

Statement of Basis

**Permit to Construct No. P-2014.0040
Project ID 61800**

**Alternative Environmental Systems, Inc.
Mayfield, Idaho**

Facility ID 039-00029

Final

**January 31, 2017
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Permit Writer**

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

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ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
ASTM	American Society for Testing and Materials
Btu	British thermal units
CAA	Clean Air Act
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CI	compression ignition
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	CO ₂ equivalent emissions
DEQ	Department of Environmental Quality
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gases
gph	gallons per hour
gpm	gallons per minute
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
hp	horsepower
hr/yr	hours per consecutive 12 calendar month period
ICE	internal combustion engines
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometers
lb/hr	pounds per hour
lb/qtr	pound per quarter
m	meters
MACT	Maximum Achievable Control Technology
MMBtu	million British thermal units
MMscf	million standard cubic feet
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
O&M	operation and maintenance
O ₂	oxygen
PC	permit condition
PM	particulate matter
PM _{2.5}	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
ppm	parts per million
ppmw	parts per million by weight
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTC/T2	permit to construct and Tier II operating permit
PTE	potential to emit
RFO	reprocessed fuel oil
RICE	reciprocating internal combustion engines

<i>Rules</i>	<i>Rules for the Control of Air Pollution in Idaho</i>
scf	standard cubic feet
SCL	significant contribution limits
SIP	State Implementation Plan
SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO ₂	sulfur dioxide
SO _x	sulfur oxides
T/day	tons per calendar day
T/hr	tons per hour
T/yr	tons per consecutive 12 calendar month period
T2	Tier II operating permit
TAP	toxic air pollutants
ULSD	ultra-low sulfur diesel
U.S.C.	United States Code
VOC	volatile organic compounds
yd ³	cubic yards
µg/m ³	micrograms per cubic meter

FACILITY INFORMATION

Description

Alternative Environmental Systems (AES) operates a pyrolysis facility in Mayfield. The facility operates two batch retorts to pyrolyze waste tires or other carbon-based offal into recoverable materials that may include oil (synoil), gas (syngas), reclaimed steel, and char material. The existing pyrolysis system is a batch process that is operated as a two-chambered retort. Waste tires are inspected for debris and side walls are removed. The remaining tire bands are sent through a primary, secondary and final shredder that reduces the tires to a size of ¾" minus. The shredders are indoors with dust management controlled by the dust collector baghouse. Throughput capacity of the shredders are 1500 pounds per hour. Other carbon-based offal may not require washing or sizing prior to loading into the retort. At this time the applicant anticipates that other carbon-based offal may include trimmings, flashings, or other waste from rubber manufacturing processes or organic material such as walnut shells.

The retort is sealed and purged with nitrogen gas to provide an inert atmosphere for the pyrolysis process. The nitrogen purge is continued throughout the process to ensure the atmosphere within the retort remains inert. The retorts are heated with burners fueled with diesel #2. The burners are external to the retorts but fully contained within a refractory lining.

The proposed continuous process reactors are two retort reactors heated by three natural gas-fired burners. The continuous process has the advantage of producing oils, syngas, and char/product at a steady rate.

The facility includes a wire separation unit, where steel wire from tire belts and beads is removed from the process following the pyrolysis of the tires. The wire separation unit is vented to a baghouse for control of particulate matter emissions. The remaining material is then sent through a primary crusher, which is also vented to one of the dust control baghouses for control of particulate matter emissions. The material is then conveyed to the jet mill for further milling to specification. The jet mill is vented to the jet mill baghouse for control of particulate matter emissions and product recovery or to the pellet mill, where the crushed material is compressed into small pellets. The dust generated in the pellet dryer is collected in the second dust control baghouse.

Synoil that is produced in the retorts is collected in a series of condensers and stored in 55-gallon drums onsite while awaiting shipment offsite. Syngas that is produced in the retorts passes through the condensers and is sent through a proprietary desulfurization scrubber and then on to a flare for destruction. Propane is used as a pilot fuel and as an auxiliary fuel for the flare.

The facility maintains an emergency generator powered by a 197 hp diesel engine to provide electric power in the event of a power interruption.

Permitting History

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

September 18, 2015 P-2014.0040, Initial PTC, Permit status (A, but will become S upon issuance of this permit)

Application Scope

This PTC is for a minor modification at an existing minor facility. The applicant has proposed to install and operate two continuous process reactors and a second dust collection baghouse. The batch process and continuous process reactors cannot be operated at the same time because they both rely on the same downstream equipment.

Application Chronology

October 25, 2016	DEQ received an application and an application fee.
November 2 – November 17, 2016	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
November 23, 2016	DEQ determined that the application was complete.
January 18, 2017	DEQ made available the draft permit and statement of basis for peer and regional office review.
January 20, 2017	DEQ made available the draft permit and statement of basis for applicant review.
January 27, 2017	DEQ received the permit processing fee.
January 31, 2017	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Sources	Control Equipment	Emission Point ID No.
<u>Batch Pyrolysis Retorts (two)</u> Manufacturer: Industrial Fabrication Company Manufacture Date: 2013 Max. Production: 3,000 lb/batch Fuel: Diesel #2 Fuel Consumption: 15 gal/hr (each)	None	Stack Height: 41 ft Exit Diameter: 1.0 ft
<u>Continuous Pyrolysis Reactors (two)</u> Manufacturer: Industrial Fabrication Company Manufacture Date: 2015 (No. 1) and 2017 (No. 2) Max. Production: 400 lb/hr (No. 1) and 700 lb/hr (No. 2) Fuel: Diesel #2 Fuel Consumption: 9 gal/hr (combined)	None	Stack Height: 41 ft Exit Diameter: 1.0 ft
<u>Syngas Flare</u> Manufacturer: Hero Manufacture Date: 2014 Aux. Fuel: Propane Fuel Consumption: 250 scf/hr	<u>Sulfur Scrubber</u> Manufacturer: Proprietary	Stack Height: 60 ft Exit Diameter: 0.5 ft Exit Flow Rate: 2,000 acfm
<u>Dust Control Baghouses No. 1 and No. 2</u> Manufacturer: UAS Model: MERV 15 Type: Cartridge Cartridges: 16 PM ₁₀ Control Efficiency: 99.99%	None	Stack Height: 31 ft Exit Diameter: 1.0 ft (No. 1) Exit Diameter: 1.5 ft (No. 2)
<u>Jet Mill Baghouse</u> Manufacturer: MAC Process Model: 24SER4 Style III Type: Cartridge Cartridges: 4 PM ₁₀ Control Efficiency: 99.99%	None	Stack Height: 30 ft Exit Diameter: 0.5 ft
<u>Emergency Engine</u> Manufacturer: John Deere Model: 6068HF285 Manufacture Date: 2005 Horsepower: 197 Fuel: ULSD	None	Stack Height: 10 ft Exit Diameter: 0.33 ft Exit Flow rate: 1165 acfm Exit Temperature: 916 °F

Emissions Inventories

Potential to Emit

IDAPA 58.01.01 defines Potential to Emit as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is state or federally enforceable. Secondary emissions do not count in determining the potential to emit of a facility or stationary source.

Using this definition of Potential to Emit an emission inventory was developed for the two pyrolysis retorts, two continuous pyrolysis reactors, syngas flare, two dust control baghouses, Jet Mill baghouse, and emergency engine (see Appendix A) associated with this proposed project. Emissions estimates of criteria pollutants, GHG, and HAPs were based on emission factors from AP-42 and source testing, operation of the batch process at 6,570 hours per year (450 hours per year for the emergency engine), operation of the continuous process at 8,760 hours per year (500 hours per year for the emergency engine), and process information specific to the facility for this proposed project.

Pre-Project Potential to Emit

Pre-project Potential to Emit is used to establish the change in emissions at a facility as a result of this project.

