Standard methods are one of A-C. The applicant may also use one of the specialized methods in D-J. Fugitive TAP emissions shall be included in the analysis. The compliance methods are based on the requirements of Rules Section 210. Applicants are often able to demonstrate preconstruction TAP compliance using a combination of methods A and B.

Emission Calculations

Emissions calculation methodologies used are dependent on whether a specific TAP is a non-carcinogen or a carcinogen and whether the compliance method chosen from the list below calls

for controlled or uncontrolled emissions. Non-carcinogens are regulated based on a 24-hour averaging period and emission rates used for comparison to the non-carcinogen screening emissions level (EL) should be the maximum controlled or uncontrolled emissions quantity during any 24-hour period divided by 24. Carcinogens are regulated as a long term increment and emission rates used for comparison to the carcinogen EL should be the maximum controlled or uncontrolled emissions quantity during any 1 year period divided by 8760.

Modeling Analyses

Atmospheric dispersion modeling is required when controlled TAP emissions rates exceed ELs. Modeling analyses should be conducted in accordance with IDAPA 58.01.01.210.03. Quantification of Ambient Concentrations and the State of Idaho Air Quality Modeling Guideline (http;//www.deq.idaho.gov/air/data_reports/publications.cfm#model). For non-carcinogen 24-hour increments, compliance is demonstrated using the maximum modeled 24-hour-averaged concentration from available meteorological data (typically a five-year data set). For carcinogen long-term increments, compliance is demonstrated using the maximum modeled average concentration for the duration of the data set (one-year to five-year data set).

A submitted modeling report should clearly specify modeled emissions rates and results. All electronic model input files should be submitted, including BPIP input files.

Poly aromatic Hydrocarbons

Questions often arise regarding polyaromatic hydrocarbons as they are listed in Rules Section 586 of the Rules. The following two points are provided for clarification.

1) The following group of 7 PAH's (i.e. named POM), shall be combined and considered as one TAP equivalent in potency to benzo(a)pryrene:

   Benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a, h) anthrancene, chrysene, indeno(1,2,3,-cd) pyrene, benzo (a) pyrene

2) All other PAH's are considered as a single pollutant and the emission of each is compared the PAH increment listed in Rules Section 586.

Compliance Methods

Fill in letter(s) (A-J) from the list below for TAP compliance demonstration method(s) used: A.

A. TAPs Compliance Using Uncontrolled Emissions (Rules Section 210.05)

☒ Calculate the uncontrolled emissions (Rules Section 210.05) of each TAP from new emissions units. Uncontrolled emission rates are emissions at maximum capacity without the effect of physical or operational limitations. See Quantification of Emission Rates (Rules Section 210.02). Show calculations and state all assumptions.

☒ Calculate the increase of TAP emissions from modified emissions units. Show calculations and state all assumptions. The increase in emissions for a modified emission unit is determined by subtracting the potential to emit the TAP before the modification from the uncontrolled potential to emit after the modification. In conducting this analysis please note the following for TAP emission rate increase determinations:

Uncontrolled emission rates after the modification are emissions at maximum capacity without the effect of physical or operational limitations.

When determining the emissions increase from existing permitted emissions units the emission rate before the modification is equivalent to the emission limits contained in the permit for the

TAPs or, if there no emission limits in the permit, by determining what the emission rate is under the physical or operational limitations contained in the permit.

☒ Aggregate the uncontrolled emissions for each TAP from all new emissions units with the increase in emissions from all modified emissions units.

☒ If the aggregated emissions increase for each TAP from the new and modified units, as determined above, are less than or equal to the respective TAP screening emissions level (EL) then preconstruction compliance with toxic standards has been demonstrated and no further analysis is required. Submit a table comparing the uncontrolled emissions rate to the applicable EL.

If aggregated emissions are greater than the respective screening emissions level (EL) for any pollutants, use another compliance demonstration method for those pollutants, such as methods B, C, or D.

B. TAP Compliance Using Uncontrolled Ambient Concentration (Rules Section 210.06)

☐ Determine the uncontrolled emissions of each TAP from new emission units and the increase in emissions from all modified emissions units as described above in compliance Method A. Show calculations and state all assumptions.

☐ Model the uncontrolled emissions of each TAP from new emissions units and the increase in emissions from all modified emissions units.

☐ If the uncontrolled ambient concentration is less than or equal to the acceptable ambient concentration increment listed in Rules Section 585 and 586 no further procedures for demonstrating preconstruction compliance will be required for that TAP as part of the application process. Submit a table comparing uncontrolled ambient concentrations to the applicable acceptable ambient concentration.

C. TAP Compliance Using Controlled Ambient Concentrations (Rules Section 210.08)

☐ Determine the controlled emissions from new emissions units and the controlled emission increase from modified emissions units. Show all calculations and state all assumptions, including the control methods.

☐ Model the controlled emissions of each TAP from new emissions units and the increase in controlled emissions from all modified emissions units.

TAP emissions levels (EL) included in Rules Section 585 and 586 are derived based on generic modeling. If the sum the of emissions from new and modified sources is below the EL compliance is demonstrated without the need to conduct site-specific dispersion modeling.

☐ If the controlled ambient concentration from emission increases from new emissions units and modified emissions units is less than the applicable acceptable ambient concentration no further procedures for demonstrating preconstruction compliance are required.

☐ The Department shall include an emission limit for the TAP in the permit to construct that is equal to or, if requested by the applicant, less than the emission rate that was used in the modeling (Rules Section 210.08.c).

In some instances the Department may consider a throughput limit or other inherently-limiting operational restriction in a permit as an effective emission limit for the TAP, rather than including a specific emission rate limit.. Note that the applicant may model uncontrolled emissions as described in compliance Method B in an attempt to avoid TAPs emissions limitations.

D. TAPs Compliance for NSPS and NESHAP Sources (Rules Section 210.20)

☐ If the owner or operator demonstrates that the TAP emissions from the source or modification is regulated by 40 CFR Part 60, 40 CFR Part 61 or 40 CFR Part 63, no further procedures for demonstrating preconstruction compliance will be required for that TAP.

☐ Provide a demonstration that the TAP is regulated under 40 CFR Part 60, 40 CFR Part 61 or 40 CFR Part 63. This demonstration must be specific for each TAP emitted.

E. TAP Compliance Using Net Emissions (Rules Section 210.09)

An applicant may use TAP net emissions to show preconstruction compliance; however this analysis may require more work than some of the others procedures available to demonstrate preconstruction compliance. When netting, all emissions increases and decreases of the TAP that have occurred within five years must be included in the analysis as described below.

☐ Determine the net emission increase for a TAP. A net emissions increase shall be an emission increase from a particular modification plus any other increase and decreases in actual emissions at the facility that are creditable and contemporaneous with particular modification (Rules Section 210.09). Show all calculations and state all assumptions.

☐ A creditable increase or decrease in actual emissions is contemporaneous with a particular modification if it occurs within five (5) years of the commencement of the construction or modification (Rules Section 210.09.a).

Actual emissions are (Rules Section 006.03):

- ☐ In general, actual emissions as of a particular date shall equal the average rate, in tons per year, at which the unit actually emitted the pollutant during a two year period which precedes the particular date and which is representative of normal source operation. The Department shall allow the use of a different time period upon a determination that it is more representative of normal source operation. Actual emissions shall be calculated using the unit's actual operating hours, productions rates, and types of materials processed, stored, or combusted during the selected time period.

- ☐ The Department may presume that the source-specific allowable emissions for the unit are equivalent to actual emissions of the unit.

- ☐ For any emission unit (except electric utility steam generating units) that has not begun normal operations on the particular date, actual emissions shall equal the potential to emit of the unit on that date.

☐ Do not include emissions increases from emission units that have an uncontrolled emission rate that is 10% or less than the applicable screening emission level (EL) in Rules Section 585 and 586 (Rules Section 007.09.c.ii) and do not include emission increases from environmental remediation sources (Rules Section 007.09.c.iii). Show all calculations and state all assumptions.

☐ If the net emission increase is less than or equal to the applicable screening emissions level (EL) listed in Rules Section 585 and 586, no further procedures for demonstrating preconstruction compliance will be required (Rules Section 210.09.c).

☐ The Department shall include emission limits and other permit terms for the TAP in the permit to construct that will assure that the facility will be operated in the manner described in the preconstruction compliance demonstration (Rules Section 210.09.d).

In some instances the Department may consider a throughput limit or other inherently-limiting operational restriction in a permit as an effective emission limit for the TAP. rather than including a specific emission rate limit..

F. TAP Compliance Using Net Ambient Concentration (Rules Section 210.10)

☐ Determine the emission increase from the new source or modification, and all other creditable emission increases and decrease using the methods described above in compliance Method E.

☐ Model the emissions increases and decreases for each TAP. Modeling TAP decreases is accomplished by using negative valued emissions rates in the model input.

☐ If the net ambient concentration is less than or equal to the applicable ambient concentration increment listed in Rules Section 585 and 586, no further procedures for demonstrating preconstruction compliance are required.

☐ The Department shall include emission limits and other permit terms for the TAP in the permit to construct that will assure that the facility will be operated in the manner described in the preconstruction compliance demonstration (Rules Section 210.10.d).

In some instances the Department may consider a throughput limit or other inherently-limiting operational restriction in a permit as an effective emission limit for the TAP, rather than including a specific emission rate limit..

G. TAP Compliance Using T-RACT Ambient Concentration for Carcinogens (Rules Section 210.12)

The applicant may use T-RACT to demonstrate preconstruction compliance for TAPs listed in Rules Section 586 only.

T-RACT is an emissions standard based on the lowest emission of TAPs that a particular source is capable of meeting by application of control technology that is reasonably available, as determined by the Department, considering technological and economic feasibility. If control technology is not feasible, the emission standard may be based on the application of a design, equipment, work practice or operational requirement, or combination thereof (Rules Section 007.16).

T-RACT Submittal Requirements

☐ The applicant shall submit the following information to the Department identifying and documenting which control technologies or other requirements the applicant believes to be T-RACT (Rules Section 210.14).

The technical feasibility of a control technology or other requirements for a particular source shall be determined considering several factors including but not limited to:

- ☐ Process and operating procedures, raw materials and physical plant layout.
- ☐ The environmental impacts caused by the control technology that can not be mitigated, including but not limited to, water pollution and the production of solid wastes.
- ☐ The energy requirements of the control technology.

The economic feasibility of a control technology or other requirement, including the costs of necessary mitigation measures, for a particular source shall be determined considering several factors including, but not limited to:

- ☐ Capital costs.
- ☐ Cost effectiveness, which is the annualized cost of the control technology divided by the amount of emission reduction.
- ☐ The difference in costs between the particular source and other similar sources, if any, that have implemented emissions reductions.

☐ Compare the source's or modification's approved T-RACT ambient concentration to the applicable acceptable ambient concentration increment listed in Rules Section 586 multiplied by a factor of 10. If the sources approved T-RACT concentration is less than or equal to 10 times the applicable acceptable ambient concentration increment listed in Rules Section 586, no further procedures for demonstrating preconstruction compliance will be required.

☐ If an application is submitted to the Department without T-RACT and determined complete, and T-RACT is later determined to be applicable the completeness determination of the application will be revoked until a supplemental application is submitted and determined complete. When the supplemental application is determined complete, the timeline for agency action shall be reinitiated (Rules Section 210.13.b).

☐ If the Department determines that the source has proposed T-RACT, the Department shall develop emission standards to be incorporated into a permit to construct.

In some instances, the Department may consider a throughput limit or other inherently limiting operational restriction in a permit as an effective emission limit for the TAP, rather than including a specific emission rate limit..

H. TAP Compliance Using the Short Term Source Factor (Rules Section 210.15)

☐ For short term sources, the applicant may utilize a short term adjustment factor of ten (10) only for a carcinogenic pollutant listed in Rules Section 586. For a carcinogen listed in Rules Section 586 multiply either the applicable acceptable ambient concentration increment or the screening emission rate (EL), but not both, by ten (10) to demonstrate preconstruction compliance (Rules Section 210.15).

☐ A short term source is any new stationary source or modification to an existing source, with an operational life no greater than five (5) years from the inception of any operations to cessation of actual operations (Rules Section 210.15).

I. TAP Compliance for Environmental Remediation Sources (Rules Section 210.16)

☐ For remediation sources subject to or regulated by the Resource Conservation and Recovery Act and the Idaho Rules and Standard for Hazardous Waste, or the comprehensive Environmental Response, Compensation and Liability Act or a consent order, if the estimated ambient concentration is greater than the acceptable ambient impact increment listed in Rules Section 585 and 586, Best Available Control Technology shall be applied and operated until the estimated uncontrolled emission from the remediation source are below the applicable acceptable ambient concentration increment (Rules Section 210.16).

J. TAP Compliance Using Offset Ambient Concentration (Rules Section 210.11)

☐ Contact the Department prior to proposing to utilize Offset Ambient Concentrations to demonstrate preconstruction compliance.