The following table presents the pre-project potential to emit for all criteria and GHG pollutants from all emissions units at the facility as submitted by the Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 2 PRE-PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC		CO ₂ e
	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	T/yr ^(b)
Batch Pyrolysis Retorts	0.072	0.32	1.065	1.94	0.72	1.31	0.15	0.27	0.017	0.073	669
Syngas Flare	0.9	3.94	0.003	0.036	2.13	9.32	2.25	9.86	0.164	0.717	8,957
Dust Control Baghouse	0.013	0.103	--	--	--	--	--	--	--	--	--
Jet Mill Baghouse	0.011	0.049	--	--	--	--	--	--	--	--	--
Emergency Engine	0.024	<0.01	0.358	0.08	0.24	0.05	0.05	0.01	0.006	0.001	51
Pre-Project Totals	1.02	4.42	1.43	2.06	3.09	10.68	2.45	10.14	0.19	0.79	9,677

a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.

b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.

Post Project Potential to Emit

Post project Potential to Emit is used to establish the change in emissions at a facility and to determine the facility's classification as a result of this project. Post project Potential to Emit includes all permit limits resulting from this project.

The following tables present the post project Potential to Emit for criteria and GHG pollutants from all emissions units at the facility as determined by DEQ staff. PTE for both the batch process and continuous process are shown below. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 3 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS (BATCH PROCESS)

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC		CO ₂ e
	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	T/yr ^(b)
Batch Pyrolysis Retorts	0.072	0.32	1.065	1.94	0.72	1.31	0.15	0.27	0.017	0.073	669
Syngas Flare	0.9	3.94	0.003	0.036	2.13	9.32	2.25	9.86	0.164	0.717	8,957
Dust Control Baghouse #1	0.001	0.005	--	--	--	--	--	--	--	--	--
Dust Control Baghouse #2	0.001	0.005	--	--	--	--	--	--	--	--	--
Jet Mill Baghouse	0.011	0.05	--	--	--	--	--	--	--	--	--
Emergency Engine	0.024	0.005	0.002	0.08	0.24	0.05	0.05	0.013	0.006	0.08	51
Post Project Totals	1.01	4.33	1.07	2.06	3.09	10.68	2.45	10.14	0.19	0.79	9,677

a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.

b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.

Table 4 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS (CONTINUOUS PROCESS)

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC		CO ₂ e
	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	T/yr ^(b)
Continuous Pyrolysis Reactors	0.022	0.09	0.002	0.01	0.22	0.95	0.05	0.20	0.005	0.02	416
Syngas Flare	0.33	0.15	0.17	0.76	0.08	0.35	0.08	0.37	0.006	0.03	332
Dust Control Baghouse #1	0.001	0.005	--	--	--	--	--	--	--	--	--
Dust Control Baghouse #2	0.001	0.005	--	--	--	--	--	--	--	--	--
Jet Mill Baghouse	0.011	0.05	--	--	--	--	--	--	--	--	--
Emergency Engine	0.024	0.005	0.002	0.08	0.24	0.05	0.05	0.01	0.006	0.03	51
Post Project Totals	0.09	0.31	0.18	0.85	0.54	1.34	0.18	0.58	0.02	0.08	800

c) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.

Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.

Change in Potential to Emit

The change in facility-wide potential to emit is used to determine if a public comment period may be required and to determine the processing fee per IDAPA 58.01.01.225. The post project PTE for the batch process is higher for every pollutant than the continuous process and because they cannot be run simultaneously the change in PTE will be compared with the higher emissions from the batch process. The following table presents the facility-wide change in the potential to emit for criteria pollutants.

Table 5 CHANGES IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC		CO ₂ e
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	T/yr
Pre-Project Potential to Emit	1.02	4.42	1.43	2.06	3.09	10.68	2.45	10.14	0.19	0.79	9,677
Post Project Potential to Emit	1.01	4.33	1.07	2.06	3.09	10.68	2.45	10.14	0.19	0.79	9,677
Changes in Potential to Emit	-0.01	-0.09	-0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0

Non-Carcinogenic TAP Emissions

None of the PTEs for non-carcinogenic TAP were exceeded as a result of the batch process in the initial permit. The TAPs emissions were estimated for the continuous process by reducing the fuel usage. Therefore, modeling is not required for any non-carcinogenic TAP because there is a cumulative decrease across all non-carcinogenic TAPs.

Carcinogenic TAP Emissions

A summary of the estimated PTE for emissions increase of carcinogenic toxic air pollutants (TAP) is provided in the following table.

Table 6 PRE- AND POST PROJECT POTENTIAL TO EMIT FOR CARCINOGENIC TOXIC AIR POLLUTANTS

Carcinogenic Toxic Air Pollutants	Pre-Project Annual Average Emissions Rates for Units at the Facility (lb/hr)	Post Project Annual Average Emissions Rates for Units at the Facility (lb/hr)	Change in Annual Average Emissions Rates for Units at the Facility (lb/hr)	Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Benzene	7.03E-02	6.60E-03	-6.37E-02	8.0E-04	No
Formaldehyde	1.54E-03	3.15E-04	-1.23E-03	5.1E-04	No
Arsenic	1.67E-05	5.01E-06	-1.17E-05	1.5E-06	No
1,3-Butadiene	0.0	2.22E-02	2.22E-02	2.4E-05	Yes
Cadmium	1.25E-05	3.75E-06	-8.75E-06	3.7E-06	No
Nickel	1.34E-05	1.77E-06	-1.16E-05	2.7E-05	No

One of the PTEs for carcinogenic TAP was exceeded as a result of this project. Therefore, modeling is required for 1,3-Butadiene because the annual average carcinogenic screening ELs identified in IDAPA 58.01.01.586 was exceeded.

Post Project HAP Emissions

Although HAPs emissions decrease with the proposed continuous process, HAPs emissions PTE remains unchanged with the batch process. The facility will remain a minor HAPs source with a PTE of 0.32 T/yr. Please see the Statement of Basis for P-2014.0040 issued September 18, 2015 for further information.

Ambient Air Quality Impact Analyses

As presented in the Modeling Memo in Appendix B, the estimated emission rates of one TAP from this project were exceeded applicable screening emission levels (EL) and published DEQ modeling thresholds established in IDAPA 58.01.01.585-586 and in the State of Idaho Air Quality Modeling Guideline¹. Refer to the Emissions Inventories section for additional information concerning the emission inventories.

The applicant has demonstrated pre-construction compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. The applicant has also demonstrated pre-construction compliance to DEQ's satisfaction that the emissions increase due to this permitting action will not exceed any acceptable ambient concentration (AAC) or acceptable ambient concentration for carcinogens (AACC) for toxic air pollutants (TAP). A summary of the Ambient Air Impact Analysis for TAP is provided in Appendix A.

An ambient air quality impact analyses document has been crafted by DEQ based on a review of the modeling analysis submitted in the application. That document is part of the final permit package for this permitting action (see Appendix B).

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Elmore County, which is designated as attainment or unclassifiable for PM_{2.5}, PM₁₀, SO₂, NO₂, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

¹ Criteria pollutant thresholds in Table 2, State of Idaho Guideline for Performing Air Quality Impact Analyses, Doc ID AQ-011, September 2013.

Facility Classification

The AIRS/AFS facility classification codes are as follows:

For THAPs (Total Hazardous Air Pollutants) Only:

- A = Use when any one HAP has actual or potential emissions ≥ 10 T/yr or if the aggregate of all HAPS (Total HAPs) has actual or potential emissions ≥ 25 T/yr.
- SM80 = Use if a synthetic minor (potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable limitations) and the permit sets limits ≥ 8 T/yr of a single HAP or ≥ 20 T/yr of THAP.
- SM = Use if a synthetic minor (potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable limitations) and the potential HAP emissions are limited to < 8 T/yr of a single HAP and/or < 20 T/yr of THAP.
- B = Use when the potential to emit without permit restrictions is below the 10 and 25 T/yr major source threshold
- UNK = Class is unknown

For All Other Pollutants:

- A = Actual or potential emissions of a pollutant are ≥ 100 T/yr.
- SM80 = Use if a synthetic minor for the applicable pollutant (potential emissions fall below 100 T/yr if and only if the source complies with federally enforceable limitations) and potential emissions of the pollutant are ≥ 80 T/yr.
- SM = Use if a synthetic minor for the applicable pollutant (potential emissions fall below 100 T/yr if and only if the source complies with federally enforceable limitations) and potential emissions of the pollutant are < 80 T/yr.
- B = Actual and potential emissions are < 100 T/yr without permit restrictions.
- UNK = Class is unknown.

Table 2 REGULATED AIR POLLUTANT FACILITY CLASSIFICATION

Pollutant	Uncontrolled PTE (T/yr)	Permitted PTE (T/yr)	Major Source Thresholds (T/yr)	AIRS/AFS Classification
PM	64.02	4.33	100	B
PM ₁₀ /PM _{2.5}	64.02	4.33	100	B
SO ₂	2.06	2.06	100	B
NO _x	10.68	10.68	100	B
CO	10.14	10.14	100	B
VOC	0.79	0.79	100	B
HAP (single)	0.31	0.31	10	B
HAP (Total)	0.32	0.32	25	B

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201Permit to Construct Required

The permittee has requested that a PTC be issued to the facility for the modified emissions source. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401 Tier II Operating Permit

The application was submitted for a permit to construct (refer to the Permit to Construct section), and an optional Tier II operating permit has not been requested. Therefore, the procedures of IDAPA 58.01.01.400–410 were not applicable to this permitting action.

Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.625 Visible Emissions

The sources of PM emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by Permit Conditions 2.4, 3.3, 4.3, and 5.3.

Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

IDAPA 58.01.01.301 Requirement to Obtain Tier I Operating Permit

Post project facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for criteria pollutants or 10 tons per year for any one HAP or 25 tons per year for all HAP combined as demonstrated previously in the Emissions Inventories Section of this analysis. Therefore, the facility is not a Tier I source in accordance with IDAPA 58.01.01.006 and the requirements of IDAPA 58.01.01.301 do not apply.

PSD Classification (40 CFR 52.21)

40 CFR 52.21 Prevention of Significant Deterioration of Air Quality

The facility is not a major stationary source as defined in 40 CFR 52.21(b)(1), nor is it undergoing any physical change at a stationary source not otherwise qualifying under paragraph 40 CFR 52.21(b)(1) as a major stationary source, that would constitute a major stationary source by itself as defined in 40 CFR 52. Therefore in accordance with 40 CFR 52.21(a)(2), PSD requirements are not applicable to this permitting action. The facility is not a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a), and does not have facility-wide emissions of any criteria pollutant that exceed 250 T/yr.

NSPS Applicability (40 CFR 60)

Because the facility has an emergency IC engine the following NSPS requirements apply to this facility. DEQ has been delegated this Subpart.

40 CFR 60, Subpart III.....Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

§60.4200 Am I subject to this subpart?

(a) The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE) and other persons as specified in paragraphs (a)(1) through (4) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator.

(3) Owners and operators of any stationary CI ICE that are modified or reconstructed after July 11, 2005 and any person that modifies or reconstructs any stationary CI ICE after July 11, 2005.

(4) The provisions of §60.4208 of this subpart are applicable to all owners and operators of stationary CI ICE that commence construction after July 11, 2005.

The emergency IC engine was installed at the facility after July 11, 2005, thus the provisions of this subpart are applicable.

§60.4205 What emission standards must I meet for emergency engines if I am an owner or operator of a stationary CI internal combustion engine?

(a) Owners and operators of pre-2007 model year emergency stationary CI ICE with a displacement of less than 10 liters per cylinder that are not fire pump engines must comply with the emission standards in Table 1 to this subpart. Owners and operators of pre-2007 model year emergency stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder that are not fire pump engines must comply with the emission standards in 40 CFR 94.8(a)(1).

(f) Owners and operators of any modified or reconstructed emergency stationary CI ICE subject to this subpart must meet the emission standards applicable to the model year, maximum engine power, and displacement of the modified or reconstructed CI ICE that are specified in paragraphs (a) through (e) of this section.

The emergency IC engine has a displacement of 1.1 liters per cylinder. The engine must comply with the emission standards in Table 1 of this subpart.

§60.4206 How long must I meet the emission standards if I am an owner or operator of a stationary CI internal combustion engine?

Owners and operators of stationary CI ICE must operate and maintain stationary CI ICE that achieve the emission standards as required in §§60.4204 and 60.4205 over the entire life of the engine.

§60.4207 What fuel requirements must I meet if I am an owner or operator of a stationary CI internal combustion engine subject to this subpart?

(a) Beginning October 1, 2007, owners and operators of stationary CI ICE subject to this subpart that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(a).

(b) Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel, except that any existing diesel fuel purchased (or otherwise obtained) prior to October 1, 2010, may be used until depleted.

The facility may only use low sulfur diesel with a maximum sulfur content of 15 ppm.

§60.4208 What is the deadline for importing or installing stationary CI ICE produced in previous model years?

(a) After December 31, 2008, owners and operators may not install stationary CI ICE (excluding fire pump engines) that do not meet the applicable requirements for 2007 model year engines.

(i) The requirements of this section do not apply to owners or operators of stationary CI ICE that have been modified, reconstructed, and do not apply to engines that were removed from one existing location and reinstalled at a new location.

While this is a 2005 model year engine, it was purchased used from a supplier and reinstalled at the new location so the requirements of this section do not apply.

§60.4209 What are the monitoring requirements if I am an owner or operator of a stationary CI internal combustion engine?

If you are an owner or operator, you must meet the monitoring requirements of this section. In addition, you must also meet the monitoring requirements specified in §60.4211.

(a) If you are an owner or operator of an emergency stationary CI internal combustion engine that does not meet the standards applicable to non-emergency engines, you must install a non-resettable hour meter prior to startup of the engine.

The emergency IC engine must have a non-resettable hour meter.

§60.4211 What are my compliance requirements if I am an owner or operator of a stationary CI internal combustion engine?

(a) If you are an owner or operator and must comply with the emission standards specified in this subpart, you must do all of the following, except as permitted under paragraph (g) of this section:

(1) Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's emission-related written instructions;

(2) Change only those emission-related settings that are permitted by the manufacturer; and

(3) Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply to you.

(b) If you are an owner or operator of a pre-2007 model year stationary CI internal combustion engine and must comply with the emission standards specified in §§60.4204(a) or 60.4205(a), or if you are an owner or operator of a CI fire pump engine that is manufactured prior to the model years in table 3 to this subpart and must comply with the emission standards specified in §60.4205(c), you must demonstrate compliance according to one of the methods specified in paragraphs (b)(1) through (5) of this section.

(1) Purchasing an engine certified according to 40 CFR part 89 or 40 CFR part 94, as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications.

(2) Keeping records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in this subpart and these methods must have been followed correctly.

(3) Keeping records of engine manufacturer data indicating compliance with the standards.

(4) Keeping records of control device vendor data indicating compliance with the standards.

(5) Conducting an initial performance test to demonstrate compliance with the emission standards according to the requirements specified in §60.4212, as applicable.

(c) If you are an owner or operator of a modified or reconstructed stationary CI internal combustion engine and must comply with the emission standards specified in §60.4204(e) or §60.4205(f), you must demonstrate compliance according to one of the methods specified in paragraphs (e)(1) or (2) of this section.

(1) Purchasing, or otherwise owning or operating, an engine certified to the emission standards in §60.4204(e) or §60.4205(f), as applicable.

(2) Conducting a performance test to demonstrate initial compliance with the emission standards according to the requirements specified in §60.4212 or §60.4213, as appropriate. The test must be conducted within 60 days after the engine commences operation after the modification or reconstruction.

(f) If you own or operate an emergency stationary ICE, you must operate the emergency stationary ICE according to the requirements in paragraphs (f)(1) through (3) of this section. In order for the engine to be considered an emergency stationary ICE under this subpart, any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situations for 50 hours per year, as described in paragraphs (f)(1) through (3) of this section, is prohibited. If you do not operate the engine according to the requirements in paragraphs (f)(1) through (3) of this section, the engine will not be considered an emergency engine under this subpart and must meet all requirements for non-emergency engines.

(1) There is no time limit on the use of emergency stationary ICE in emergency situations.

(2) You may operate your emergency stationary ICE for any combination of the purposes specified in paragraphs (f)(2)(i) through (iii) of this section for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed by paragraph (f)(3) of this section counts as part of the 100 hours per calendar year allowed by this paragraph (f)(2).

(i) Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance

company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year.