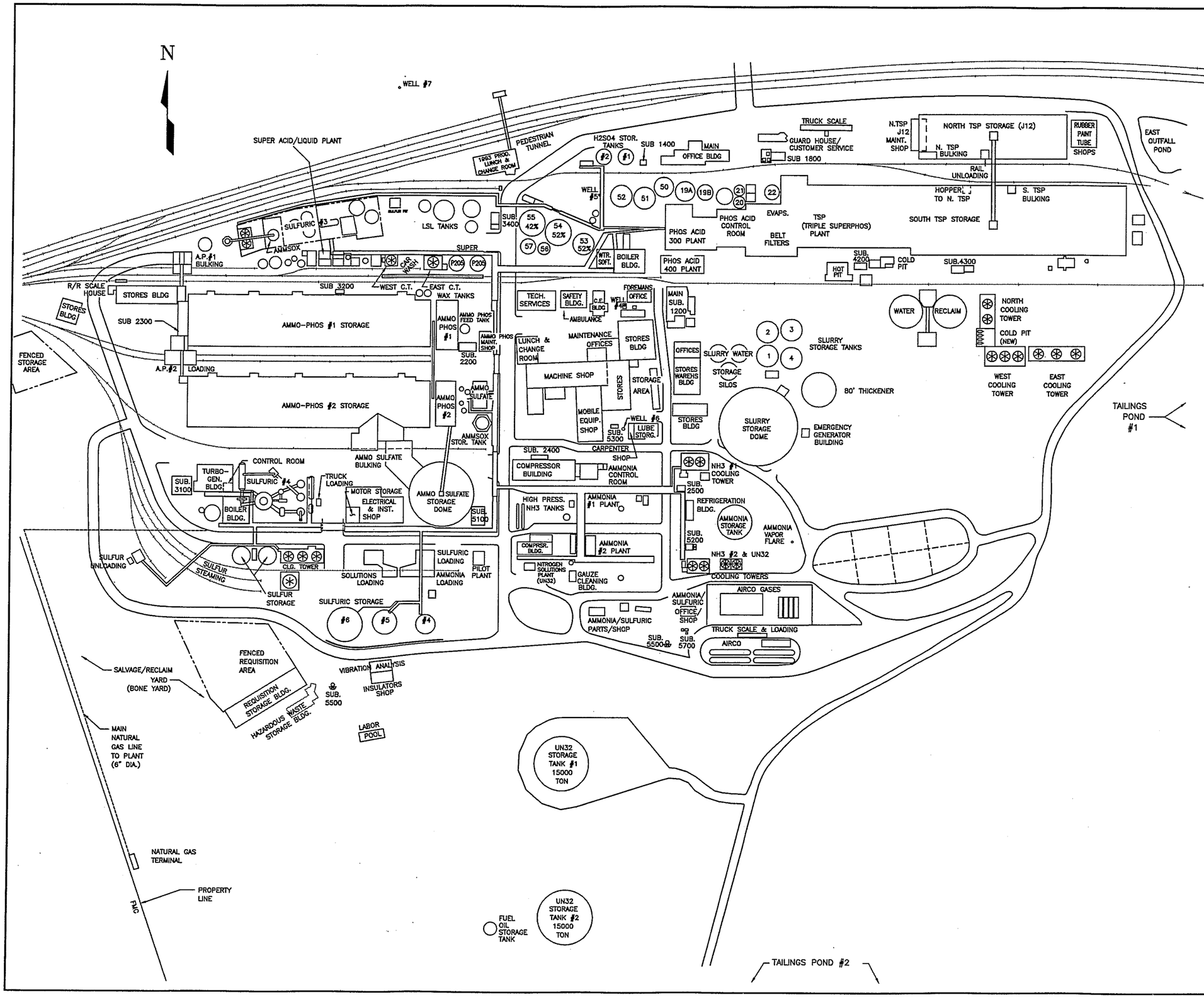
☐ Emission offsets must satisfy the requirements for emission reduction credits (Rules Section 460).

- The proposed level of allowable emissions must be less than the actual emissions of the emissions units providing the offsets (Rules Section 460.01).
- An air quality permit must be issued that restricts the potential to emit of the emission unit providing the offset.
- Emission reduction imposed by local, state or federal regulations or permits shall not be allowed.

☐ Compare the source's or modifications approved emission offset ambient concentration to the applicable acceptable ambient concentration listed in Rules Section 585 and 586. If the source's or modifications approved offset concentration is less than the acceptable ambient concentration listed in Rules Section 585 and 586, no further procedures for demonstrating preconstruction compliance will be required.

☐ The Department shall include emission limits and other permit terms for the TAP in the permit to construct that will assure that the facility will be operated in the manner described in the preconstruction compliance demonstration (Rules Section 210.10.d).

APPENDIX B
Plot Plan



DRAWN BY:	G. COSSABOOM	10-19-88
APPV'D. BY:	G. COSSABOOM	10-25-89

	NO.	DESCRIPTION
REFERENCES	130-8345-121	PLANT MAP, N.E. CORNER
	130-8345-122	PLANT MAP, N.W. CORNER
	130-8345-123	PLANT MAP, S.W. CORNER
	130-8345-124	PLANT MAP, S.E. CORNER
	TP130-6701-101	AERIAL PHOTOGRAPH, PLANT COMPLEX

	NO.	BY	DATE	DESCRIPTION
REVISIONS	0	GGC	10-26-88	ISSUED FOR USE
	1	GEJ	12-13-89	CHANGED SOME NAMES, LOCATIONS, ETC.
	2	GGC	10-18-89	ADDED BIF#3,N.COOL.TWR.,PED.TUNNEL,ETC.
	3	GGC	2-1-90	ADDED COST CENTER NO'S & MISC.
	4	GEJ	4-91	ADDED ORE SLURRY TERMINAL TANKS
	5	GEJ	5-92	ADDED NEW CAR WASH & P.A. TANKS
	6	GEJ	9-93	ADDED PROD LUNCHRM, DEFLU TKS & KOA
	7	GEJ	11-94	REMOVED CALCINER BLDG

MFG, Inc.

Figure 1

PLOT DATE: 8/4/95

Simplot

MINERALS & CHEMICAL GROUP POCATELLO, IDAHO

GENERAL UTILITIES

YARDS, ROADS, PARKING AREAS & PIPEWAYS

TOTAL PLANT MAP

CAD DWG. #: 8348358C

JRS-8345-A-356

SCALE: 1"=100.00'

REVISION 6

APPENDIX C

Emission Calculations and Documentation

C. SIMPLOT DON PLANT NO. 400 ACID PLANT SO_2 REDUCTION AND CAPACITY INCREASE PROJECT CALCULATIONS – BASIS AND RESULTS

Table C-1 summarizes the results of Simplot's analysis of the estimated emissions increases projected to result from the No. 400 Acid Plant changes that are being planned for the 2012, 2014, and 2016 turnarounds. The remainder of this appendix provides additional details on the emissions estimation basis and methodology for this project.

C.1 General Discussion of Approach

Simplot has been in discussions with U.S. EPA regarding a possible consent agreement for the two sulfuric acid production units at its Don Plant in Pocatello, Idaho. To meet the SO_2 emission targets proposed to U.S. EPA, Simplot will need to implement certain changes to the No. 400 Plant at upcoming unit turnarounds beginning in 2012 and ending in 2016. Near-term, implementing the changes planned for the 2012 turnaround is critical to meeting the emissions reduction schedule and targets Simplot has proposed. The changes planned for the 2012 turnaround and subsequent turnarounds are viewed as a single project for PSD applicability purposes because they support the common goals of reducing SO_2 emissions and increasing sulfuric acid production from the No. 400 Plant. The emissions impacts of these changes must be evaluated to determine PSD applicability. Simplot has completed a preliminary analysis of the emissions impact of the planned No. 400 Plant changes and has concluded that the changes do not trigger the PSD review requirements under IDAPA 58.01.01.205. The basis for the emissions impact estimates is documented below and in the emissions calculation spreadsheets that accompany this discussion.

C.2 Scope of Project

The project considered in this analysis is limited to planned changes to the No. 400 Plant and the construction of a new cooling tower to support operations of the No. 400 Plant. Unmodified units affected by this project include certain upstream and downstream equipment, but do not include the fertilizer production operations (as discussed in Section C.6).

This project involves modification of an existing emissions unit (the No. 400 Acid Plant) and construction of a new emissions unit (a new cooling tower) with the overall objective of reducing SO_2 emissions while increasing the production capacity of the No. 400 Plant. The emissions increases that result from these changes must be evaluated to determine whether they represent a major modification with respect to PSD permitting requirements.

Table C-1 Summary of Emissions Changes Projected to Result from Planned Changes to #400 Plant

#400 Plant Project Affected Units	PM (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NOx (tpy)	SO_2 (tpy)	H_2SO_4 (tpy)	GHGs (tpy)	H_2S [a] (tpy)	VOC (tpy)	CO (tpy)	Pb (tpy)	Fluorides (tpy)
Existing Units Baseline Actual Emissions [BAE]												
# 400 Plant Stack	24.7	29.8	17.7	37.1	1,157	13.1	106	[b]	[b]	[b]	[b]	[b]
#400 Fugitive Emissions	[b]	[b]	[b]	[b]	1.5	[b]	[b]	25.9	[b]	[b]	[b]	[b]
H2SO4 Process & Storage Tanks [c]	0.34	0.34	0.34	[b]	[b]	0.34	[b]	[b]	[b]	[b]	[b]	[b]
Existing Units Excludable Emissions [EE]												
#400 Plant Stack	3.8	10.5	10.0	8.0	301	8.5	6.7	[b]	[b]	[b]	[b]	[b]
#400 Fugitive Emissions	[b]	[b]	[b]	[b]	0.1	[b]	[b]	1.6	[b]	[b]	[b]	[b]
H2SO4 Process & Storage Tanks [c]	0.02	0.02	0.02	[b]	[b]	0.02	[b]	[b]	[b]	[b]	[b]	[b]
Existing Units Projected Actual Emissions [PAE]												
#400 Plant Stack	31.0	43.8	30.1	49.1	913	28.3	123	[b]	[b]	[b]	[b]	[b]
#400 Fugitive Emissions	[b]	[b]	[b]	[b]	0.4	[b]	[b]	29.9	[b]	[b]	[b]	[b]
H2SO4 Process & Storage Tanks [c]	0.39	0.39	0.39	[b]	[b]	0.39	[b]	[b]	[b]	[b]	[b]	[b]
New Units Potential to Emit [PTE]												
New Cooling Tower	0.8	0.2	0.0	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
Total Project Increase [PAE - BAE - EE + PTE]												
Increase from New Emission Units [PTE]	0.8	0.2	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0
Increase from Existing Units [PAE - BAE]	2.5	3.6	2.5	4.0	0.0	6.7	9.9	2.4	0.0	0.0	0.0	0.0
Total of Above Changes [d]	3.3	3.7	2.5	4.0	0.0	6.7	10	2.4	0.0	0.0	0.0	0.0
PSD Significant Emission Rate	25	15	10	40	40	7.0	75,000	10	40	100	1	3
Increase Significant?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Reasonable Possibility Test												
Project Increase + EE	7.2	14.2	12.5	12.0	301.5	15.2	17	4.0	0.0	0.0	0.0	0.0
Reasonable Possibility Fraction per 40 CFR 52.21(r)(c)(vi)(a)	0.1	0.2	0.2	0.1	0.0	1.0	0	0.2	0.0	0.0	0.0	0.0
Reasonable Possibility Fraction per 40 CFR 52.21(r)(c)(vi)(b)	0.3	0.9	1.2	0.3	7.5	2.2	0	0.4	0.0	0.0	0.0	0.0
Reasonable Possibility?	NO	YES	YES	NO	YES	YES	NO	NO	NO	NO	NO	NO
Fee Basis												
Project Increase (less fugitives)	3.32	3.74	2.46	3.95	0.00	6.66	9.86	0.00	0.00	0.00	0.00	0.00

[a] Estimated H_2S emissions are worst case. Actual emissions will be a fraction of these estimates since less than 100% of H_2S will evolve prior to combustion.

[b] No data are available on emissions of other regulated NSR pollutants from sulfuric acid plants (e.g., CO, VOC, Pb, F, TRS). Emissions of regulated NSR pollutants not quantified are considered to be either zero or negligible/non-quantifiable.

[c] It is assumed that any H_2SO_4 emissions from these tanks would also be considered particulate emissions since H_2SO_4 would be detected as a condensable particulate using U.S. EPA Method 202.

[d] For SO_2, the project will result in a significant decrease in emissions. This decrease is shown as a zero increase for purposes of evaluating PSD applicability.

The methodology used for evaluating emissions increases at the No. 400 Plant resulting from the proposed modifications is the "hybrid test" as defined at 40 CFR 52.21(a)(2)(iv)(f) and incorporated by reference at IDAPA 58.01.01.205.01. Under the "hybrid test", for newly constructed emissions units, an actual-to-potential methodology is used. Potential emissions are estimated for new units based on the maximum potential processing rate of material in these units. Baseline actual emissions from new equipment are zero.

For existing emissions units affected by the project, the actual-to-projected-actual applicability methodology is used.[1] Baseline actual emissions are estimated using past production data from the selected baseline period coupled with emissions factors derived from CEMS, source tests, design data, or standardized emission factors (e.g., AP-42 factors). The baseline period used for this analysis is the 24-month period beginning July 1, 2006 and ending June 30, 2008.