(g) If you do not install, configure, operate, and maintain your engine and control device according to the manufacturer's emission-related written instructions, or you change emission-related settings in a way that is not permitted by the manufacturer, you must demonstrate compliance as follows:

(2) If you are an owner or operator of a stationary CI internal combustion engine greater than or equal to 100 HP and less than or equal to 500 HP, you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of startup, or within 1 year after an engine and control device is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within 1 year after you change emission-related settings in a way that is not permitted by the manufacturer.

The facility must limit maintenance and testing hours of operation to no more than 100 hours per year.

§60.4214 What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary CI internal combustion engine?

(b) If the stationary CI internal combustion engine is an emergency stationary internal combustion engine, the owner or operator is not required to submit an initial notification. Starting with the model years in table 5 to this subpart, if the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time.

The facility must maintain records of the operation of the emergency IC engine, including the date and length of the operation and the reason (non-emergency or emergency) for the operation.

NESHAP Applicability (40 CFR 61)

The facility is not subject to any NESHAP requirements in 40 CFR 61.

MACT Applicability (40 CFR 63)

Because the facility has an emergency IC engine the following requirements apply to this facility. DEQ has been delegated this Subpart.

40 CFR 63, Subpart ZZZZ.....National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

§63.6580 What is the purpose of subpart ZZZZ?

Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations.

§ 63.6585 Am I subject to this subpart?

You are subject to this Subpart if you own or operate a stationary RICE at a major or area source of HAP emissions, except if the stationary RICE is being tested at a stationary RICE test cell/stand.

(a) A stationary RICE is any internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile. Stationary RICE differ from mobile RICE in that a stationary RICE is not a non-road engine as defined at 40 CFR 1068.30, and is not used to propel a motor vehicle or a vehicle used solely for competition.

(b) A major source of HAP emissions is a plant site that emits or has the potential to emit any single HAP at a rate of 10 tons (9.07 megagrams) or more per year or any combination of HAP at a rate of 25 tons (22.68 megagrams) or more per year, except that for oil and gas production facilities, a major source of HAP emissions is determined for each surface site.

(c) An area source of HAP emissions is a source that is not a major source.

(d) If you are an owner or operator of an area source subject to this subpart, your status as an entity subject to a standard or other requirements under this subpart does not subject you to the obligation to obtain a permit under 40 CFR part 70 or 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this subpart. Notwithstanding the previous sentence, you must continue to comply with the provisions of this subpart as applicable.

The facility operates a 197 HP emergency diesel IC engine which is used periodically throughout the year for maintenance and testing and may be used in the event of a power interruption. The facility is classified as an area source for HAPs because the PTE is less than 10 tons per year for any single HAP and less than 25 tons per year for all HAPs combined.

§ 63.6590 What parts of my plant does this subpart cover?

This subpart applies to each affected source.

(a) Affected source. An affected source is any existing, new, or reconstructed stationary RICE located at a major or area source of HAP emissions, excluding stationary RICE being tested at a stationary RICE test cell/stand.

(1) Existing stationary RICE.

(iii) For stationary RICE located at an area source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006.

(iv) A change in ownership of an existing stationary RICE does not make that stationary RICE a new or reconstructed stationary RICE.

(2) New stationary RICE. (i) A stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions is new if you commenced construction of the stationary RICE on or after December 19, 2002.

(iii) A stationary RICE located at an area source of HAP emissions is new if you commenced construction of the stationary RICE on or after June 12, 2006.

(b) Stationary RICE subject to limited requirements. (1) An affected source which meets either of the criteria in paragraphs (b)(1)(i) through (ii) of this section does not have to meet the requirements of this subpart and of subpart A of this part except for the initial notification requirements of §63.6645(f).

(c) Stationary RICE subject to Regulations under 40 CFR Part 60. An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.

(1) A new or reconstructed stationary RICE located at an area source;

The emergency IC engine was manufactured in 2005 and installed at the facility after June 12, 2006, thus it is classified as a new area source and must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII. No further requirements apply for the emergency IC engine under part 63.

Permit Conditions Review

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

Revised Permit Condition 2.2 was modified to include the two continuous pyrolysis reactors.

Revised Permit Condition 2.3 was modified to include criteria pollutant emission limits for the continuous pyrolysis reactors.

Permit Condition 2.7 was added to include the operating limits for the new continuous pyrolysis reactors.

Revised Permit Condition 2.8 was modified to include the two continuous pyrolysis reactors.

Revised Permit Condition 2.9 was modified to clarify the definition of ULSD fuel oil.

Permit Condition 2.10 was added to specify that the batch retorts and continuous reactors cannot be operated at the same time.

Permit Condition 2.11 was modified to include recording the weight of material processed to demonstrate compliance with the operating limits.

Permit Condition 2.12 was added to include recordkeeping requirements for the new continuous pyrolysis reactors.

Revised Permit Condition 3.5 was modified to include the two continuous pyrolysis reactors.

Revised Permit Condition 4.2 was modified to include dust control baghouse No. 2.

Revised Permit Condition 4.5 was modified to include dust control baghouse No. 2 and change the collection efficiency to 99.99% for PM₁₀ and PM_{2.5}.

PUBLIC REVIEW

Public Comment Opportunity

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

APPENDIX A – EMISSIONS INVENTORIES

Regulated NSR Air Pollutant Potential Emissions Inventory

Emission Unit: **ENG-1**

Description: John Deere 2005 164KW generator 6068HF275L

Engine supplies mechanical work to water pump for fire suppression in t

Control Device: none

Fuel: Distillate Fuel Oil No. 2

Design Maximum Power Output: 200 horsepower

Design Maximum Heat Input Capacity: 1.4 MMBtu/hr¹

convert using 138874 btu/gal dis

Operation: 500 hours per year²

Max fuel sulfur % 0.0015

	Emission Factor lb/1000 gallons		lb/hr	ton/yr
Table 1.3-1 Criteria Pollutants				
SO ₂ S=0.0015	142S	0.213	0.00215	0.001
SO ₃	5.7S	0.00855	0.00009	0.00002
NOX	24		0.24195	0.06
CO	5		0.05041	0.01
Filterable PM	2		0.02016	0.01

Table 1.3-2 Condensable Particulate Matter

CPM-TOT	1.3		0.01311	0.00
CPM-IOR	0.845		0.00852	0.00
CPM-ORG	0.455		0.00459	0.00
Total PM			0.03327	0.01
PM10	55% of filterable PM from 1.3-7		0.02419	0.01
PM2.5	42% of filterable PM from 1.3-7		0.02157	0.01

Table 1.3-3 Total Organic Compounds

TOC	0.556		0.00561	0.00140
Methane	0.216		0.00218	0.00054
NMTOC	0.34		0.00343	0.00086

Table 1.3-8

N ₂ O	0.26		0.00262	0.00066
Poly Cyclic Organic Matter (POM)	0.0033		0.00003	0.00001
Formaldehyde (HCOH)	0.035		0.00035	0.00009

Table 1.3-9 Speciated Organic Compounds lb/1000 gallons

Benzene	0.000214		2.16E-06	5.39E-07
Ethylbenzene	0.0000636		6.41E-07	1.60E-07
Naphthalene	0.00113		1.14E-05	2.85E-06
1,1,1-Trichlorethane.	0.000236		2.38E-06	5.95E-07
Toluene	0.0062		6.25E-05	1.56E-05
o-Xylene	0.000109		1.10E-06	2.75E-07
Acenaphthene	0.0000211		2.13E-07	5.32E-08
Acenaphthylene	0.000000253		2.55E-09	6.38E-10

Benz(a)anthracene	0.00000401	4.04E-08	1.01E-08
Benzo(b,k)fluoranthene	0.00000148	1.49E-08	3.73E-09
Benzo(g,h,i)perylene	0.00000226	2.28E-08	5.70E-09
Chrysene	0.00000038	3.83E-08	9.58E-09
Dibenzo(a,h)anthracene	0.00000167	1.68E-08	4.21E-09
Fluoranthene	0.00000484	4.88E-08	1.22E-08
Fluorene	0.00000447	4.51E-08	1.13E-08
Indol(1,2,3-cd)pyrene	0.00000214	2.16E-08	5.39E-09
Phenanthrene	0.0000105	1.06E-07	2.65E-08
Pyrene	0.00000425	4.28E-08	1.07E-08
OCDD	3.1E-09	3.13E-11	7.81E-12