Projected actual emissions are estimated based on Simplot's projection of the current and future maximum capacity of the No. 400 Plant. The emissions factors used in developing the projection are based on a statistical analysis of past emissions data. In calculating the projected actual emissions increase for this project, Simplot has excluded emissions that the No. 400 Plant could have accommodated during the 24-month period used to establish baseline actual emissions and that are unrelated to the planned changes.[2]

Any additional acid produced by the No. 400 Plant may either be used in the production of fertilizer at the Don plant or it may be shipped off-site to external customers. Increased acid production will increase the amount of elemental sulfur raw material consumed in the No. 400 Plant as well as the amount of sulfuric acid that is handled and stored on-site. Increased acid production will also increase production of steam by the No. 400 Plant, thereby reducing the need to generate steam in on-site boilers. Finally, increased acid production will increase the demand for cooling water. Simplot has concluded that increased acid production will not result in increased emissions from fertilizer production or the existing acid plant cooling towers. The bases for this conclusion are described in Sections C.6 and C.7, respectively.

The following discussion provides a summary of the emissions estimation approaches used for specific emission units/sources evaluated in this analysis. The spreadsheet printouts in Attachment C-1 provide additional details on how emissions from each individual unit are estimated and also provide documentation and the basis for the emission factors used in the estimates. Summaries of the data used to derive emission factors used in this analysis are provided in Attachment C-2.

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[1] The PSD rule requires that emissions increases from all units affected by the project be estimated [see 40 CFR 52.21(r)(6) incorporated by reference at IDAPA 58.01.01.205.01]. The rule makes no distinction between modified and unmodified units in this regard.

[2] Such exclusions are permitted pursuant to IDAPA 58.01.01.007.08 (definition of 'projected actual emissions').

C.3 No. 400 Acid Plant Stack (Emissions Group 15)

As described above, Simplot is planning certain changes to the No. 400 Acid Plant. If all of the contemplated changes are made, the H_2SO_4 production capability of the No. 400 Plant is projected to increase by about 9% on an annual basis.[3] Simplot evaluated the impact of this increased production by comparing baseline actual emissions to projected actual emissions after accounting for "excludable emissions."[4]

Baseline actual emissions are determined for each pollutant based on historical production data and historical emissions data. For example, for NOx, the baseline emissions during this period were estimated by applying the results of the 2006, 2007, and 2008 stack tests to the relevant production data for those years. More specifically, the 2006 stack test results (average of two tests) were applied to the 2006 production data (July – December), the 2007 stack test results to the 2007 production data, and the 2008 stack test results to the 2008 production data (January – June). This same approach was used to estimate baseline emissions of PM, PM_{10}, $PM_{2.5}$, and H_2SO_4. Greenhouse gas (GHGs) emissions were estimated based on actual acid production rates during the baseline period and an emissions factor specific to a sulfur-burning acid plant derived from AP-42 background documents.[5] In the case of SO_2 emissions, CEMS data from the period July, 2006 through June, 2008 are used determine baseline emissions.[6]

Excludable emissions are estimated based on the production capability of the No. 400 Plant during the baseline period and production-normalized emission factors derived from statistical analysis of historical emissions test data or CEMS data.[7] The production capability used in the analysis of excludable emissions is 839,500 tons per year (2,300 tons per day x 365 days per year). This rate is less than the peak monthly average production rate of the No. 400 Plant (2,311 tons/day which occurred in December, 2007) and very close to the peak quarterly average production rate (2,293 tons/day which occurred in the quarter ending December 31, 2007). Emissions associated with the production increase from the baseline production rate up to the projected rate of 839,500 are excludable because: (1) the increase in production could have been accommodated in the selected baseline period (e.g., demand growth related emissions) and; (2)

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[3] Baseline H_2SO_4 production capability (100% acid) is approximately 840,000 tons per year and future production capability is projected to increase to approximately 913,000 tons per year.

[4] The term "excludable emissions" is used in this analysis to refer to that portion of a unit's projected emissions that the unit could have accommodated during the consecutive 24-month period used to establish the baseline actual emissions and that are also unrelated to the project (including any increased utilization due to product demand growth) as provided for at IDAPA 58.01.01.007.08(b)(iii) [the definition of "*projected actual emissions*"].

[5] See "*BACKGROUND REPORT, AP-42 SECTION 5.17, SULFURIC ACID*", Pacific Environmental Services, Inc., December 3, 1992. Factor used is equal to the upper CI_{95} of GHG emissions data rated A or B from sulfur burning plants.

[6] While CEMS data are used to estimate emissions, the end result would be similar if annual source test data are used in this analysis. Specifically, the CEMS-derived emission factor for the baseline period is 2.93 lb/ton vs. an emissions factor of 3.03 lb/ton derived from production records and the stack test data from 2006 - 2008. Simplot believes that it is more appropriate to use CEMS data because it captures variations in emissions that are not represented in the stack test results.

[7] See "#400 Plant EE" worksheet and related sheets in Attachment C-1 for details.

the increase is unrelated to the planned changes needed to increase the production capability of the No. 400 plant from 839,500 tons per year to 913,000 tons per year.

Projected actual emissions are determined for each pollutant based on a projected production rate of 913,000 tons per year of sulfuric acid and production-normalized emission factors derived from statistical analysis of historical emissions data. See Attachment C-1 and C-2 for specific details of the data used to derive these factors.

C.4 No. 400 Plant Loadout and Storage and Process Tank H_2SO_4 Emissions

Sulfuric acid emissions from loadout operations and storage and process tanks are estimated based on the production rate of H_2SO_4. For the baseline actual emissions, this rate is 789,579 tons per year, for the baseline production capability (i.e., excludable emissions), this rate is 839,500 tons per year, and for projected actual emissions, this rate is 913,000 tons per year. Tank and loadout emissions were estimated using vapor pressure data for concentrated sulfuric acid solutions and the assumption that each gallon of additional acid displaces a gallon of saturated vapor from the trucks/rail cars being loaded as well as from each existing acid tank in the No. 400 Plant. This is a very conservative approach to estimating these emissions and the resultant emissions increase.

C.5 No. 400 Plant "Fugitive" H_2S and SO_2 Emissions

Emissions of H_2S and SO_2 can result from storage and handling of sulfur and sulfuric acid, respectively. Small amounts of H_2S are dissolved in the elemental sulfur raw material and this may evolve as the sulfur is handled. Small amounts of SO_2 are dissolved in the product H_2SO_4 and this SO_2 may evolve as the acid is stored and handled.

Increased production of sulfuric acid at the No. 400 Plant will result in increased deliveries and handling of elemental sulfur and an increase in storage and handling of self-produced sulfuric acid. Some of these emissions may be considered fugitive (e.g., emissions of H_2S from sulfur unloading) while some are point source emissions (e.g., emissions of SO_2 from the sulfuric acid storage tanks). Because there are no accepted methodologies or emission factors for estimating such emissions, Simplot used an overall material balance approach to evaluate the various sources of H_2S and SO_2 emissions. No attempt was made to identify the specific locations where these emissions will occur. Instead, the approach used is very conservative because it assumes that all H_2S or SO_2 present in the sulfur and acid, respectively, will be emitted somewhere in the storage and handling operations. In reality, much of the H_2S and SO_2 will not be emitted because these species will remain dissolved in the sulfur and the acid product.

Baseline, excludable, and projected actual "fugitive" emissions of H_2S and SO_2 are estimated using production rate estimates (as described in Section C.4) and data on the amount of H_2S or SO_2 dissolved in the sulfur and sulfuric acid. For example, the H_2S emissions increase associated with this project is estimated based on a projected increase in sulfur use of approximately 24,000 tons per year (projected actual sulfur use minus baseline actual use minus excludable sulfur use) and an H_2S concentration of 100 ppmw in the sulfur.

C.6 Fertilizer Production

After the planned changes to the No. 400 Plant are implemented, some of the additional sulfuric acid produced by the No. 400 Plant may be used in producing fertilizer at the Don Plant and some may be exported to customers. Future fertilizer production rates using self-produced acid can be accommodated by the current configuration of the Don Plant without the proposed changes to the No. 400 Plant because acid production and fertilizer production are decoupled.

Historically, the Don Plant has imported sulfuric acid raw material when the demand for fertilizer production is such that the supply of self-produced sulfuric acid is unable to meet that demand. Conversely, the Don Plant has also exported sulfuric acid when production exceeds internal demands. Specifically, the maximum sulfuric acid imported in the last 10 years was in Simplot's 2008 fiscal year when over 25,000 tons of sulfuric acid was imported. Maximum exports totaled over 57,000 tons in 2007. There is no specific limit on how much acid can be imported or exported, and data show that over 50,000 tons can be imported or exported in a single year. In short, the fertilizer production operations are decoupled from the sulfuric acid production operations at the Don Plant. The demonstrated ability to import and export large amounts of sulfuric acid shows that this decoupling is real and not theoretical.
Based on this information, Simplot concludes that the Don Plant's fertilizer production operations will not be affected by the planned changes to the No. 400 Plant.

C.7 Acid Plant Cooling Tower

A non-contact cooling tower is used to supply cooling water to the #400 Plant. Increased acid production at the No. 400 Plant will increase cooling load. Some of this additional cooling load will be handled by the construction of a new non-contact cooling tower and some may be handled by existing cooling towers. Simplot has accounted for particulate emissions from the new cooling tower based on the tower's potential to emit.

Increased cooling load on the existing cooling tower is not expected to affect emissions from this unit. Cooling tower particulate emissions are a function of a cooling tower's circulation rate, the design of the drift eliminator, and the total dissolved solids (TDS) level in the cooling water. The proposed modifications to the No. 400 Plant will not affect any of these parameters at the existing cooling tower. Circulation rate is fixed by the design of the cooling water pumps and the cooling tower is equipped with drift eliminators that will not be affected by the project. Finally cooling water TDS is controlled within a set range which will not be affected by the proposed modifications. Thus, existing cooling tower emissions are not affected by the project.

ATTACHMENT C-1
EMISSIONS CALCULATIONS SPREADSHEETS

#400 Project Emissions Increase

#400 Plant Project Affected Units	PM (tpy)	PM10 (tpy)	PM2.5 (tpy)	NOx (tpy)	SO2 (tpy)	H2SO4 (tpy)	GHGs (tpy)	H2S [a] (tpy)	VOC (tpy)	CO (tpy)	Pb (tpy)	Fluorides (tpy)	HAP (tpy)	Notes / Basis
Existing Units Baseline Actual Emissions [BAE]														
# 400 Plant Stack	24.7	29.8	17.7	37.1	1,157	13.1	106	[b]	[b]	[b]	[b]	[b]	[b]	See '#400 BAE' worksheet.
#400 Fugitive Emissions	[b]	[b]	[b]	[b]	1.5	[b]	[b]	25.9	[b]	[b]	[b]	[b]	[b]	See '#400 BAE Fugitive SO2' worksheet.
H2SO4 Process & Storage Tanks [c]	0.34	0.34	0.34	[b]	[b]	0.34	[b]	[b]	[b]	[b]	[b]	[b]	[b]	See'BAE H2SO4 Tanks' worksheet.
Existing Units Excludable Emissions [EE]														
#400 Plant Stack	3.8	10.5	10.0	8.0	301	8.5	6.7	[b]	[b]	[b]	[b]	[b]	[b]	See '#400 EE' worksheet.
#400 Fugitive Emissions	[b]	[b]	[b]	[b]	0.1	[b]	[b]	1.6	[b]	[b]	[b]	[b]	[b]	See '#400 EE Fugitive SO2' worksheet.
H2SO4 Process & Storage Tanks [c]	0.02	0.02	0.02	[b]	[b]	0.02	[b]	[b]	[b]	[b]	[b]	[b]	[b]	See'EE H2SO4 Tanks' worksheet.
Existing Units Projected Actual Emissions [PAE]														
#400 Plant Stack	31.0	43.8	30.1	49.1	913	28.3	123	[b]	[b]	[b]	[b]	[b]	[b]	See '#400 PAE' worksheet.
#400 Fugitive Emissions	[b]	[b]	[b]	[b]	0.4	[b]	[b]	29.9	[b]	[b]	[b]	[b]	[b]	See '#400 PAE Fugitive SO2' worksheet.
H2SO4 Process & Storage Tanks [c]	0.39	0.39	0.39	[b]	[b]	0.39	[b]	[b]	[b]	[b]	[b]	[b]	[b]	See'BAE H2SO4 Tanks' worksheet.
New Units Potential to Emit [PTE]														
New Cooling Tower	0.8	0.2	0.0	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	See 'Cooling Towers - PTE' worksheet.
Total Project Increase [PAE - BAE - EE + PTE]														
Increase from New Emission Units [PTE]	0.8	0.2	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	
Increase from Existing Units [PAE - BAE]	2.5	3.6	2.5	4.0	0.0	6.7	9.9	2.4	0.0	0.0	0.0	0.0	0.0	
Total of Above Increases	3.3	3.7	2.5	4.0	0.0	6.7	10	2.4	0.0	0.0	0.0	0.0	0.0	
PSD Significant Emission Rate	25	15	10	40	40	7.0	75,000	10	40	100	1	3	n/a	
Increase Significant?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	n/a	
Reasonable Possibility Test														
Project Increase + EE	7.2	14.2	12.5	12.0	301.5	15.2	17	4.0	0.0	0.0	0.0	0.0	n/a	
Reasonable Possibility Fraction (a)	0.1	0.2	0.2	0.1	0.0	1.0	0	0.2	0.0	0.0	0.0	0.0	n/a	
Reasonable Possibility Fraction (b)	0.3	0.9	1.2	0.3	7.5	2.2	0	0.4	0.0	0.0	0.0	0.0	n/a	
Reasonable Possibility?	NO	YES	YES	NO	YES	YES	NO	NO	NO	NO	NO	NO	n/a	
Fee Basis														
Project Increase (less fugitives)	3.32	3.74	2.46	3.95	-545.00	6.66	9.86	0.00	0.00	0.00	0.00	0.00	0.00	

[a] Estimated H2S emissions are worst case. Actual emissions will be only a fraction of these estimates since less than 100% of H2S will evolve prior to combustion.

[b] No data are available on emissions of other regulated NSR pollutants from sulfuric acid plants (e.g., CO, VOC, Pb, F, TRS). Emissions of regulated NSR pollutants not quantified are considered to be either zero or negligible/non-quantifiable.

[c] It is assumed that any H2SO4 emissions from these tanks would also be considered particulate emissions since H2SO4 would be detected as a condensable particulate using U.S. EPA Method 202.

Constants

Parameter		Value	Units	Source / Basis
Baseline Period Start	=	07-01-2006		Selected Baseline Period Start Date for #400 Plant Project.
Baseline Period End	=	06-30-2008		Selected Baseline Period End Date for #400 Plant Project
Baseline #400 Plant H2SO4 Production	=	789,579	tons/yr	Average annual produciton of 100% H2SO4 from Jul-06 to Jun-08
Baseline #400 Plant Sulfur Use	=	258,884	tons/yr	Average annual sulfur use from Jul-06 to Jun-08
H2SO4-to-S Ratio	=	3.0	tons/ton	= (Baseline #400 Plant H2SO4 Production) / (Baseline #400 Plant Sulfur Use)
Baseline H2SO4 Production Capability	=	839,500	tons/yr	Baseline Production Capability of #400 Plant capacity = 2,300 tons 100% H2SO4/day × 365 days/year
Projected Actual H2SO4 Capability	=	913,000	tons/yr	Future projected #400 Plant capacity = 2,500 tons 100% H2SO4/day × 365 days/year
Acid Plant GHG Emission Factor	=	0.27	lb/ton	AP42 Background Sec. 8.10 (12/92); upper CI95 of emissiosn data rated A or B. from sulfur burning plants.
Short Term Rate Factor	=	110%	lb/lb	Estimated increase in short-term production and emissions rates above rates determined using 2,500 tpd production rate based on preliminary engineering estimates.

No. 400 Plant BAE

Parameter		Value	Units	Basis
Emission Unit(s) ID	=	***#400 Sulfuric Acid Plant (Emissions Unit Group 15)***		
Baseline Dates				
Baseline Period Start	=	07-01-2006		Selected Baseline for all regulated NSR pollutants
Baseline Period End	=	06-30-2008		Selected Baseline for all regulated NSR pollutants
Baseline Production Data				
Baseline H2SO4 Production	=	789,579	tons/yr	Average annual produciton of 100% H2SO4 from Jul-06 to Jun-08
Baseline Emission Data & Factors				
PM EF	=	0.063	lb/ton	7/2006-6/2008 production weighted average emission factor (from 2006-2008 stack test data)
PM10 EF	=	0.075	lb/ton	7/2006-6/2008 production weighted average emission factor (from 2006-2008 stack test data)
PM2.5 EF	=	0.045	lb/ton	7/2006-6/2008 production weighted average emission factor (from 2006-2008 stack test data)
NOx EF	=	0.094	lb/ton	7/2006-6/2008 production weighted average emission factor (from 2006-2008 stack test data)
Baseline SO2 Emissions	=	1,157	tons/yr	CEMS-measured SO2 emissions in Baseline period
H2SO4 EF	=	0.033	lb/ton	7/2006-6/2008 production weighted average emission factor (from 2006-2008 stack test data)
GHG EF	=	0.268	lb/ton	AP42 Background Sec. 8.10 (12/92); upper CI95 of data from sulfur buring plants rated A or B.
Annual Emissions Calculations				
Baseline Actual PM Emissions	=	24.7	tpy	= (Baseline H2SO4 Production) x (PM EF) / (2,000 lb/ton)
Baseline Actual PM10 Emissions	=	29.8	tpy	= (Baseline H2SO4 Production) x (PM10 EF) / (2,000 lb/ton)
Baseline Actual PM2.5 Emissions	=	17.7	tpy	= (Baseline H2SO4 Production) x (PM2.5 EF) / (2,000 lb/ton)
Baseline Actual NOx Emissions	=	37.1	tpy	= (Baseline H2SO4 Production) x (NOx EF) / (2,000 lb/ton)
Baseline Actual SO2 Emissions	=	1,157	tpy	= Baseline SO2 Emissions determined from CEMS data
Baseline Actual H2SO4 Emissions	=	13.1	tpy	= (Baseline H2SO4 Production) x (H2SO4 EF) / (2,000 lb/ton)
Baseline Actual GHG Emissions	=	106.0	tpy	= (Baseline H2SO4 Production) x (GHG EF) / (2,000 lb/ton)
Summary of Results				

		Baseline Actual Emissions (tons per year)							
		PM	**PM10**	**PM2.5**	**NOx**	**SO2**	**H2SO4**	**GHGs**	**All Other NSR Pollutants**
#400 Plant Baseline Actual Emissions	=	24.7	29.8	17.7	37.1	1,157	13.1	106	*

*No data are available on emissions of other regulated NSR pollutants from sulfuric acid plants (e.g., CO, VOC, Pb, F, TRS). Emissions of regulated NSR pollutants not quantified are considered to be either zero or negligible/non-quantifiable.

No. 400 Plant EE

Parameter		Value	Units	Basis
Emission Unit(s) ID	=	***#400 Sulfuric Acid Plant (Emissions Unit Group 15)***		
Baseline Production Capability				
Baseline Production Capability	=	839,500	tons/yr	Baseline Production Capability of #400 Plant capacity = 2,300 tons 100% H2SO4/day × 365 days/year.
Baseline Capability Emission Data & Factors				
PM EF	=	0.068	lb/ton	99th percentile value derived from 2006-2008 stack test data
PM10 EF	=	0.096	lb/ton	99th percentile value derived from 2006-2008 stack test data
PM2.5 EF	=	0.066	lb/ton	99th percentile value derived from 2006-2008 stack test data
NOx EF	=	0.108	lb/ton	99th percentile value derived from 2006-2008 stack test data
SO2 EF	=	3.846	lb/ton	99th percentile value derived from July 2006 - June 2008 monthly SO2 emission rates.
H2SO4 EF	=	0.052	lb/ton	99th percentile value derived from 2006-2008 stack test data
GHG EF	=	0.268	lb/ton	AP42 Background Sec. 8.10 (12/92); upper CI95 of data from sulfur buring plants rated A or B.
Annual Emissions Calculations				
Baseline PM10 Emissions Capability	=	28.5	tpy	= (Baseline Production Capability) x (PM EF) / (2,000 lb/ton)
Baseline PM10 Emissions Capability	=	40.2	tpy	= (Baseline Production Capability) x (PM10 EF) / (2,000 lb/ton)
Baseline PM2.5 Emissions Capability	=	27.7	tpy	= (Baseline Production Capability) x (PM2.5 EF) / (2,000 lb/ton)
Baseline NOx Emissions Capability	=	45.1	tpy	= (Baseline Production Capability) x (NOx EF) / (2,000 lb/ton)
Baseline SO2 Emissions Capability	=	1614.5	tpy	= (Baseline Production Capability) x (SO2 EF) / (2,000 lb/ton)
Baseline H2SO4 Emissions Capability	=	21.7	tpy	= (Baseline Production Capability) x (H2SO4 EF) / (2,000 lb/ton)
Baseline GHG Emissions Capability	=	112.7	tpy	= (Baseline Production Capability) x (GHG EF) / (2,000 lb/ton)
Summary of Results				

		Baseline Emissions Capability Unrelated to Project (tons per year)							
		PM	**PM10**	**PM2.5**	**NOx**	**SO2**	**H2SO4**	**GHGs**	**All Other NSR Pollutants**
#400 Plant Emissions Capability (EC)	=	28.5	40.2	27.7	45.1	1,458*	21.7	113	**
#400 Plant Baseline Actual Emissions (BAE)	=	24.7	29.8	17.7	37.1	1,157	13.1	106	**
"Excludable Emissions" (EC - BAE)	=	3.8	10.5	10.0	8.0	301	8.5	7	**

* Allowable emissions used since calculated emissions capability exceeds allowable rate.

**No data are available on emissions of other regulated NSR pollutants from sulfuric acid plants (e.g., CO, VOC, Pb, F, TRS). Emissions of regulated NSR pollutants not quantified are considered to be either zero or negligible/non-quantifiable.

No. 400 Plant PAE

Parameter		Value	Units	Basis
Emission Unit(s) ID	=	***#400 Sulfuric Acid Plant (Emissions Unit Group 15)***		
Projected Actual Production Data				
Projected Actual Production Rate	=	913,000	tons/yr	Future projected #400 Plant capacity = 2,500 tons 100% H2SO4/day × 365 days/year
Projected Actual Emission Data & Factors				
PM EF	=	0.068	lb/ton	99th percentile value derived from 2006-2008 stack test data
PM10 EF	=	0.096	lb/ton	99th percentile value derived from 2006-2008 stack test data
PM2.5 EF	=	0.066	lb/ton	99th percentile value derived from 2006-2008 stack test data
NOx EF	=	0.108	lb/ton	99th percentile value derived from 2006-2008 stack test data
SO2 EF	=	2.000	lb/ton	Projected emissions rate following completion of expansion project.
H2SO4 EF	=	0.062	lb/ton	Maximum expected emissiosn rate for new ME design.
GHG EF	=	0.268	lb/ton	AP42 Background Sec. 8.10 (12/92); upper CI95 of data from sulfur buring plants rated A or B.
Annual Emissions Calculations				
Projected Actual PM10 Emissions	=	31.0	tpy	= (Projected Actual Production Rate) x (PM EF) / (2,000 lb/ton)
Projected Actual PM10 Emissions	=	43.8	tpy	= (Projected Actual Production Rate) x (PM10 EF) / (2,000 lb/ton)
Projected Actual PM2.5 Emissions	=	30.1	tpy	= (Projected Actual Production Rate) x (PM2.5 EF) / (2,000 lb/ton)
Projected Actual NOx Emissions	=	49.1	tpy	= (Projected Actual Production Rate) x (NOx EF) / (2,000 lb/ton)
Projected Actual SO2 Emissions	=	913.0	tpy	= (Projected Actual Production Rate) x (SO2 EF) / (2,000 lb/ton)
Projected Actual H2SO4 Emissions	=	28.3	tpy	= (Projected Actual Production Rate) x (H2SO4 EF) / (2,000 lb/ton)
Baseline Actual GHG Emissions	=	122.5	tpy	= (Projected Actual Production Rate) x (GHG EF) / (2,000 lb/ton)
Summary of Results				

		Projected Actual Emissions (tons per year)							
		PM	**PM10**	**PM2.5**	**NOx**	**SO2**	**H2SO4**	**GHGs**	**All Other NSR Pollutants**
#400 Plant Projected Actual Emissions	=	31.0	43.8	30.1	49.1	913	28.3	123	*

*No data are available on emissions of other regulated NSR pollutants from sulfuric acid plants (e.g., CO, VOC, Pb, F, TRS). Emissions of regulated NSR pollutants not quantified are considered to be either zero or negligible/non-quantifiable.

No. 400 Plant BAE Fugitive SO2

Parameter		Value	Units	Basis
Estimation of Dissolved SO2 & Maximum Possible Fugitive Emissions @ Baseline Actual Production Rate				
Baseline Dates				
Baseline Period Start	=	07-01-2006		Selected Baseline Period Start Date for #400 Plant Project.
Baseline Period End	=	06-30-2008		Selected Baseline Period End Date for #400 Plant Project
Calculation Input Data				
Total Pressure	=	91.1	kPa	Final absorber operating pressure value based on pressure survey in 2011.
SO2 Gas Mole Fraction	=	0.04%	mol. %	Final absorber tower gas feed SO2 @ 99.75% conversion efficiency.
Temperature	=	200.0	F	Final absorber tower acid bottoms temperature per Simplot process engineer.
Temperature	=	366.5	K	unit conversion.
Henry's Law Constant	=	1.106	kPa/(mmol/kg H2SO4 sol'n.)	For SO2 in 95.91 wt% H2SO4 @ process temperature - from Q. Zhang paper (see Notes).
P_{SO2}	=	0.032	kPa	Design value from PFD; Streams 54 & 18 assumed to be in equilibrium.
Baseline H2SO4 Production	=	789,579	tons/yr	Average annual produciton of 100% H2SO4 from Jul-06 to Jun-08
Calcuations				
C_{SO2}	=	0.029	mmol/kg H2SO4 sol'n.	= (PSO2) / (Henry's Law Constant)
Baseline H2SO4 Production	=	801,603	tons/yr	Production of 98.5% solution (concentration at exit of Absorbing Tower).
Baseline H2SO4 Production	=	727,202,036	kg/yr	unit conversion.
SO2 in H2SO4 Product		1.5	tons/yr	= (Baseline H2SO4 Production) x (CSO2) / (1,000 mg/g) / (453.6 g/lb) x (64 lb SO2/lb-mol) / (2,000 lb/ton)
Assumed Loss Factor	=	100%	wt. %	Worst-case scenario; actual losses are likely to be less (see notes).
Baseline Actual Fugitive SO2 Emissions	=	1.5	tons/yr	= (Assumed Loss Factor) x (SO2 in H2SO4 Product)
NOTES:				
• SO2 solubility data from: "Solubility of Sulfur Dioxide in Sulfuric Acid of High Concentration"; Ind. Eng. Chem. Res. 1998, 37, 1167 - 1172; Zhang, Q., et. al.				
• SO2 has higher solubility at lower temperatures.				
• SO2 has lower solubility at lower acid concentrations.				
• Cooling in main acid pump tank will significantly reduce potential for downstream fugitive SO2 emissions as temperature drops from 230 ºF to 164 ºF.				