Table 1.3-10 Trace Elements

		lbs/10 ⁿ 12 btus	
AS	0.000555496	4	5.60E-06 1.40E-06
Be	0.000416622	3	4.20E-06 1.05E-06
Cd	0.000416622	3	4.20E-06 1.05E-06
Cr	0.000416622	3	4.20E-06 1.05E-06
Cu	0.000833244	6	8.40E-06 2.10E-06
Pb	0.001249866	9	1.26E-05 3.15E-06
Hg	0.000416622	3	4.20E-06 1.05E-06
Mn	0.000833244	6	8.40E-06 2.10E-06
Ni	0.000416622	3	4.20E-06 1.05E-06
Se	0.00208311	15	2.10E-05 5.25E-06
Zn	0.000555496	4	5.60E-06 1.40E-06

	lbs/1000 gallons		
CO2	22300	224.8	56.2

AES DCBHS Baghouse PM Emissions

DCBHS 1 and 2

Loading = 300 lb/day

Flow Rate = 4500 cfm and 7200 cfm

Particle Size = < 8.5 microns

Particulate Emissions

	lb/hr	T/yr
PM	0.0012	0.005475
PM-10	0.0012	0.005475
PM-2.5	0.0012	0.005475

UAS MERV 15 ProTura Nanofiber

99.99%

Grain Loading 0.005 gr/dscf

lb/hr = (gr/dscf) (Qstd dscf/min) (60 min/hr) / 7000 grains/lb.

PM -10 and PM 2.5 Calculated using Total lb/hr and AP-42 Appendix B

Table B.2-3 Typical Collection Efficiencies of Various Particulate Control Devices %

AIRS Code of Collector

Removal Efficiency

	PM-2.5	PM-10	PM
18 Filter low Temp	99	99.5	99.5

AES Jet Mill Bag House PM Emissions

Jet Mill Bag House

Loading = 340 lb/hr

Flow Rate = 260 cfm

Particle Size = < 8.5 microns

	Particulate Emissions	
	lb/hr	T/yr
PM	0.0111	0.04880571
PM-10	0.0111	0.048806
PM-2.5	0.0111	0.048806

PM Emissions Calculat

Sentry Polyester Filters - 24SER4 Style III filter w/CW Pneumatic Reciever

Air to Media 2.2 to 1 at 260 CFM

117 ssq ft of Media

Grain Loading 0.005 gr/dscf

lb/hr = (gr/dscf) (Qstd dscf/min) (60 min/hr) / 7000 grains/lb

PM -10 and PM 2.5 Calculated using Total lb/hr and AP-42 Appendix B

Table B.2-3 Typical Collection Efficiencies of Various Particulate Control Devices %

AIRS Code	Type of Collector	Removal Efficiency		
		PM-2.5	PM-10	PM
18	Fabric Fillter low Temp	99	99.5	99.5

RETORT

24 hrs/day

1 Burner - Reactor No. 1 and 2 Burners - Reactor No 2 = 9 gal/hr = 0.009 1000 gal/hr
 max gal/day = 216

Max fuel sulfur %

0.0015

Emission Factor
lb/1000 gallonsEmission Factor
lb/1000 gallons

lb/hr

ton/yr

AP-42 Table 1.3-1 Criteria Pollutants

SO ₂ S=0.0015	142S	0.213	0.00192	0.01
SO ₃	5.7S	0.00855	0.00008	0.0003
NO _X	24		0.21600	0.95
CO	5		0.04500	0.20
Filterable PM	2		0.01800	0.08

AP-42 Table 1.3-2 Condensable Particulate Matter

CPM-TOT	1.3		0.01170	0.05
CPM-IOR	0.845		0.00761	0.03
CPM-ORG	0.455		0.00410	0.02

Total PM			0.02970	0.13
PM ₁₀	55% of filterable PM from 1.3-7		0.02160	0.09
PM _{2.5}	42% of filterable PM from 1.3-7		0.01926	0.08

Table 1.3-3 Total Organic Compounds

TOC	0.556		0.00500	0.02192
Methane	0.216		0.00194	0.00851
NMTOC	0.34		0.00306	0.01340

Table 1.3-8

N ₂ O	0.26		0.00234	0.01025
Poly Cyclic Organic Matter (POM)	0.0033		0.00003	0.00013
Formaldehyde (HCOH)	0.035		0.00032	0.00138

Table 1.3-9 Speciated Organic Compounds lb/1000 gallons

Benzene	0.000214		1.93E-06	8.44E-06
Ethylbenzene	0.0000636		5.72E-07	2.51E-06
Naphthalene	0.00113		1.02E-05	4.45E-05
1,1,1-Trichloroethane.	0.000236		2.12E-06	9.30E-06

Toluene	0.0062		5.58E-05	2.44E-04
o-Xylene	0.000109		9.81E-07	4.30E-06
Acenaphthene	0.0000211		1.90E-07	8.32E-07
Acenaphthylene	0.000000253		2.28E-09	9.97E-09
Benz()anthracene	0.00000401		3.61E-08	1.58E-07
Benzo(b,k)fluoranthene	0.00000148		1.33E-08	5.83E-08
Benzo(g,h,i)perylene	0.00000226		2.03E-08	8.91E-08
Chrysene	0.0000038		3.42E-08	1.50E-07
Dibenzo(a,h)anthracene	0.00000167		1.50E-08	6.58E-08
Fluoranthene	0.00000484		4.36E-08	1.91E-07
Fluorene	0.00000447		4.02E-08	1.76E-07
Indol(1,2,3-cd)pyrene	0.00000214		1.93E-08	8.44E-08
Phenanthrene	0.0000105		9.45E-08	4.14E-07
Pyrene	0.00000425		3.83E-08	1.68E-07
OCDD	3.1E-09		2.79E-11	1.22E-10

Table 1.3-10 Trace Elements

lbs/10¹² btus

AS	0.000555496	4	5.00E-06	2.19E-05
Be	0.000416622	3	3.75E-06	1.64E-05
Cd	0.000416622	3	3.75E-06	1.64E-05
Cr	0.000416622	3	3.75E-06	1.64E-05
Cu	0.000833244	6	7.50E-06	3.28E-05
Pb	0.001249866	9	1.12E-05	4.93E-05
Hg	0.000416622	3	3.75E-06	1.64E-05
Mn	0.000833244	6	7.50E-06	3.28E-05
Ni	0.000416622	3	3.75E-06	1.64E-05
Se	0.00208311	15	1.87E-05	8.21E-05
Zn	0.000555496	4	5.00E-06	2.19E-05

lbs/1000 gallons

CO2	22300		200.7	8.79E+02
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Pound per hour EMISSION RATES from 2015 SOB Table 2

	PM10	PM2.5	CO	NOx	SO2	VOC	CO2e
Retort	0.072	0.064	0.15	0.72	1.065	0.017	316.7
Flare	0.9	0.9	2.25	2.13	0.003	0.164	2045
DCBHS1	0.013	0.013					
JMBHS	0.011	0.011					
EMERG	0.024	0.022	0.050	0.242	0.3580	0.0060	228
TOTAL	1.020	1.010	2.450	3.090	1.4300	0.1870	2590

Ton per year

	PM10	PM2.5	CO	NOx	SO2	VOC	CO2e
Retort	0.32	0.28	0.27	1.31	1.94	0.073	669
Flare	3.94	3.94	9.86	9.32	0.036	0.717	8957
DCBHS1	0.103	0.103					
JMBHS	0.05	0.05					
EMERG	0.006	0.005	0.01	0.05	0.08	0.0010	51
TOTAL	4.42	4.42	10.14	10.68	2.02	0.791	9677

Pound per hour EMISSION RATES from for Continuous Process

	PM10	PM2.5	CO	NOx	SO2	VOC	CO2e
Retort	0.0216	0.01926	0.045	0.216	0.0019	0.0051	95.0
Flare	0.000	0.000	0.000	0.000	0.174	0.000	0.0
DCBHS1	0.00125	0.00125					
DCBHS2	0.00125	0.00125					
JMBHS	0.011	0.011					
EMERG	0.024	0.022	0.050	0.242	0.0021	0.0060	228
TOTAL	0.059	0.054	0.095	0.458	0.178	0.011	323