No. 400 Plant EE Fugitive SO2

Parameter		Value	Units	Basis
Estimation of Dissolved SO2 & Maximum Possible Fugitive Emissions @ Baseline Production Capability				
Baseline Dates				
Baseline Period Start	=	07-01-2006		Selected Baseline Period Start Date for #400 Plant Project.
Baseline Period End	=	06-30-2008		Selected Baseline Period End Date for #400 Plant Project
Calculation Input Data				
Total Pressure	=	91.1	kPa	Final absorber operating pressure value based on pressure survey in 2011.
SO2 Gas Mole Fraction	=	0.04%	mol. %	Final absorber tower gas feed SO2 @ 99.75% conversion efficiency.
Temperature	=	200.0	F	Final absorber tower acid bottoms temperature per Simplot process engineer.
Temperature	=	366.5	K	unit conversion.
Henry's Law Constant	=	1.106	kPa/(mmol/kg H2SO4 sol'n.)	For SO2 in 95.91 wt% H2SO4 @ process temperature - from Q. Zhang paper (see Notes).
P_{SO2}	=	0.032	kPa	Design value from PFD; Streams 54 & 18 assumed to be in equilibrium.
Baseline H2SO4 Production Capability	=	839,500	tons/yr	Baseline Production Capability of #400 Plant capacity = 2,300 tons 100% H2SO4/day × 365 days/year.
Calcuations				
C_{SO2}	=	0.029	mmol/kg H2SO4 sol'n.	= (PSO2) / (Henry's Law Constant)
Baseline 98.5% H2SO4 Production Capability	=	852,284	tons/yr	Production of 98.5% solution (concentration at exit of Absorbing Tower).
Baseline 98.5% H2SO4 Production Capability	=	773,179,278	kg/yr	unit conversion.
SO2 in H2SO4 Product		1.6	tons/yr	= (Baseline 98.5% H2SO4 Production Capability) x (CSO2) / (1,000 mg/g) / (453.6 g/lb) x (64 lb SO2/lb-mol) / (2,000 lb/ton)
Assumed Loss Factor	=	100%	wt. %	Worst-case scenario; actual losses are likely to be less (see notes).
Baseline Fugitive SO2 Emissions Capability	=	1.6	tons/yr	= (Assumed Loss Factor) x (SO2 in H2SO4 Product)
Baseline Actual Fugitive SO2 Emissions	=	1.5	tons/yr	See '#400 BAE Fugitive SO2' worksheet.
Excludable Fugitive SO2 Emissions	=	0.1	tons/yr	= (Baseline Fugitive SO2 Emissions Capability) - (Baseline Actual Fugitive SO2 Emissions)
NOTES:				
• SO2 solubility data from: "Solubility of Sulfur Dioxide in Sulfuric Acid of High Concentration"; Ind. Eng. Chem. Res. 1998, 37, 1167 - 1172; Zhang, Q., et. al.				
• SO2 has higher solubility at lower temperatures.				
• SO2 has lower solubility at lower acid concentrations.				
• Cooling in main acid pump tank will significantly reduce potential for downstream fugitive SO2 emissions as temperature drops from 230 ºF to 164 ºF.				

No. 400 Plant PAE Fugitive SO2

Parameter		Value	Units	Basis
Estimation of Dissolved SO2 & Maximum Possible Fugitive Emissions @ Projected Actual Production Rate				
Calculation Input Data				
Total Pressure	=	91.1	kPa	Final absorber operating pressure value based on pressure survey in 2011.
SO2 Gas Mole Fraction	=	0.01%	mol. %	Final absorber tower gas feed SO2 @ 99.89% conversion efficiency (cesium catalyst).
Temperature	=	200.0	F	Final absorber tower acid bottoms temperature per Simplot process engineer.
Temperature	=	366.5	K	unit conversion.
Henry's Law Constant	=	1.106	kPa/(mmol/kg H2SO4 sol'n.)	For SO2 in 95.91 wt% H2SO4 @ process temperature - from Q. Zhang paper (see Notes).
P_{SO2}	=	0.007	kPa	Design value from PFD; Streams 54 & 18 assumed to be in equilibrium.
Projected H2SO4 Production	=	913,000	tons/yr	Future projected #400 Plant capacity = 2,500 tons 100% H2SO4/day × 365 days/year
Calcuations				
C_{SO2}	=	0.006	mmol/kg H2SO4 sol'n.	= (PSO2) / (Henry's Law Constant)
Projected 98.5% H2SO4 Production	=	926,904	tons/yr	Production of 98.5% solution (concentration at exit of Absorbing Tower).
Projected 98.5% H2SO4 Production	=	840,872,759	kg/yr	unit conversion.
SO2 in H2SO4 Product		0.4	tons/yr	= (Projected 98.5% H2SO4 Production) x (CSO2) / (1,000 mg/g) / (453.6 g/lb) x (64 lb SO2/lb-mol) / (2,000 lb/ton)
Assumed Loss Factor	=	100%	wt. %	Worst-case scenario; actual losses are likely to be less (see notes).
Projected Actual Fugitive SO2 Emissions	=	0.4	tons/yr	= (Assumed Loss Factor) x (SO2 in H2SO4 Product)
NOTES:				
• SO2 solubility data from: "Solubility of Sulfur Dioxide in Sulfuric Acid of High Concentration"; Ind. Eng. Chem. Res. 1998, 37, 1167 - 1172; Zhang, Q., et. al.				
• SO2 has higher solubility at lower temperatures.				
• SO2 has lower solubility at lower acid concentrations.				
• Cooling in main acid pump tank will significantly reduce potential for downstream fugitive SO2 emissions as temperature drops from 230 ºF to 164 ºF.				

No. 400 Plant BAE Fugitive H2S

Parameter		Value	Units	Basis
Estimation of Fugitive H2S Emissions from Sulfur Handling & Storage - Baseline Actual Emissions				
Baseline Dates				
Baseline Period Start	=	07-01-2006		Selected Baseline Period Start Date for #400 Plant Project.
Baseline Period End	=	06-30-2008		Selected Baseline Period End Date for #400 Plant Project
Calculation Input Data				
Baseline H2SO4 Production	=	789,579	tons/yr	Average annual produciton of 100% H2SO4 from Jul-06 to Jun-08
H2SO4-to-Sulfur Ratio	=	3.05	tons/ton	Long-term H2SO4-to-Sulfur ratio from production records.
Calcuations				
Sulfur Used	=	258,884	tons/yr	= (Baseline H2SO4 Production) / (H2SO4-to-Sulfur Ratio)
H2S in Sulfur	=	100.0	ppmw	Max H2S concentration in molten sulfur per Marathon MSDS.
H2S in Sulfur	=	25.9	tons/yr	= (Sulfur Used - tons/yr) x (H2S in Sulfur - ppmw) / 1,000,000
Assumed Loss Factor	=	100%	wt. %	Worst-case scenario; actual loss rate should be much lower since H2S is released slowly from sulfur.
Fugitive H2S Emissions	=	25.9	tons/yr	= (H2S in Sulfur - tons/yr) x (Assumed Loss Factor)

No. 400 Plant EE Fugitive H2S

Parameter		Value	Units	Basis
Estimation of Fugitive H2S Emissions from Sulfur Handling & Storage - Baseline Emissions Capability				
Baseline Dates				
Baseline Period Start	=	07-01-2006		Selected Baseline Period Start Date for #400 Plant Project.
Baseline Period End	=	06-30-2008		Selected Baseline Period End Date for #400 Plant Project
Calculation Input Data				
Baseline H2SO4 Production Capability	=	839,500	tons/yr	Baseline Production Capability of #400 Plant capacity = 2,300 tons 100% H2SO4/day × 365 days/year.
H2SO4-to-Sulfur Ratio	=	3.05	tons/ton	Long-term H2SO4-to-Sulfur ratio from production records.
Calcuations				
Sulfur Used	=	275,252	tons/yr	= (Baseline H2SO4 Production Capability) / (H2SO4-to-Sulfur Ratio)
H2S in Sulfur	=	100.0	ppmw	Max H2S concentration in molten sulfur per Marathon MSDS.
H2S in Sulfur	=	27.5	tons/yr	= (Sulfur Used - tons/yr) x (H2S in Sulfur - ppmw) / 1,000,000
Assumed Loss Factor	=	100%	wt. %	Worst-case scenario; actual loss rate should be much lower since H2S is released slowly from sulfur.
Fugitive H2S Emissions Capability	=	27.5	tons/yr	= (H2S in Sulfur - tons/yr) x (Assumed Loss Factor)
Baseline Actual Fugitive H2S	=	25.9	tons/yr	See '#400 BAE Fugitive H2S' worksheet.
Excludable Fugitive H2S Emissions	=	1.6	tons/yr	= (Fugitive H2S Emissions Capability) - (Baseline Actual Fugitive H2S)

No. 400 Plant PAE Fugitive H2S

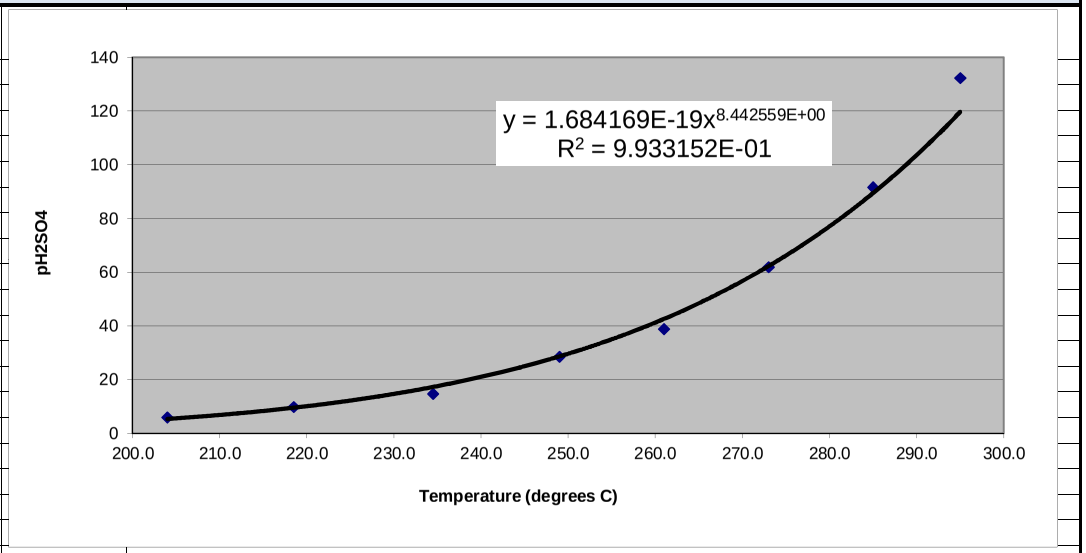
Parameter		Value	Units	Basis
Estimation of Fugitive H2S Emissions from Sulfur Handling & Storage - Projected Actual Emissions				
Calculation Input Data				
Projected H2SO4 Production	=	913,000	tons/yr	Future projected #400 Plant capacity = 2,500 tons 100% H2SO4/day × 365 days/year
H2SO4-to-Sulfur Ratio	=	3.05	tons/ton	Long-term H2SO4-to-Sulfur ratio from production records.
Calcuations				
Sulfur Used	=	299,351	tons/yr	= (Projected H2SO4 Production) / (H2SO4-to-Sulfur Ratio)
H2S in Sulfur	=	100.0	ppmw	Max H2S concentration in molten sulfur per Marathon MSDS.
H2S in Sulfur	=	29.9	tons/yr	= (Sulfur Used - tons/yr) x (H2S in Sulfur - ppmw) / 1,000,000
Assumed Loss Factor	=	100%	wt. %	Worst-case scenario; actual loss rate should be much lower since H2S is released slowly from sulfur.
Fugitive H2S Emissions	=	29.9	tons/yr	= (H2S in Sulfur - tons/yr) x (Assumed Loss Factor)

Baseline Actual Emissions - H_2SO_4 Tanks

Parameter		Value	Units	Basis
Baseline Dates				
Baseline Period Start	=	07-01-2006		Selected Baseline Period Start Date for #400 Plant Project.
Baseline Period End	=	06-30-2008		Selected Baseline Period End Date for #400 Plant Project
Calculation Input Data				
Baseline H2SO4 Production	=	789,579	tons/yr	Average annual produciton of 100% H2SO4 from Jul-06 to Jun-08
Number of Acid Storage Tanks	=	5		Main acid tank, dilution/product tank, intermediate storage tank, final storage tank, loadout.
H2SO4 Liquid Density	=	15.0	lb/gal	
Tank Temperature	=	230	^oF	Max. temp of product acid.
Tank Temperature	=	110	^oC	Max. temp of product acid.
Calcuations				
Volume of Acid Produced	=	14,063,241	ft3	= (Baseline H2SO4 Production) x (2,000 lb/ton) / (H2SO4 Liquid Density lb/gal) / (7.48 gal/ft3)
Maximum Vapor Displacement Rate	=	70,316,206	ft3	= (Volume of acid produced) x (Mumber of tanks)
H_2SO_4 Conc. in Displaced Vapor @ 100% saturation.	=	38.0	ppmv	Extrapolation of Perry's data; see figure for equation.
Baseline Actual H_2SO_4 Emissions	=	0.34	tpy	= (Volume of vapor displaced) x (saturation concentration) x (conversion factors)

Vapor Pressure Data from Perry's 5th Edition; Table 3-14.

Temp. (^oC)		pH_2SO_4 (mmHg)
204.0	@	5.9
218.5	@	9.8
234.5	@	14.7
249.0	@	28.5
261.0	@	38.8
273.0	@	61.9
285.0	@	91.6
295.0	@	132.3

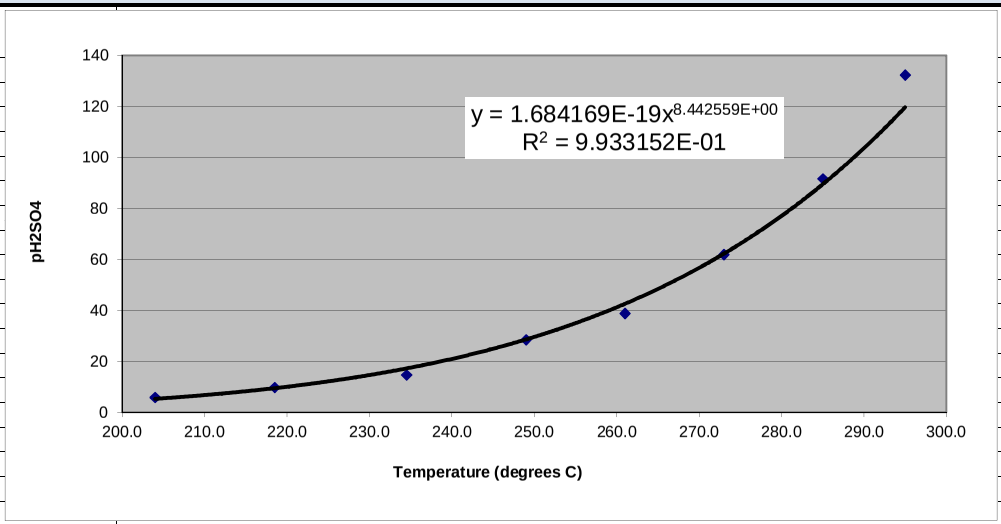


Baseline Emissions Capability - H_2SO_4 Tanks

Parameter		Value	Units	Basis
Baseline Dates				
Baseline Period Start	=	07-01-2006		Selected Baseline Period Start Date for #400 Plant Project.
Baseline Period End	=	06-30-2008		Selected Baseline Period End Date for #400 Plant Project
Calculation Input Data				
Baseline H2SO4 Production Capability	=	839,500	tons/yr	Baseline Production Capability of #400 Plant capacity = 2,300 tons 100% H2SO4/day × 365 days/year.
Number of Acid Storage Tanks	=	5		Main acid tank, dilution/product tank, intermediate storage tank, final storage tank, loadout.
H2SO4 Liquid Density	=	15.0	lb/gal	
Tank Temperature	=	230	^oF	Max. temp of product acid.
Tank Temperature	=	110	^oC	Max. temp of product acid.
Calcuations				
Volume of Acid Produced	=	14,952,387	ft3	= (Baseline H2SO4 Production Capability) x (2,000 lb/ton) / (H2SO4 Liquid Density lb/gal) / (7.48 gal/ft3)
Maximum Vapor Displacement Rate	=	74,761,937	ft3	= (Volume of acid produced) x (Mumber of tanks)
H_2SO_4 Conc. in Displaced Vapor @ 100% saturation.	=	38.0	ppmv	Extrapolation of Perry's data; see figure for equation.
Baseline H_2SO_4 Emissions Capability	=	0.36	tpy	= (Volume of vapor displaced) x (saturation concentration) x (conversion factors)
Baseline Actual H_2SO_4 Emissions	=	0.34	tpy	See 'BAE H2SO4 Tanks' worksheet.
Excludable Tank H2SO4 Emissions	=	0.02	tons/yr	= (Baseline H2SO4 Emissions Capability) - (Baseline Actual H2SO4 Emissions)

Vapor Pressure Data from Perry's 5th Edition; Table 3-14.

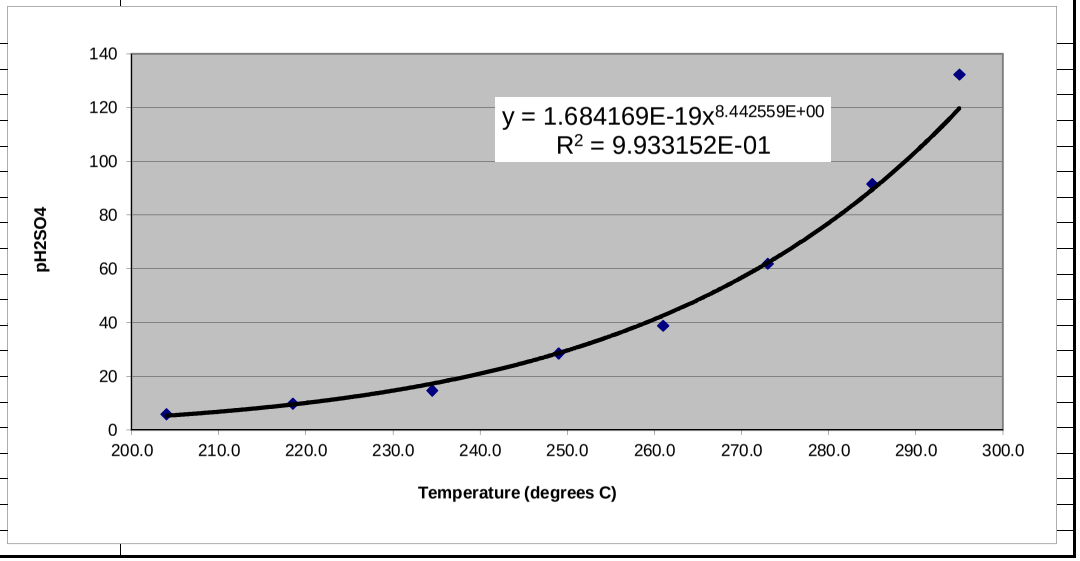
Temp. (^oC)		pH_2SO_4 (mmHg)
204.0	@	5.9
218.5	@	9.8
234.5	@	14.7
249.0	@	28.5
261.0	@	38.8
273.0	@	61.9
285.0	@	91.6
295.0	@	132.3



Projected Actual Emissions - H_2SO_4 Tanks

Parameter		Value	Units	Basis
Calculation Input Data				
Projected H2SO4 Production	=	913,000	tons/yr	Future projected #400 Plant capacity = 2,500 tons 100% H2SO4/day × 365 days/year
Number of Acid Storage Tanks	=	5		Main acid tank, dilution/product tank, intermediate storage tank, final storage tank, loadout.
H2SO4 Liquid Density	=	15.0	lb/gal	
Tank Temperature	=	230	^oF	Max. temp of product acid.
Tank Temperature	=	110	^oC	Max. temp of product acid.
Calcuations				
Volume of Acid Produced	=	16,261,501	ft3	= (Projected H2SO4 Production) x (2,000 lb/ton) / (H2SO4 Liquid Density lb/gal) / (7.48 gal/ft3)
Maximum Vapor Displacement Rate	=	81,307,503	ft3	= (Volume of acid produced) x (Mumber of tanks)
H_2SO_4 Conc. in Displaced Vapor @ 100% saturation.	=	38.0	ppmv	Extrapolation of Perry's data; see figure for equation.
Projected Actual H_2SO_4 Emissions	=	0.39	tpy	= (Volume of vapor displaced) x (saturation concentration) x (conversion factors)
Vapor Pressure Data from Perry's 5th Edition; Table 3-14.				

Temp. (^oC)		pH_2SO_4 (mmHg)
204.0	@	5.9
218.5	@	9.8
234.5	@	14.7
249.0	@	28.5
261.0	@	38.8
273.0	@	61.9
285.0	@	91.6
295.0	@	132.3



New Cooling Towers - PTE

Parameter		Value	Units	Source / Basis
Emission Unit(s) ID	=			***New Cooling Tower***
Number of Cells	=	1		Design Specification
Cell Recirculation Rate	=	6,000	gal/min	Design Specification
Annual Operating Hours	=	8,760	hrs/yr	Maximum potential use.
Drift Loss Factor	=	0.0010%	wt. %	Design Specification.
Cooling Water Rate	=	6,000	gal/min	= Cell Recirculation Rate * Number of Cells
Cooling Water TDS	=	6,000	ppmw	Conservative estimate.
PM10 Fraction of PM	=	23.6%	wt. %	See "CT PM10 Fxn Calc" sheet.
PM2.5 Fraction of PM	=	0.15%	wt. %	See "CT PM2.5 Fxn Calc" sheet.
Hourly PM PTE (per cell)	=	0.180	lb/hr	= Cell Recirculation Rate * 60 * 8.34 * Drift Loss Factor * Cooling Water TDS / 1,000,000
PM PTE (total)	=	0.789	tpy	= Hourly PM PTE (per cell) * Annual Operating Hours / 2000 * Number of Cells
Hourly PM10 PTE (per cell)	=	0.0425	lb/hr	= Hourly PM PTE (per cell) * PM10 Fraction of PM
PM10 PTE (total)	=	0.186	tpy	= PM PTE (total) * PM10 Fraction of PM
Hourly PM2.5 PTE (per cell)	=	0.0003	lb/hr	= Hourly PM10 PTE (per cell) * Hourly PM PTE (per cell)
PM2.5 PTE (total)	=	0.001	tpy	= PM10 PTE (total) * Hourly PM PTE (per cell)

CT PM10 Fxn Calc

EPRI Droplet Diameter (um)	Droplet Volume (um3)	Droplet, Mass (ug)	Particle Mass (Solids) (ug)	Solid Particle Volume (um3)	Solid Particle Diameter (um)	EPRI % Mass Smaller	Wt% PM10 in PM Emissions
10	524	5.24E-04	3.14E-06	1.43	1.40	0	
20	4189	4.19E-03	2.51E-05	11.42	2.79	0.196	
30	14137	1.41E-02	8.48E-05	38.56	4.19	0.226	
40	33510	3.35E-02	2.01E-04	91.39	5.59	0.514	
50	65450	6.54E-02	3.93E-04	178.50	6.99	1.806	
60	113097	1.13E-01	6.79E-04	308.45	8.38	5.702	
70	179594	1.80E-01	1.08E-03	489.80	9.78	21.348	
90	381704	3.82E-01	2.29E-03	1041.01	12.57	49.812	23.6
110	696910	6.97E-01	4.18E-03	1900.66	15.37	70.509	
130	1150347	1.15E+00	6.90E-03	3137.31	18.16	82.023	
150	1767146	1.77E+00	1.06E-02	4819.49	20.96	88.012	
180	3053628	3.05E+00	1.83E-02	8328.08	25.15	91.032	
210	4849048	4.85E+00	2.91E-02	13224.68	29.34	92.468	
240	7238229	7.24E+00	4.34E-02	19740.63	33.53	94.091	
270	10305995	1.03E+01	6.18E-02	28107.26	37.72	94.689	
300	14137167	1.41E+01	8.48E-02	38555.91	41.91	96.288	
350	22449298	2.24E+01	1.35E-01	61225.36	48.90	97.011	
400	33510322	3.35E+01	2.01E-01	91391.79	55.89	98.34	
450	47712938	4.77E+01	2.86E-01	130126.20	62.87	99.071	
500	65449847	6.54E+01	3.93E-01	178499.58	69.86	99.071	
600	113097336	1.13E+02	6.79E-01	308447.28	83.83	100	
			Cooling Tower TDS =	**6,000**	ppmw		
		Cooling Tower PM10 fraction of total PM =		**23.6**	wt. %		
Note:							

CT PM2.5 Fxn Calc

EPRI Droplet Diameter (um)	Droplet Volume (um3)	Droplet, Mass (ug)	Particle Mass (Solids) (ug)	Solid Particle Volume (um3)	Solid Particle Diameter (um)	EPRI % Mass Smaller	Wt% PM2.5 in PM Emissions
10	524	5.24E-04	3.14E-06	1.43	1.40	0	
20	4189	4.19E-03	2.51E-05	11.42	2.79	0.196	0.15
30	14137	1.41E-02	8.48E-05	38.56	4.19	0.226	
40	33510	3.35E-02	2.01E-04	91.39	5.59	0.514	
50	65450	6.54E-02	3.93E-04	178.50	6.99	1.806	
60	113097	1.13E-01	6.79E-04	308.45	8.38	5.702	
70	179594	1.80E-01	1.08E-03	489.80	9.78	21.348	
90	381704	3.82E-01	2.29E-03	1041.01	12.57	49.812	
110	696910	6.97E-01	4.18E-03	1900.66	15.37	70.509	
130	1150347	1.15E+00	6.90E-03	3137.31	18.16	82.023	
150	1767146	1.77E+00	1.06E-02	4819.49	20.96	88.012	
180	3053628	3.05E+00	1.83E-02	8328.08	25.15	91.032	
210	4849048	4.85E+00	2.91E-02	13224.68	29.34	92.468	
240	7238229	7.24E+00	4.34E-02	19740.63	33.53	94.091	
270	10305995	1.03E+01	6.18E-02	28107.26	37.72	94.689	
300	14137167	1.41E+01	8.48E-02	38555.91	41.91	96.288	
350	22449298	2.24E+01	1.35E-01	61225.36	48.90	97.011	
400	33510322	3.35E+01	2.01E-01	91391.79	55.89	98.34	
450	47712938	4.77E+01	2.86E-01	130126.20	62.87	99.071	
500	65449847	6.54E+01	3.93E-01	178499.58	69.86	99.071	
600	113097336	1.13E+02	6.79E-01	308447.28	83.83	100	
			Cooling Tower TDS =	**6,000**	ppmw		
		Cooling Tower PM2.5 fraction of total PM =		**0.15**	wt. %		
Note:							