Ton per year

	PM10	PM2.5	CO	NOx	SO2	VOC	CO2e
Retort	0.09	0.08	0.20	0.95	0.01	0.02	416
Flare	0.00	0.00	0.00	0.00	0.76	0.00	0
DCBHS1	0.005	0.005					
DCBHS2	0.005	0.005					
JMBHS	0.05	0.05					
EMERG	0.006	0.005	0.01	0.050	5.4E-04	0.0010	51
TOTAL	0.16	0.15	0.21	1.00	0.77	0.02	467

Pound per Hour Change in EMISSION Rates

	PM10	PM2.5	CO	NOx	SO2	VOC	CO2e
Retort	-0.05	-0.04	-0.105	-0.504	-1.06308	-0.0119	-221.69
Flare	-0.90	-0.90	-2.25	-2.13	0.171	-0.164	-2045
DCBHS1	-0.0118	-0.0118					
DCBHS2	0.00125	0.00125					
JMBHS	0	0					
EMERG	0	0	0	0	-0.35585	0	0

TOTAL	-0.961	-0.955	-2.355	-2.634	-1.248	-0.176	-2267
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Ton per year

	PM10	PM2.5	CO	NOx	SO2	VOC	CO2e
Retort	-0.22	-0.20	-0.07	-0.36	-1.93	-0.05	-253
Flare	-3.94	-3.94	-9.86	-9.32	0.73	-0.72	-8957
DCBHS1	-0.10	-0.10					
DCBHS2	0.005	0.005					
JMBHS	0.00	0.00					
EMERG	0.00	0.00	0.00	0.00	-0.08	0.00	0.00
TOTAL	-4.25	-4.23	-9.93	-9.68	-1.28	-0.77	-9210

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES

MEMORANDUM

DATE: January 17, 2017

TO: Kelli Wetzel, Permit Writer, Air Program

FROM: Kevin Schilling, Stationary Source Modeling Coordinator, Air Program

PROJECT: P-2014.0040 PROJ 61800, Modification of PTC for Alternative Environment Systems, LLC.

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

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Acronyms, Units, and Chemical Nomenclature

AAC	Acceptable Ambient Concentration of a non-carcinogenic TAP
AACC	Acceptable Ambient Concentration of a Carcinogenic TAP
AES	Alternative Environment Systems, LLC
Appendix W	40 CFR 51, Appendix W – Guideline on Air Quality Models
BPIP	Building Profile Input Program
BRC	Below Regulatory Concern
CFR	Code of Federal Regulations
CMAQ	Community Multi-Scale Air Quality modeling system
CO	Carbon Monoxide
DEQ	Idaho Department of Environmental Quality
EL	Emissions Screening Level of a TAP
EPA	United States Environmental Protection Agency
Idaho Air Rules	Rules for the Control of Air Pollution in Idaho, located in the Idaho Administrative Procedures Act 58.01.01
lb/hr	Pounds per hour
NAAQS	National Ambient Air Quality Standards
NO ₂	Nitrogen Dioxide
NO _x	Oxides of Nitrogen
O ₃	Ozone
Pb	Lead
PM ₁₀	Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 10 micrometers
PM _{2.5}	Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 2.5 micrometers
ppb	parts per billion
PTC	Permit to Construct
PTE	Potential to Emit
SIL	Significant Impact Level
SO ₂	Sulfur Dioxide
Stantec	Stantec Consulting Services, Inc.
TAP	Toxic Air Pollutant
VOC	Volatile Organic Compounds
µg/m ³	Micrograms per cubic meter of air

1.0 Summary

Alternative Environment Systems (AES) submitted a Permit to Construct (PTC) application to modify their existing permitted facility. Project-specific air quality analyses involving atmospheric dispersion modeling of estimated emissions associated with the facility were submitted to DEQ to demonstrate that emissions increases associated with the facility would not cause or significantly contribute to a violation of any applicable ambient air quality standard as required by the Idaho Administrative Procedures Act 58.01.01.203.02 and 203.03 (Idaho Air Rules Section 203.02 and 203.03). This memorandum provides a summary of the ambient air impact analyses submitted with the permit application and DEQ's review of those analyses.

Stantec Consulting Services, Inc. (Stantec), on behalf of AES, prepared the PTC application and performed the ambient air impact analyses for this project to demonstrate compliance with applicable National Ambient Air Quality Standards (NAAQS) and Toxic Air Pollutants (TAPs). The DEQ review of submitted data and analyses summarized by this memorandum addressed only the rules, policies, methods, and data pertaining to the air impact analyses used to demonstrate that estimated emissions associated with operation of the facility will not cause or significantly contribute to a violation of any applicable air quality standard. This review did not address/evaluate compliance with other rules or analyses not pertaining to the air impact analyses. Evaluation of emissions estimates was the responsibility of the DEQ permit writer and is addressed in the main body of the DEQ Statement of Basis, and emissions calculation methods were not evaluated in this modeling review memorandum.

The submitted information and analyses: 1) showed either a) that estimated potential/allowable emissions are at a level defined as below regulatory concern (BRC) and do not require a NAAQS compliance demonstration, or b) that criteria pollutant emissions increases resulting from the proposed project are below site-specific modeling applicability thresholds, developed to assure that emissions below such levels will not result in ambient air impacts exceeding Significant Impact Levels (SILs); 2) showed that TAP emissions increases associated with the project will not result in increased ambient air impacts exceeding allowable TAP increments.

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

Idaho Air Rules require air impact analyses be conducted in accordance with methods outlined in 40 CFR 51, Appendix W *Guideline on Air Quality Models* (Appendix W). Appendix W requires that air quality impacts be assessed using atmospheric dispersion models with emissions and operations representative of design capacity or as limited by a federally enforceable permit condition. The submitted information and analyses demonstrated to the satisfaction of the Department that operation of the proposed project will not cause or significantly contribute to a violation of any ambient air quality standard, provided the key conditions in Table 1 are representative of facility design capacity or operations as limited by a federally enforceable permit condition. The DEQ permit writer should use Table 1 and other information presented in this memorandum to generate appropriate permit provisions/restrictions to assure the requirements of Appendix W are met regarding emissions representative of design capacity or permit allowable rates.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	Explanation/Consideration
General Emissions Rates. Emissions rates used in the air impact analyses, as listed in this memorandum, must represent maximum potential emissions as given by design capacity, inherently limited by the nature of the process or configuration of the facility, or as limited by the issued permit for the specific pollutant and averaging period.	Compliance has not been demonstrated for emissions rates greater than those used in the air impact analyses.
TAP Emissions Sources. TAP emissions sources, as constructed and operated, must be accurately represented by the analyses submitted with the PTC application.	Important parameters include release point locations, release height, stack flow rates, and stack release temperature.

Summary of Submittals and Actions

- October 25, 2016: Application received by DEQ.
- November 23, 2016: Application determined complete by DEQ.

2.0 Background Information

Background information on the project and the air impact analyses was provided in the Modeling Analysis Report submitted with the application.

2.1 Air Impact Analyses Required for All Permits to Construct

Idaho Air Rules Sections 203.02 and 203.03:

No permit to construct shall be granted for a new or modified stationary source unless the applicant shows to the satisfaction of the Department all of the following:

02. NAAQS. *The stationary source or modification would not cause or significantly contribute to a violation of any ambient air quality standard.*

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

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

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

2.2 Significant Impact Level and Cumulative NAAQS Impact Analyses

If specific criteria pollutant increases associated with the proposed permitting project cannot qualify for a BRC exemption as per Idaho Air Rules Section 221, then the permit cannot be issued unless the application demonstrates that applicable emissions increases will not cause or significantly contribute to a violation of NAAQS, as required by Idaho Air Rules Section 203.02.

The first phase of a NAAQS compliance demonstration is to evaluate whether the proposed facility/project could have a significant impact to ambient air. Section 3.1.1 of this memorandum describes the applicability evaluation of Idaho Air Rules Section 203.02. The Significant Impact Level (SIL) analysis for a new facility or proposed modification to a facility involves modeling estimated criteria air pollutant emissions from the facility or modification to determine the potential impacts to ambient air. Air impact analyses are required by Idaho Air Rules to be conducted in accordance with methods outlined in 40 CFR 51, Appendix W (Guideline on Air Quality Models). Appendix W requires that facilities be modeled using emissions and operations representative of design capacity or as limited by a federally enforceable permit condition.