ATTACHMENT C-2
DATA & DATA SUMMARIES

Data Rollup

Month-Year	#400 Plant H2SO4 Production (tons)	#400 Plant H2SO4 Production (tons) 24-month Avg. Annual	#400 Plant CEMS SO2 Emissions (tons)	#400 Plant 24-month annual Avg. SO2 Emiss. (tons)	Monthly Avg. SO2 EF (lb/ton)	H2SO4 Emissions (tons)	H2SO4 Emiss. 24-month annual Avg. (tons)	PM Emissions (tons)	PM Emiss. 24-month annual Avg. (tons)	PM10 Emissions (tons)	PM10 Emiss. 24-month annual Avg. (tons)	PM2.5 Emissions (tons)	PM2.5 Emiss. 24-month annual Avg. (tons)	NOx Emissions (tons)	NOx Emissions 24-month annual Avg. (tons)
Jul-2006	69,585	34,793	103.0	52	2.96	1.04	0.52	2.07	1.03	2.70	1.35	1.69	0.85	3.00	1.50
Aug-2006	69,800	69,693	113.8	108	3.26	1.05	1.05	2.07	2.07	2.71	2.70	1.70	1.69	3.00	3.00
Sep-2006	69,377	104,381	105.9	161	3.05	1.04	1.57	2.06	3.10	2.69	4.05	1.69	2.54	2.99	4.49
Oct-2006	69,336	139,050	97.6	210	2.82	1.04	2.09	2.06	4.13	2.69	5.39	1.68	3.38	2.98	5.99
Nov-2006	68,403	173,251	92.3	256	2.70	1.03	2.60	2.03	5.15	2.65	6.72	1.66	4.21	2.94	7.46
Dec-2006	71,460	208,981	81.8	297	2.29	1.07	3.13	2.12	6.21	2.77	8.11	1.74	5.08	3.08	9.00
Jan-2007	63,153	240,557	70.0	332	2.22	1.26	3.77	2.02	7.22	2.21	9.21	1.22	5.69	3.07	10.53
Feb-2007	65,701	273,408	100.8	383	3.07	1.31	4.42	2.10	8.27	2.29	10.36	1.27	6.32	3.19	12.12
Mar-2007	70,143	308,479	98.8	432	2.82	1.40	5.12	2.24	9.39	2.45	11.58	1.36	7.00	3.41	13.83
Apr-2007	68,527	342,743	96.6	480	2.82	1.37	5.81	2.19	10.48	2.39	12.78	1.32	7.66	3.33	15.49
May-2007	69,375	377,430	96.5	529	2.78	1.39	6.50	2.22	11.59	2.42	13.99	1.34	8.33	3.37	17.17
Jun-2007	55,436	405,148	51.6	554	1.86	1.11	7.06	1.77	12.48	1.94	14.96	1.07	8.87	2.69	18.52
Jul-2007	66,367	438,332	89.6	599	2.70	1.33	7.72	2.12	13.54	2.32	16.12	1.28	9.51	3.22	20.13
Aug-2007	67,648	472,156	115.5	657	**3.41**	1.35	8.40	2.16	14.62	2.36	17.30	1.31	10.16	3.28	21.77
Sep-2007	65,158	504,735	103.7	709	3.18	1.30	9.05	2.08	15.66	2.28	18.43	1.26	10.79	3.16	23.35
Oct-2007	71,641	540,555	119.0	768	3.32	1.43	9.77	2.29	16.81	2.50	19.69	1.38	11.48	3.48	25.09
Nov-2007	67,703	574,407	110.1	823	3.25	1.35	10.44	2.16	17.89	2.36	20.87	1.31	12.14	3.29	26.74
Dec-2007	**71,645**	610,229	**120.5**	884	3.37	**1.43**	11.16	**2.29**	19.03	2.50	22.12	1.38	12.83	**3.48**	28.48
Jan-2008	71,546	646,002	120.5	944	3.37	0.79	11.55	2.27	20.17	**3.06**	23.65	**1.95**	13.81	3.45	30.20
Feb-2008	65,138	678,571	104.1	996	3.20	0.72	11.91	2.06	21.20	2.78	25.04	1.78	14.70	3.14	31.77
Mar-2008	67,484	712,313	104.3	1,048	3.09	0.74	12.28	2.14	22.27	2.89	26.48	1.84	15.62	3.25	33.40
Apr-2008	66,839	745,733	105.7	1,101	3.16	0.74	12.65	2.12	23.33	2.86	27.91	1.82	16.53	3.22	35.01
May-2008	51,577	771,521	66.0	1,134	2.56	0.57	12.93	1.63	24.14	2.21	29.01	1.41	17.23	2.49	36.25
Jun-2008	36,116	**789,579**	45.6	**1,157**	2.53	0.40	**13.13**	1.14	**24.72**	1.54	**29.79**	0.99	**17.73**	1.74	**37.12**
Max.	71,645	789,579	121	1,157	3.41	1.43	13.13	2.29	24.72	3.06	29.79	1.95	17.73	3.48	37.12

No. 400 Plant Test Data

Year	SO2		H2SO4		Production	nox	nox	PM	PM	PM10	PM10	PM2.5*	PM2.5	back half (CPM)
	#/ton	#/hr	#/ton	#/hr	TPH	#/hr	#/ton	#/hr	#/ton	#/hr	#/ton	#/hr	#/ton	#/hr
2006	2.8	273	0.03	3.3		8.20	0.086	5.65	0.059	7.36	0.078	4.61	0.049	1.72
2007	3.11	300	0.04	3.9	96.5	9.37	0.097	6.17	0.064	6.74	0.070	3.73	0.039	0.57
2008	3.1	299	0.022	2.2	96.6	9.31	0.096	6.12	0.063	8.26	0.086	5.27	0.055	2.14
2006-a					93.8	8.12	0.087	6.23	0.066	8.96	0.096	5.92	0.063	2.73
2006-b	2.8	273	0.03	3.3	96.6	8.27	0.086	5.06	0.052	5.76	0.060	3.29	0.034	0.70
Max	3.11	300	0.04	3.9	96.6	9.37	0.097	6.17	0.064	8.26	0.086	5.27	0.055	2.14

* PM fraction assumed to be 51.2% PM2.5 per AP-42, Appendix B-1, p. B.1-18 (10/1986). All of CPM assumed to be PM2.5.

Don Plant Acid Import & Export

H2SO4 Imports (tons)		H2SO4 Exports (tons)	
Fiscal 1999	35,135		
Fiscal 2000	50,809		
Fiscal 2001	14,605		
Fiscal 2002	0	CY 2002	16,960
Fiscal 2003	0	CY 2003	34,268
Fiscal 2004	1,078	CY 2004	52,853
Fiscal 2005	2,540	CY 2005	21,715
Fiscal 2006	24,090	CY 2006	46,424
Fiscal 2007	1,072	CY 2007	57,555
Fiscal 2008	25,531	CY 2008	23,233
Fiscal 2009	8,307	CY 2009	18,104
Fiscal 2010	2,504	CY 2010	15,937
Fiscal 2011	16,470		

APPENDIX D

AIR QUALITY IMPACTS CORRESPONDENCE

RTP Environmental Associates, Inc.

304-A West Millbrook Road
Raleigh, North Carolina 27609
Tel: (919) 845-1422 Fax: (919) 845-1424

22 November 2011 **VIA EMAIL**

Mr. Darrin Mehr
Air Quality Analyst
Monitoring, Modeling & Emissions Inventory
Idaho Department of Environmental Quality

Subject: J.R. Simplot (Simplot) Don Plant No. 400 Sulfuric Acid Plant Project

Dear Mr. Mehr:

As we discussed on our conference call on October 21, 2011, Simplot is planning to submit a permit to construct (PTC) application for certain changes to the No. 400 Sulfuric Acid Plant located at its Don Plant in Pocatello, Idaho. Simplot has retained RTP Environmental Associates, Inc. (RTP) to prepare the permit application. RTP has completed the PSD applicability analysis for the planned changes and concluded that the changes do not constitute a "major modification" and therefore, the project is not subject to Prevention of Significant Deterioration (PSD) review requirements including the PSD requirements related to air quality impacts assessment. We also discussed the issue of whether the planned changes require air quality modeling under IDEQ's guidelines. Subsequent to that call, you supplied RTP with a copy of the Department's modeling guidance document.

RTP completed Table 1 of the modeling guidance using the project emissions increase analysis along with information from the Department's guidance document. This table is attached. As shown, it appears that of the criteria pollutants affected by the project, only NOx and $PM_{2.5}$ emissions reach the level where Department discretion is needed to determine the need for air quality impact modeling.[1]

During the October 21 call, we also discussed the possibility of stack parameter modifications as part of the project in question. Based on discussions with Simplot, the only stack parameter that is projected to change as a result of the No. 400 Plant project is the discharge velocity from the stack. Flow

[1] Note that in the case of $PM_{2.5}$, the reason the increase is at this level is that there is currently no limit on allowable $PM_{2.5}$ emissions. However, there is an allowable limit on PM_{10} emissions, and because Simplot is not requesting any increase in this limit associated with the planned changes, it is reasonable to presume that $PM_{2.5}$ emissions will not increase beyond the level embodied in the PM_{10} allowable emissions limit.

is expected to increase by about 8.5% which would increase discharge velocity by the same amount since the stack location, height and diameter will remain unchanged. The stack temperature is also projected to remain constant. This change should improve dispersion characteristics from the No. 400 Plant stack.

With this letter, Simplot is requesting that the Department provide guidance on the need for criteria air quality modeling associated with this project. Please contact me if you have any questions or need additional information. Also, for your information, I have attached a copy of the presentation describing the planned project provided by Simplot to Mr. Mike Simon and Mr. Darrin Pampaian on September 29, 2011.

Sincerely,

Jack M. Burke, P.E.
Senior Project Manager
RTP Environmental Associates, Inc.

Simplot Don Plant #400 Plant Estimated Emissions Increases for Modeling Purposes [a, b]

Emissions Unit	Stack or Emissions Point ID	PM_{10}	$PM_{2.5}$		SO_2		NOx		CO		Lead	
		lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr
		24-hr Avg.	24-hr Avg.	Annual Avg.	Max.	3-hr Avg.	Max.	Annual Avg.	Max.	8-hr Avg.	monthly Avg.	1/4ly Avg.
Point Sources												
#400 Plant Stack [c, d, e]	15	0	0.61	0.55	0	0	1.2	1.1	0	0	0	0
New Cooling Tower	TBD	0.18	2.8E-04	2.8E-04	0	0	0	0	0	0	0	0
Fugitive Sources												
#400 Plant Storage Tanks [c, f]		7.9E-03	7.9E-03	7.2E-03	0	0	0	0	0	0	0	0
#400 Plant Fugitives [c]		0	0	0	-0.3	-0.3	0	0	0	0	0	0

a. Increases are equal to PTE for new units, increase in allowable emissions for existing units with limits, or project emissions increase where no emission limits exist.

b. Values are derived from annual ton per year emissions estimates which are based on a projected annual average H_2SO_4 production rate of 2,500 tpd.

c. No increases in allowable PM_{10} or SO_2 emissions are requested in conjunction with this project.

d. Short-term increases are estimated at 1.1X the annual average hourly increase as an estimate of maximum expected variation in flows or emissions.

e. There is no allowable limit on $PM_{2.5}$. However, $PM_{2.5}$ is effectively limited by the PM_{10} rate. Since there will be no increase in PM_{10} allowable emissions, there is in effect no increase in allowable $PM_{2.5}$ emissions.

f. Emissions are H_2SO_4 vapor which is assumed to be both PM_{10} and $PM_{2.5}$.

burke@rtpenv.com

From: Kevin.Schilling@deq.idaho.gov
Sent: Thursday, December 01, 2011 8:11 PM
To: burke@rtpenv.com
Cc: Bob.Willey@simplot.com; burl.ackerman@Simplot.com; Darrin.Mehr@deq.idaho.gov
Subject: RE: Modeling Guidance for Simiplot Don Plant--400 Sulfuric Acid Plant Project

Jack,

We located older modeling files for the plant and ran a couple tests on the 400 acid plant stack. These tests verified that use Level II modeling thresholds are appropriate for the stack provided the following:

UTM location: 375,272 E, 4,751,539 N

stack height 210 ft, stack diameter about 9.5 ft or less, flow greater than 130158 acfm, temperature about 163 F or greater.

Include this email with the permit application as documentation of approval of the Level II thresholds.

Please let me know if you have any additional questions.

Kevin Schilling
Stationary Source Air Modeling Coordinator
Idaho Department of Environmental Quality
208 373-0112

From: burke@rtpenv.com [mailto:burke@rtpenv.com]
Sent: Thu 12/1/2011 9:30 AM
To: Kevin Schilling
Cc: 'Willey, Robert'; 'Ackerman, Burl'; Darrin Mehr
Subject: FW: Modeling Guidance for Simiplot Don Plant--400 Sulfuric Acid Plant Project

Kevin,

I believe the info below answers the questions that Darrin Mehr asked regarding the Simplot Don Plant No. 400 Acid Plant. I will try and summarize:

The stack drawing shows a height of 210'. Simplot believes that the height of the sample ports shown in the sketch as 130' may be incorrect as this was estimated and not measured.

The Stack has a cone at the discharge which reduces the diameter to 9 feet from 11 feet.

The location of the No. 400 Stack shown on the Google Earth photo appears to be correct so UTM coordinates for this location would be more accurate than the UTM coordinate data from the Tier I permit / inventory.

Based on past stack tests, the baseline flow is estimated to be 144,000 acfm at 165 F. There will be no change in discharge temperature after the project, but the flow will increase as described earlier.

Please let me know if you have any questions. Also, could you provide an estimate of when you think this question might get resolved? Thanks.

Jack Burke
RTP Environmental Associates, Inc.
304A West Millbrook Road
Raleigh, NC 27609
919.845.1422 x39

From: Willey, Robert [mailto:Bob.Willey@simplot.com]
Sent: Wednesday, November 30, 2011 3:53 PM
To: 'burke@rtpenv.com'
Subject: RE: Modeling Guidance for Simiplot Don Plant--400 Sulfuric Acid Plant Project

Jack,

Looked at drawings for the stack.

Stack Height: 210 ft
(distance from sample port to ground – 130 ft – may not be correct – from stack test drawing)
Stack diameter at exit: 9 ft (short cone at exit point of stack)
Stack diameter: 11 ft

Flow and temperature data attached for 2009, 2010, 2011

Google Earth stack location seems to be correct.

Hope this helps.

Bob Willey

Environmental Department
Office (208) 234 5352
Cell (208) 241 2556
Fax (208) 234 5305
J.R. Simplot AgriBusiness
Bringing Earth's Resources to Life

From: burke@rtpenv.com [mailto:burke@rtpenv.com]
Sent: Tuesday, November 29, 2011 4:14 PM
To: Willey, Robert
Cc: Ackerman, Burl
Subject: FW: Modeling Guidance for Simiplot Don Plant--400 Sulfuric Acid Plant Project

Bob,

We need to discuss this and develop a response.

Jack

From: Darrin.Mehr@deq.idaho.gov [mailto:Darrin.Mehr@deq.idaho.gov]
Sent: Tuesday, November 29, 2011 5:29 PM
To: burke@rtpenv.com
Cc: burl.ackerman@Simplot.com; Kevin.Schilling@deq.idaho.gov
Subject: RE: Modeling Guidance for Simiplot Don Plant--400 Sulfuric Acid Plant Project

Hi Jack and Burl,

Kevin Schilling and I are working to make a determination on the modeling as quickly as possible for your #400 Sulfuric Acid Plant (#400 SAP) project. To complete this background work additional information/clarification is needed from Simplot.

The stack location data I have from the current 2010 Facility-wide emission inventory and the 2000 Facility-wide Tier I /Tier II OP lists the UTM coordinates as 375,272 meters Easting and 4,751,539 meters Northing, with a stack base elevation of 4448 feet. Can you verify the UTM coordinates of this stack in NAD83 or WGS84 datum? The location I have on file is in error or is in a different datum based on what I assume is the actual location of the 400 SAP stack and the location the coordinates are for.

Can you provide the baseline stack parameters that you are using to evaluate whether there have been any changes that are occurring? I have run across conflicting data from the resources available to me.

The 2010 Emissions Inventory data and the 2000 Tier I/ Tier II app have the same information: Stack Height taken as the point of exhaust release to atmosphere of 210 feet

Stack Diameter of 9.5 feet (cross-sectional area would be 70.9 square feet)

Exhaust flow rate was listed at 130,693 actual cubic feet per minute

The 2009 performance test on the #400 SAP lists the stack diameter at 11.0 feet (95.0 square feet) and the schematic in Appendix E of the test report depicts a stack that may be approximately 174 feet from base elevation to the point of release instead of 210 feet in past permit applications and EI submittals. Please verify the release height of this stack.

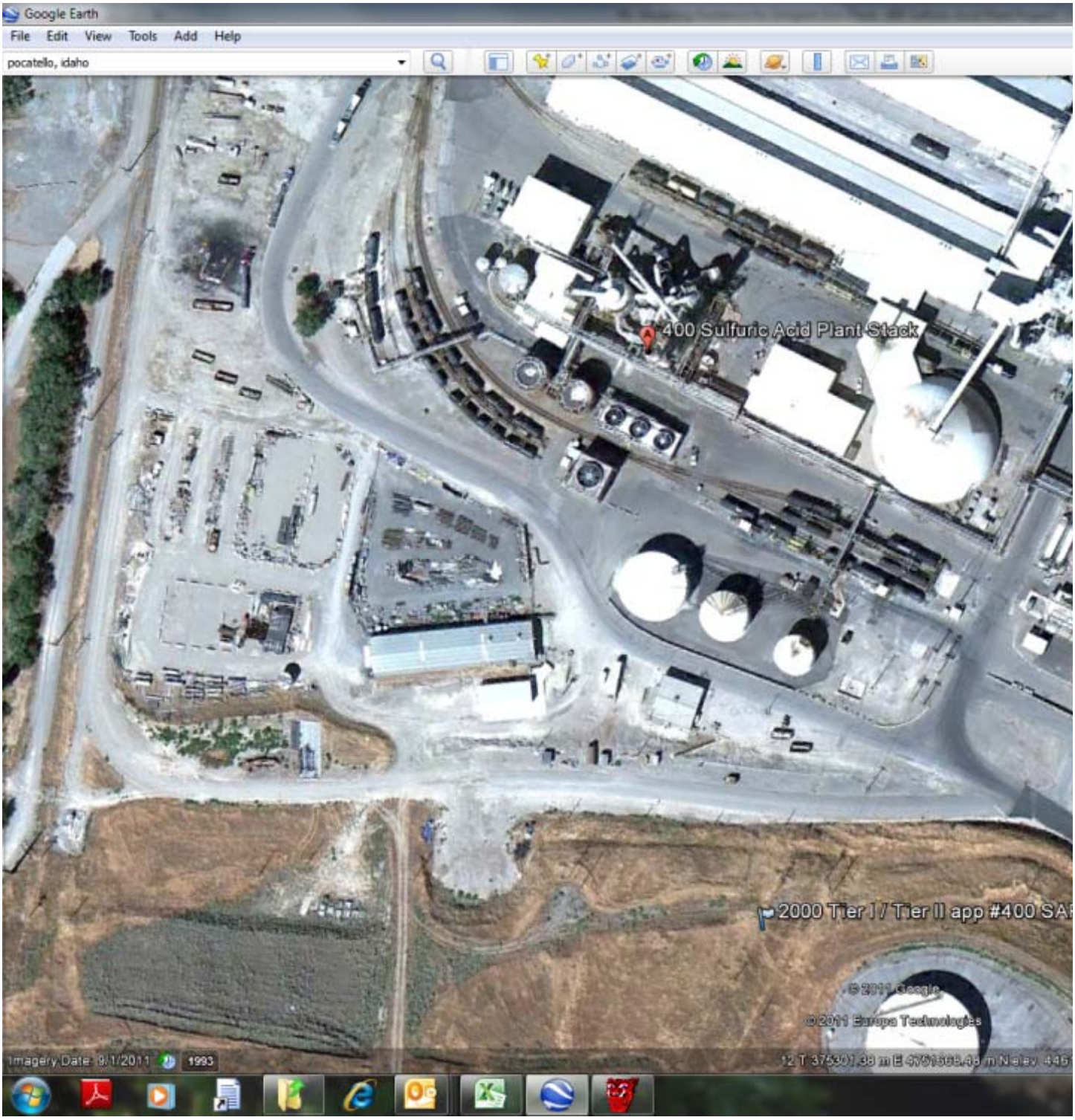
The 2009 summary information available to me on flow rates and temperatures is illegible, but the 2010 and 2011 performance data indicates that an average temperature of the exhaust is about 163 degrees Fahrenheit and the average exhaust flow rate is about 142,000 ACFM. Please document the flow rate you are using as the baseline flow which is expected to be increased by 8.5%.

Please provide your response to Kevin Schilling for consideration in reviewing your requested modeling applicability determination.

Thank you,
Darrin

Darrin Mehr
Air Quality Analyst
Monitoring, Modeling & Emissions Inventory
Idaho Department of Environmental Quality
Phone: 208-373-0536
Fax: 208-373-0143
e-mail: Darrin.Mehr@deq.idaho.gov

Google Earth Imagery—WGS84 datum (basically equivalent to NAD83 datum), September 1, 2011 Image:



November 10 and 11, 2009 Performance Test, Figure 1, Appendix E:

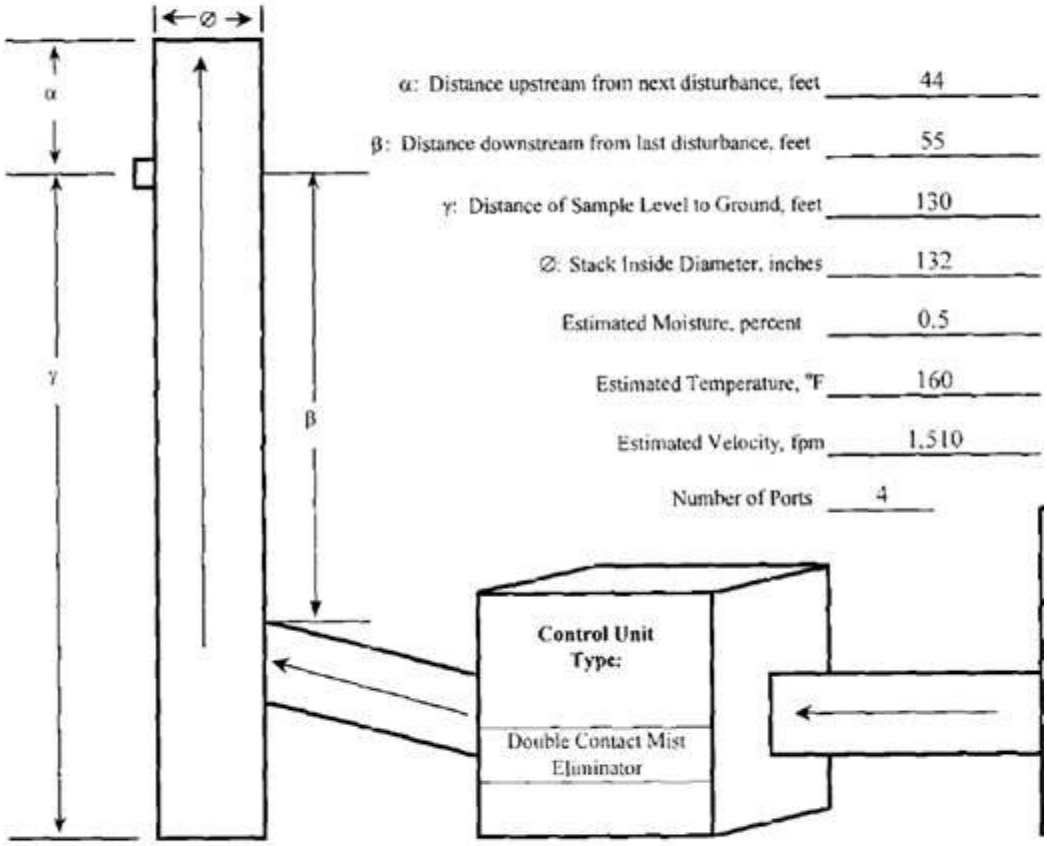
J R SIMPLOT COMPANY-DON SIDING POCATELLO - 400 Sulfuric Acid PCT Test Results.PDF - Adobe Reader

File Edit View Window Help

67 / 93 110%

Facility: J.R. Simplot

Stack Identification: 400 Sulfuric Acid



α: Distance upstream from next disturbance, feet 44

β: Distance downstream from last disturbance, feet 55

γ: Distance of Sample Level to Ground, feet 130

∅: Stack Inside Diameter, inches 132

Estimated Moisture, percent 0.5

Estimated Temperature, °F 160

Estimated Velocity, fpm 1,510

Number of Ports 4

Figure 1. Facility Schematic Representation

From: burke@rtpenv.com [mailto:burke@rtpenv.com]
Sent: Tuesday, November 22, 2011 6:27 AM
To: Darrin Mehr

Cc: Darrin Pampaian; 'Ackerman, Burl'; 'Willey, Robert'
Subject: Modeling Guidance for Simiplot Don Plant

Dear Mr. Mehr,

Attached is a letter documenting the emissions impacts of Simiplot's planned changes to the No. 400 Acid Plant at its Don Plant in Pocatello, ID. Simplot has requested I provide this information to you and is requesting the Department's guidance on the need for air quality modeling for this project. As discussed on our call in October, timing is critical as certain work needs to be completed next June to meet the emissions reduction schedule Simplot is pursuing. Please contact me if you have any questions. Thanks in advance.

Jack Burke
RTP Environmental Associates, Inc.
304A West Millbrook Road
Raleigh, NC 27609
919.845.1422 x39