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

If modeled maximum pollutant impacts to ambient air from the emissions sources associated with a new facility or modification exceed the SILs, then a cumulative NAAQS impact analysis is necessary to demonstrate compliance with NAAQS and Idaho Air Rules Section 203.02.

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

If the cumulative NAAQS impact analysis indicates a violation of the standard, the permit may not be issued if the proposed project has a significant contribution (exceeding the SIL) to the modeled violation. If project-specific impacts are below the SIL, then the project does not have a significant contribution to the specific violations.

Table 2. APPLICABLE REGULATORY LIMITS				
Pollutant	Averaging Period	Significant Impact Levels ^a (µg/m ³) ^b	Regulatory Limit ^c (µg/m ³)	Modeled Design Value Used ^d
PM ₁₀ ^e	24-hour	5.0	150 ^f	Maximum 6 th highest ^g
PM _{2.5} ^h	24-hour	1.2	35 ⁱ	Mean of maximum 8 th highest ^j
	Annual	0.3	12 ^k	Mean of maximum 1 st highest ^l
Carbon monoxide (CO)	1-hour	2,000	40,000 ^m	Maximum 2 nd highest ⁿ
	8-hour	500	10,000 ^m	Maximum 2 nd highest ⁿ
Sulfur Dioxide (SO ₂)	1-hour	3 ppb ^o (7.8 µg/m ³)	75 ppb ^p (196 µg/m ³)	Mean of maximum 4 th highest ^q
	3-hour	25	1,300 ^m	Maximum 2 nd highest ⁿ
	24-hour	5	365 ^m	Maximum 2 nd highest ⁿ
	Annual	1.0	80 ^r	Maximum 1 st highest ⁿ
Nitrogen Dioxide (NO ₂)	1-hour	4 ppb (7.5 µg/m ³)	100 ppb ^s (188 µg/m ³)	Mean of maximum 8 th highest ^t
	Annual	1.0	100 ^r	Maximum 1 st highest ⁿ
Lead (Pb)	3-month ^u	NA	0.15 ^r	Maximum 1 st highest ⁿ
	Quarterly	NA	1.5 ^r	Maximum 1 st highest ⁿ
Ozone (O ₃)	8-hour	40 TPY VOC ^v	75 ppb ^w	Not typically modeled

- a. Idaho Air Rules Section 006 (definition for significant contribution) or as incorporated by reference as per Idaho Air Rules Section 107.03.b.
- b. Micrograms per cubic meter.
- c. Incorporated into Idaho Air Rules by reference, as per Idaho Air Rules Section 107.
- d. The maximum 1st highest modeled value is always used for the significant impact analysis unless indicated otherwise. Modeled design values are calculated for each ambient air receptor.
- e. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
- f. Not to be exceeded more than once per year on average over 3 years.
- g. Concentration at any modeled receptor when using five years of meteorological data.
- h. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
- i. 3-year mean of the upper 98th percentile of the annual distribution of 24-hour concentrations.
- j. 5-year mean of the 8th highest modeled 24-hour concentrations at the modeled receptor for each year of meteorological data modeled. For the SIL analysis, the 5-year mean of the 1st highest modeled 24-hour impacts at the modeled receptor for each year.
- k. 3-year mean of annual concentration.
- l. 5-year mean of annual averages at the modeled receptor.
- m. Not to be exceeded more than once per year.
- n. Concentration at any modeled receptor.
- o. Interim SIL established by EPA policy memorandum.
- p. 3-year mean of the upper 99th percentile of the annual distribution of maximum daily 1-hour concentrations.
- q. 5-year mean of the 4th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of 1st highest modeled 1-hour impacts for each year is used.
- r. Not to be exceeded in any calendar year.
- s. 3-year mean of the upper 98th percentile of the annual distribution of maximum daily 1-hour concentrations.
- t. 5-year mean of the 8th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of maximum modeled 1-hour impacts for each year is used.
- u. 3-month rolling average.
- v. An annual emissions rate of 40 ton/year of VOCs is considered significant for O₃.
- w. Annual 4th highest daily maximum 8-hour concentration averaged over three years. The O₃ standard was revised (the notice was signed by the EPA Administrator on October 1, 2015) to 70 ppb. However, this standard will not be applicable for permitting purposes until it is incorporated by reference *sine die* into Idaho Air Rules.

2.3 Toxic Air Pollutant Analyses

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

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

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

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

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

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

3.0 Analytical Methods and Data

The submitted application provides a discussion of the methods and data used to demonstrate compliance with applicable standards.

3.1 Emission Source Data

Emissions of criteria pollutants and TAPs resulting from operation of the facility or modification were estimated by Stantec for various applicable averaging periods.

Emissions rates used in the dispersion modeling analyses, as listed in this memorandum, should be reviewed by the DEQ permit writer and compared with those in the final emissions inventory. All modeled criteria air pollutant and TAP emissions rates must be equal to or greater than the facility's potential emissions calculated in the PTC emissions inventory or proposed permit allowable emissions rates.

3.1.1 Modeling Applicability and Modeled Criteria Pollutant Emissions Rates

If project-specific emission increases for criteria pollutants would qualify for a below regulatory concern (BRC) permit exemption as per Idaho Air Rules Section 221 if it were not for potential emissions of one or more pollutants exceeding the BRC threshold of 10 percent of emissions defined by Idaho Air Rules as significant, then a NAAQS compliance demonstration may not be required for those pollutants with emissions below BRC levels. DEQ's regulatory interpretation policy of exemption provisions of Idaho Air Rules is that: "A DEQ NAAQS compliance assertion will not be made by the DEQ modeling group for specific criteria pollutants having a project emissions increase below BRC levels, provided the proposed project would have qualified for a Category I Exemption for BRC emissions quantities except for the emissions of another criteria pollutant.^{1b}" The interpretation policy also states that the exemption criteria of uncontrolled potential to emit (PTE) not to exceed 100 ton/year (Idaho Air Rules Section 220.01.a.i) is not applicable when evaluating whether a NAAQS impact analyses is required. A permit will be issued limiting PTE below 100 ton/year, thereby negating the need to maintain calculated uncontrolled PTE under 100 ton/year. The BRC exemption cannot be used to exempt a project from a pollutant-specific NAAQS compliance demonstration in cases where a PTC is required for the action regardless of emissions quantities, such as the modification of an existing emissions or throughput limit.

A NAAQS compliance demonstration must be performed for pollutant increases that would not qualify for the BRC exemption from the requirement to demonstrate compliance with NAAQS. The AES emissions inventory asserts that post-project facility-wide controlled PTE emissions of specific criteria pollutants are below BRC levels, as listed in Table 3.

Table 3. CRITERIA POLLUTANT NAAQS COMPLIANCE DEMONSTRATION APPLICABILITY			
Criteria Pollutant	BRC Level (ton/year)	Applicable Facility Wide PTE Emissions (ton/year)	Air Impact Analyses Required?
PM ₁₀ ^a	1.5	0.31	No
PM _{2.5} ^b	1.0	0.30	No
Carbon Monoxide (CO)	10.0	0.58	No
Sulfur Dioxide (SO ₂)	4.0	0.85	No
Nitrogen Oxides (NOx)	4.0	1.34	No
Lead (Pb)	0.06	Negligible	No
Volatile Organic Compounds (VOCs)	4.0	0.08	No

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

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

Site-specific air impact modeling analyses may not be necessary for some pollutants, even where such emissions do not qualify for the BRC exemption. DEQ has developed modeling applicability thresholds, below which a site-specific modeling analysis is not required. DEQ generic air impact modeling analyses that were used to develop the modeling thresholds provide a conservative SIL analysis for projects with emissions below identified threshold levels. Project-specific modeling applicability thresholds are provided in the *Idaho Air Modeling Guideline*². These thresholds were based on assuring an ambient impact of less than the established SIL for specific pollutants and averaging periods.

If project-specific total emissions rate increases of a pollutant are below Level I Modeling Thresholds, then project-specific air impact analyses are not necessary for permitting. Use of Level II Modeling Thresholds are conditional, requiring DEQ approval. DEQ approval is based on dispersion-affecting characteristics of the emissions sources such as stack height, stack gas exit velocity, stack gas temperature, distance from sources to ambient air, presence of elevated terrain, and potential exposure to sensitive public receptors.

Stantec asserted that post-project facility-wide emissions of all criteria pollutants were below BRC thresholds, and a NAAQS compliance demonstration was therefore not required for permit issuance. A comparison of emissions with modeling applicability thresholds was not necessary since no NAAQS compliance demonstrations were required by Idaho Air Rules Section 203.02.

Ozone (O₃) differs from other criteria pollutants in that it is not typically emitted directly into the atmosphere. O₃ is formed in the atmosphere through reactions of VOCs, NO_x, and sunlight. Atmospheric dispersion models used in stationary source air permitting analyses cannot be used to estimate O₃ impacts resulting from VOC and NO_x emissions from an industrial facility. O₃ concentrations resulting from area-wide emissions are predicted by using more complex airshed models such as the Community Multi-Scale Air Quality (CMAQ) modeling system. Use of the CMAQ model is very resource intensive and DEQ asserts that performing a CMAQ analysis for a particular permit application is not typically a reasonable or necessary requirement for air quality permitting. Addressing secondary formation of O₃ within the context of permitting a new stationary source has been somewhat addressed in EPA regulation and policy. As stated in a letter from Gina McCarthy of EPA to Robert Ukeiley, acting on behalf of the Sierra Club (letter from Gina McCarthy, Assistant Administrator, United States Environmental Protection Agency, to Robert Ukeiley, January 4, 2012):

... footnote 1 to sections 51.166(I)(5)(I) of the EPA's regulations says the following: "No de minimis air quality level is provided for ozone. However, any net emission increase of 100 tons per year or more of volatile organic compounds or nitrogen oxides subject to PSD would be required to perform an ambient impact analysis, including the gathering of air quality data."

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

DEQ determined it was not appropriate or necessary to require a quantitative source specific O₃ impact analysis because allowable emissions estimates of VOCs and NO_x are below the 100 tons/year threshold. Additionally, both VOC and NO_x emissions satisfied BRC exemption criteria.

Secondary Particulate Formation

The impact from secondary particulate formation resulting from emissions of NO_x, SO₂, and/or VOCs was assumed by DEQ to be negligible based on the magnitude of emissions and the short distance from emissions sources to locations where maximum PM₁₀ and PM_{2.5} impacts are anticipated.

3.1.2 Toxic Air Pollutant Emissions Rates

TAP emissions regulations under Idaho Air Rules Section 210 are only applicable to new or modified sources constructed after July 1, 1995.

Table 4 provides a summary of TAP emissions increases for the project for those TAPs that had an increase exceeding the ELs of Idaho Air Rules Section 585 or 586. Table 5 lists source-specific emissions of TAPs used in the impact analyses.

Table 4. TAP EMISSIONS INCREASES THAT TRIGGER MODELING		
Toxic Air Pollutant	Emissions Increase (lb/hr)^a	Screening Emissions Level (lb/hr)
1,3-butadiene ^b	2.22E-2	2.4E-5

^a. Pounds per hour.

^b. Carcinogenic TAP. ELs are a maximum annual average expressed as pounds/hour. The emissions increase is the annual emissions divided by 8,760 hours/year.

Table 5. MODELED EMISSIONS RATES FOR TOXIC AIR POLLUTANTS		
Source ID	Source Description	Emissions Rates (pounds/hour)
		1,3-butadiene^a
FLARE	Flare	2.22E-2

^a. Annual average emissions rate in pounds per hour.

3.1.3 General Modeling Approach

An air impact analysis was performed in May 2015 for PTC 2014.0040 PROJ 61445 that assessed pollutant impacts from the flare for benzene. A maximum annual average emissions rate of 7.03E-2 pounds/hour resulted in a maximum impact of 2.43E-3 µg/m³. Since the location of this source and the modeled release parameters have not changed since the previous permitting project, the benzene emissions rate and modeled result can be used to generate a dispersion factor as follows:

$$(2.43\text{E-}3 \text{ } \mu\text{g/m}^3) / (7.03\text{E-}2 \text{ lb/hr}) = 0.035 \text{ } (\mu\text{g/m}^3)/(\text{lb/hr})$$

The impact associated with 2.22E-2 pounds/hour 1,3-butadiene was then calculated by multiplying the emissions rate by the dispersion factor.

3.1.4 DEQ Review

DEQ determined the following from review of the submitted application and referenced analyses:

- The appropriate atmospheric dispersion model was used for the proposed project.
- The AES facility was properly represented in the model, regarding geographical location, terrain, structures, emission point locations, and areas of potential exposure.
- Appropriate meteorological data were used with the dispersion model.

- Appropriate averaging periods were selected for model output, corresponding to the form of applicable standards.
- The modeling report indicates that all TAPs with project-wide emissions increases above the ELs of Idaho Air Rules Section 585 and 586 were modeled to evaluate compliance with applicable AACs and AACCs.
- Through review of the application, it appears that the TAPs air impact analyses were performed using recommended data and methods prescribed in the *Idaho Air Quality Modeling Guideline*².

DEQ determined the review of the air impact analyses, as described above, was adequate to provide assurance that the proposed project will not result in increases in ambient air TAP levels that exceeded the specific AACs or AACCs. This conclusion is based on the general type and magnitude of the facility, the types of methods and data used in the analyses, and the modeled results in comparison to applicable AACs/AACCs.

4.0 NAAQS and TAPs Air Impact Modeling Results

4.1 Results for NAAQS Analyses

A NAAQS compliance demonstration was not necessary for the facility because potential emissions of criteria pollutants qualify for a BRC exemption, as described in Section 3.1.1 of this memorandum.

4.2 Results for TAPs Impact Analyses

Table 6 lists the maximum modeled impacts for specific TAPs. Modeled impacts are well below applicable AACs and AACCs.

Table 6. TAP AIR IMPACT ANALYSIS RESULTS			
TAP	Maximum Modeled Impact ($\mu\text{g}/\text{m}^3$)^a	AAC or AACC ($\mu\text{g}/\text{m}^3$)	Percent of AAC/AACC
1,3-butadiene ^b	7.8E-4	3.6E-3	22

^a. Micrograms per cubic meter.

^b. Carcinogenic TAP. Modeled impact and AACC represent a 5-year period average concentration.

5.0 Conclusions

The information submitted with the PTC application demonstrated to DEQ's satisfaction that applicable emissions resulting from the AES facility or modification will not cause or significantly contribute to a violation of any ambient air quality standard.

References

1. *Policy on NAAQS Compliance Demonstration Requirements*. Idaho Department of Environmental Quality Policy Memorandum. July 11, 2014.
2. *State of Idaho Guideline for Performing Air Quality Impact Analyses*. Idaho Department of Environmental Quality. September 2013. State of Idaho DEQ Air Doc. ID AQ-011. Available at <http://www.deq.idaho.gov/media/1029/modeling-guideline.pdf>.

APPENDIX C – FACILITY DRAFT COMMENTS

The following comments were received from the facility on January 25, 2017:

Facility Comment: An update on the facility description has been provided to mention the shredders. Please include "Waste tires are inspected for debris and side walls are removed. The remaining tire bands are sent through a primary, Secondary and final shredder that reduces the tires to a size of $\frac{3}{4}$ " minus. The shredders are indoors with dust management controlled by the dust collector baghouse. Throughput capacity of the shredders are 1500 pounds per hour."

DEQ Response: The requested change has been made.

APPENDIX D – PROCESSING FEE

PTC Processing Fee Calculation Worksheet

Instructions:

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

Company: Alternative Environmental Systems
Address: 350 NW Recycle Dr
City: Mayfield
State: ID
Zip Code: 83716
Facility Contact: Rocky Warner
Title: Plant Manager
AIRS No.: 039-00029

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

Y Did this permit require engineering analysis? Y/N

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

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO _x	0.0	0	0.0
SO ₂	0.0	0	0.0
CO	0.0	0	0.0
PM10	0.0	-0.1	0.1
VOC	0.0	0	0.0
TAPS/HAPS	0.0	0	0.0
Total:	0.0	-0.1	0.1
Fee Due	\$ 1,000.00		

Comments: