Statement of Basis

Permit to Construct No. P-2012.0025
Project ID 61036

City of Twin Falls WWPTF
Twin Falls, Idaho

Facility ID 083-00143

Final

July 18, 2012
Kelli Wetzel KW
Permit Writer

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

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

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
2CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent emissions
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gases
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
lb/km	kilometers
lb/hr	pounds per hour
m	meters
MACT	Maximum Achievable Control Technology
MMBtu	million British thermal units
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
PAH	polyaromatic hydrocarbons
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
RICE	reciprocating internal combustion engines
Rules	*Rules for the Control of Air Pollution in Idaho*
scf	standard cubic feet
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
$\mu g/m^3$	micrograms per cubic meter

FACILITY INFORMATION

Description

The City of Twin Falls will own and operate a waste water pre-treatment facility (WWPTF) on a parcel of land leased from Agro Farma, Inc. Waste water from the Agro Farma (Chobani Idaho, Inc.) equalization tanks will be pumped to the Dissolved Air Flotation (DAF) system. The underflow from the DAF is pumped to a USAB conditioning tank.

In the USAB conditioning tank, the DAF effluent stream is blended and the conditioned waste water is pumped into the influent feed distribution system located at the bottom of the USAB reactor. In the USAB reactor, the granular biomass degrades the COD and produces biogas. The biogas is directed to the candlestick flare.

A diesel-fired emergency standby generator is used to supply emergency backup power to the WWPTF.

There are no emission controls for either the candlestick flare or the emergency generator. However, the pre-treatment process includes a biofilter system to reduce odors.

Permitting History

This is the initial PTC for a new facility thus there is no permitting history.

Application Scope

This permit is the initial PTC for this facility. The applicant has proposed to authorize pre-permit construction and to install and operate a waste water pre-treatment facility.

Application Chronology

May 2, 2012	DEQ received an application and an application fee.
May 10 – May 25, 2012	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
May 16, 2012	DEQ approved pre-permit construction.
May 18, 2012	DEQ received supplemental information from the applicant.
May 30, 2012	DEQ determined that the application was complete.
June 18, 2012	DEQ made available the draft permit and statement of basis for peer and regional office review.
June 25, 2012	DEQ made available the draft permit and statement of basis for applicant review.
July 12, 2012	DEQ received the permit processing fee.
July 18, 2012	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Source ID No.	Sources	Control Equipment	Emission Point ID No.
N/A	Anaerobic Digester #1 Storage capacity: 250,000 gallons Gas generation capacity: 278,400 scf/day	Biogas is combusted in the flare	N/A
N/A	Anaerobic Digester #2 Storage capacity: 250,000 gallons Gas generation capacity: 278,400 scf/day	Biogas is combusted in the flare	N/A
Flare	Candlestick Flare Manufacturer: Varec Model: 244W Series Heat input rating: 6.96 MMBtu/hr	N/A	Exit height: 23.8 ft (7.26 m) Exit diameter: 1.51 ft (0.46 m) Exit flow rate: 7,144 acfm Exit temperature: 1832 °F (1273 K)
Generator	Emergency IC Engine Manufacturer: Cummins Model: DSGAD Maximum power rating: 324 hp Fuel: ULSD	N/A	Exit height: 15 ft (4.57 m) Exit diameter: 0.66 ft (0.20 m) Exit flow rate: 1,056 acfm Exit temperature: 718 °F (654 K)

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 flare and the emergency IC engine at the facility (see Appendix A) associated with this proposed project. Emissions estimates of criteria pollutant, greenhouse gases (GHG), and hazardous air pollutants (HAP), and toxic air pollutants (TAP) were based on emission factors from AP-42, South Coast Air Quality Management District, manufacturer data, and operation of 8,760 hours per year.

Uncontrolled Potential to Emit

Using the definition of Potential to Emit, uncontrolled Potential to Emit is then defined 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 **not** be treated as part of its design **since** the limitation or the effect it would have on emissions **is not** state or federally enforceable.

The uncontrolled Potential to Emit is used to determine if a facility is a "Synthetic Minor" source of emissions. Synthetic Minor sources are facilities that have an uncontrolled Potential to Emit for regulated air pollutants or HAP above the applicable Major Source threshold without permit limits.

The following table presents the uncontrolled Potential to Emit for regulated air pollutants as submitted by the Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations and the assumptions used to determine emissions for each emissions unit. For this facility the uncontrolled Potential to Emit (PTE) is based upon a worst-case for operation of the facility of 8,760 hrs/yr and there are no add-on controls used on any of the equipment being permitted.

Table 2 UNCONTROLLED POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

	$PM_{10}/PM_{2.5}$	SO_2	NOx	CO	VOC	CO_2e
Source	**T/yr**	**T/yr**	**T/yr**	**T/yr**	**T/yr**	**T/yr**
Point Sources						
Candlestick Flare	0.39	37.39	2.07	11.28	1.92	4535.48
Emergency IC Engine	0.03	0.00001	0.54	0.46	0.34	145.45
Total, Point Sources	**0.42**	**37.39**	**2.61**	**11.74**	**2.26**	**4680.93**

The following table presents the uncontrolled Potential to Emit for HAP pollutants as submitted by the Applicant and verified by DEQ staff.

Table 3 UNCONTROLLED POTENTIAL TO EMIT FOR HAZARDOUS AIR POLLUTANTS

Hazardous Air Pollutants	PTE (T/yr)
Acetaldehyde	7.52E-04
Acrolein	9.07E-05
Benzene	8.99E-03
1,3-Butadiene	3.83E-05
Formaldehyde	6.06E-02
Hydrogen Sulfide	3.94
Naphthalene	8.31E-05
o-Xylenes	2.79E-04
Toluene	4.01E-04
Total	**4.01**

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.

This is a new facility. Therefore, pre-project emissions are set to zero for all criteria pollutants.

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 table presents the post project Potential to Emit for criteria and GHG pollutants from all emissions units at the facility as determined by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 4 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	$PM_{10}/PM_{2.5}$		SO_2		NO_x		CO		VOC		CO_2e	
	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]	lb/hr[a]	T/yr[b]
Candlestick Flare	0.09	0.39	8.54	37.39	0.47	2.07	2.58	11.28	0.44	1.92	1035.5	4535.5
Emergency IC Engine	0.11	0.005	0.0001	3.0E-06	2.14	0.11	1.86	0.09	1.37	0.07	33.22	145.5
Post Project Totals	**0.20**	**0.40**	**8.54**	**37.39**	**2.61**	**2.18**	**4.44**	**11.37**	**1.81**	**1.99**	**1068.7**	**4680.9**

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.

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 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_2e	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Pre-Project Potential to Emit	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Post Project Potential to Emit	0.20	0.40	8.54	37.39	2.61	2.18	4.44	11.37	1.81	1.99	1068.7	4680.9
Changes in Potential to Emit	**0.20**	**0.40**	**8.54**	**37.39**	**2.61**	**2.18**	**4.44**	**11.37**	**1.81**	**1.99**	**1068.7**	**4680.9**

Non-Carcinogenic TAP Emissions

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

Pre- and post-project, as well as the change in, non-carcinogenic TAP emissions are presented in the following table:

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

Non-Carcinogenic Toxic Air Pollutants	Pre-Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Post Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Change in 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Non-Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Acrolein	0.00E-03	3.63E-04	3.63E-04	0.017	No
Ammonia	0.00E-03	3.71E-02	3.71E-02	1.2	No
Hydrogen Sulfide	0.00E-03	5.05E-01	5.05E-01	0.933	No
Naphthalene	0.00E-03	3.32E-04	3.32E-04	3.33	No
o-Xylenes	0.00E-03	1.12E-03	1.12E-03	29	No
Toluene	0.00E-03	1.60E-03	1.60E-03	25	No

None of the PTEs for non-carcinogenic TAP were exceeded as a result of this project. Therefore, modeling is not required for any non-carcinogenic TAP because none of the 24-hour average carcinogenic screening ELs identified in IDAPA 58.01.01.585 were exceeded.

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 7 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)
Acetaldehyde	0.00E-03	3.01E-03	3.01E-03	3.0E-03	Yes
Benzene	0.00E-03	5.50E-03	5.50E-03	8.0E-04	Yes
1,3-Butadiene	0.00E-03	1.53E-04	1.53E-04	2.4E-05	Yes
Formaldehyde	0.00E-03	1.82E-02	1.82E-02	5.1E-04	Yes
PAH[a]	0.00E-03	1.76E-04	1.76E-04	2.0E-06	Yes

a) Polynuclear Aromatic Hydrocarbons (PAH) is considered as one TAP comprised of: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,l)perylene, dibenzo(a,h)anthracene, chrysene, indeno(1,2,3-cd)pyrene, benzo(a)pyrene. The total is compared to benzo(a)pyrene.

All of the PTEs for carcinogenic TAP were exceeded as a result of this project. Therefore, modeling is required for acetaldehyde, benzene, 1,3-butadiene, formaldehyde, and PAHs because the annual average carcinogenic screening ELs identified in IDAPA 58.01.01.586 were exceeded.

Post Project HAP Emissions

The following table presents the post project potential to emit for HAP 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 8 HAZARDOUS AIR POLLUTANTS EMISSIONS POTENTIAL TO EMIT SUMMARY

Hazardous Air Pollutants	PTE (lb/hr)	PTE (T/yr)
Acetaldehyde	3.01E-03	1.50E-04
Acrolein	3.63E-04	1.81E-05
Benzene	5.50E-03	8.26E-03
1,3-Butadiene	1.53E-04	7.66E-06
Formaldehyde	1.82E-02	5.96E-02
Hydrogen Sulfide	5.05E-01	3.94
Naphthalene	3.32E-04	1.66E-05
o-Xylenes	1.12E-03	5.59E-05
Toluene	1.60E-03	8.02E-05
Totals	**0.54**	**4.01**

Ambient Air Quality Impact Analyses

As presented in the Modeling Memo in Appendix B, the estimated emission rates of $PM_{2.5}$, SO_2, NO_2, and TAPs from this project 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 Guideline[1]. Refer to the Emissions Inventories section for additional information concerning the emission inventories.

[1] Criteria pollutant thresholds in Table 1, State of Idaho Air Quality Modeling Guideline, Doc ID AQ-011, rev. 1, December 31, 2002.

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 Twin Falls County, which is designated as attainment or unclassifiable for $PM_{2.5}$, PM_{10}, SO_2, NO_2, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201 .....Permit to Construct Required

The permittee has requested that a PTC be issued to the facility for the proposed new 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.

Rules for Control of Odors (IDAPA 58.01.01.775)

IDAPA 58.01.01.750 .....Rules for Control of Odors

Section 776.01 states that no person shall allow, suffer, cause, or permit the emission of odorous gases, liquids, or solids into the atmosphere in such quantities as to cause air pollution. These requirements are assured by Permit Condition 2.3.

Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.625 .....Visible Emissions

The sources of PM_{10} emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by Permit Conditions 3.4 and 4.4.

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 PM_{10}, SO2, NOx, CO, and VOC 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)

The facility is subject to the requirements of 40 CFR 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE). The generator is a 175 kW diesel CI engine manufactured in 2011.

40 CFR 60 Subpart IIII..... 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) as specified in paragraphs (a)(1) through (3) 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.

(2) Owners and operators of stationary CI ICE that commence construction after July 11, 2005 where the stationary CI ICE are:

(i) Manufactured after April 1, 2006 and are not fire pump engines, or

(ii) Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.

(3) Owners and operators of stationary CI ICE that modify or reconstruct their stationary CI ICE after July 11, 2005.

(b) The provisions of this Subpart are not applicable to stationary CI ICE being tested at a stationary CI ICE test cell/stand.

(c) If you are an owner or operator of an area source subject to this Subpart, you are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 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 applicable to area sources.

(d) Stationary CI ICE may be eligible for exemption from the requirements of this Subpart as described in 40 CFR part 1068, Subpart C (or the exemptions described in 40 CFR part 89, Subpart J and 40 CFR part 94, Subpart J, for engines that would need to be certified to standards in those parts), except that owners and operators, as well as manufacturers, may be eligible to request an exemption for national security.

The IC engine is a new engine which will be constructed after July 11, 2005. Therefore the engine is subject to the Subpart.

§ 60.4201 What emission standards must I meet for non-emergency engines if I am a stationary CI internal combustion engine manufacturer?

The permittee is not the manufacturer of the engine and therefore this requirement is not applicable.

§ 60.4202 What emission standards must I meet for emergency engines if I am a stationary CI internal combustion engine manufacturer?

The permittee is not the manufacturer of the engine. Therefore, this requirement is not applicable.

§ 60.4203 How long must my engines meet the emission standards if I am a stationary CI internal combustion engine manufacturer?

The permittee is not the manufacturer of the engine and therefore this requirement is not applicable.

§ 60.4204 What emission standards must I meet for non-emergency engines if I am an owner or operator of a stationary CI internal combustion engine?

The IC engine is an emergency engine and therefore this requirement is not 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).

(b) Owners and operators of 2007 model year and later emergency stationary CI ICE with a displacement of less than 30 liters per cylinder that are not fire pump engines must comply with the emission standards for new nonroad CI engines in §60.4202, for all pollutants, for the same model year and maximum engine power for their 2007 model year and later emergency stationary CI ICE.

The IC engine must comply with the emission standards for new nonroad CI engines in §60.4202.

The subpart requires that the permittee comply with Table 1 per 40 CFR 89.112.

§ 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 according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer, over the entire life of the engine.

The permittee must operate the IC engine for the life of the unit in accordance with manufacturer-approved methods.

§ 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 non-road diesel fuel.

The permittee has stated that they will operate the IC engine in accordance with 40 CFR 80.510(b). The fuel sulfur content cannot exceed 15 ppm or 0.0015% by weight. All emissions calculations assume that percentage.

§ 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.

A non-resettable hour meter shall be installed on the IC engine.

§ 60.4210 What are my compliance requirements if I am a stationary CI internal combustion engine manufacturer?

The permittee is not the manufacturer of the IC engine and therefore this requirement is not applicable.

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

(c) If you are an owner or operator of a 2007 model year and later stationary CI internal combustion engine and must comply with the emission standards specified in §60.4204(b) or §60.4205(b), or if you are an owner or operator of a CI fire pump engine that is manufactured during or after the model year that applies to your fire pump engine power rating in table 3 to this Subpart and must comply with the emission standards specified in §60.4205(c), you must comply by purchasing an engine certified to the emission standards in §60.4204(b), or §60.4205(b) or (c), as applicable, for the same model year and maximum (or in the case of fire pumps, NFPA nameplate) engine power. The engine must be installed and configured according to the manufacturer's specifications.

The permittee is subject to 60.4205(b), therefore the IC engine must be installed and configured according to the manufacturer's specifications.

(f) Emergency stationary ICE may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary ICE in emergency situations. 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 year. Emergency stationary ICE may operate up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply non-emergency power as part of a financial arrangement with another entity. For owners and operators of emergency engines, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as permitted in this section, is prohibited.

Maintenance and testing of the IC engine shall not exceed 100 hours per year.

§ 60.4212 What test methods and other procedures must I use if I am an owner or operator of a stationary CI internal combustion engine with a displacement of less than 30 liters per cylinder?

A performance test on the IC engine is not required and therefore this requirement is not applicable.

§ 60.4213 What test methods and other procedures must I use if I am an owner or operator of a stationary CI internal combustion engine with a displacement of greater than or equal to 30 liters per cylinder?

A performance test on the IC engine is not required and the engine is less than 30 liters per cylinder. Therefore this requirement is not applicable.

§ 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 IC engine does not meet the criteria set forth in the subpart requiring notification unless it is uncertified.

NESHAP Applicability (40 CFR 61)

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

MACT Applicability (40 CFR 63)

The facility is not subject to any MACT standards in 40 CFR Part 63.

Permit Conditions Review

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

Permit Condition 1.1 provide a description of the purpose of the permit.

Permit Condition 1.2 provides a description of the regulated sources and the control devices used at the facility.

Permit Condition 2.1 provides a process description of the anaerobic digester process at this facility.

Permit Condition 2.2 provides a description of the control devices used on the anaerobic digester equipment at this facility.

Permit Condition 2.3 establishes that there are to be no emissions of odorous gases, liquids, or solids from the anaerobic digester operations into the atmosphere in such quantities that cause air pollution.

Permit Condition 2.4 establishes that average annual concentration of hydrogen sulfide (H_2S) of the biogas entering the flare shall not exceed 5,000 ppmv. The H_2S concentration limitation was proposed by the Applicant and was subsequently used during the ambient air quality modeling analysis.

Permit Condition 2.5 establishes a daily biogas production limit for the anaerobic digester operations as proposed by the Applicant.

Permit Condition 2.6 establishes that biogas produced from the on-site anaerobic digesters shall only be combusted in the Candlestick Flare as proposed by the Applicant.

Permit Condition 2.7 establishes that the permittee monitor and record odor complaints to demonstrate compliance with odor permit condition.

Permit Condition 2.8 establishes that the permittee monitor biogas H_2S concentration to demonstrate compliance with H_2S concentration limit permit condition.

Permit Condition 2.9 establishes that the permittee monitor biogas production to demonstrate compliance with biogas combustion limit permit condition.

Permit Condition 3.1 provides a process description of the candlestick flare process at this facility.

Permit Condition 3.2 provides a description of the control devices used on the candlestick flare equipment at this facility.

Permit Condition 3.3 establishes hourly and annual emissions limits for PM_{10}, SO_2, NO_X, CO, and VOC emissions from the candlestick flare at this facility.

Permit Condition 3.4 establishes a 20% opacity limit for the Candlestick Flare or functionally equivalent openings associated with the Candlestick Flare.

Permit Condition 3.5 establishes that the Candlestick Flare shall have a flare ignition system in order to assure proper operation of the flare.

Permit Condition 3.6 establishes that the Candlestick Flare shall only combust biogas as fuel as proposed by the Applicant.

Permit Condition 3.7 establishes that the flare ignition system must be monitored using a ultraviolet beam sensor, infrared sensor, or an alternative equivalent device to demonstrate compliance with flare ignition system permit condition.

Permit Condition 3.8 establishes the opacity monitoring for the Candlestick Flare.

Permit Condition 4.1 provides a process description of the diesel-fired emergency standby IC engine process at this facility.

Permit Condition 4.2 provides a description of the control devices used on the diesel-fired emergency standby IC engine at this facility.

Permit Condition 4.3 establishes hourly and annual emissions limits for PM_{10}, SO_2, NO_X, CO, and VOC emissions from the IC Engine at this facility.

Permit Condition 4.4 establishes a 20% opacity limit for the IC Engines stack or functionally equivalent openings associated with the IC Engines.

Permit Condition 4.5 establishes that the IC Engines shall only combust diesel fuel oil with a maximum sulfur content of 0.0015% (15 ppm) by weight as fuel as proposed by the Applicant.

Permit Condition 4.6 establishes weekly and annual hourly operational limits for the IC Engines as proposed by the Applicant. The weekly and annual hourly operational limits were proposed by the Applicant and were subsequently used during the ambient air quality modeling analysis.

Permit Condition 4.7 establishes operation and maintenance requirements for the IC Engines as required by 40 CFR 60, IIII for Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

Permit Condition 4.8 establishes engine replacement requirements for the IC Engines as required by 40 CFR 60, IIII for Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

Permit Condition 4.9 establishes that the IC Engines be equipped with a non-resettable hour meter as required by 40 CFR 60, IIII for Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

Permit Condition 4.10 establishes that the federal requirements of 40 CFR Part 60 are incorporated by reference into the requirements of this permit per current DEQ guidance.

Permit Condition 4.11 incorporates 40 CFR 60, Subpart A – General Provisions.

Permit Condition 4.12 establishes that the permittee monitor and record weekly operation of the IC Engines to demonstrate compliance with the IC Engine operating limit permit condition.

Permit Condition 4.13 establishes that the permittee shall maintain delivery receipts showing the percent sulfur content by weight for each shipment of fuel oil to demonstrate compliance with the fuel oil sulfur content permit condition.

Permit Condition 4.14 establishes that the permittee shall maintain records of the operation and maintenance of the IC engine to demonstrate compliance with the operation and maintenance permit condition.

Permit Condition 4.15 establishes the opacity monitoring for the IC engine stack.

Permit Condition 5.1 requires that the permittee comply with all of the permit terms and conditions pursuant to Idaho Code §39-101.

Initial Permit Condition 5.2 requires that the permittee maintain and operate all treatment and control facilities at the facility in accordance with IDAPA 58.01.01.211.

Initial Permit Condition 5.3 specifies that no permit condition is intended to relieve or exempt the permittee from compliance with applicable state and federal requirements, in accordance with IDAPA 58.01.01.212.01.

Initial Permit Condition 5.4 requires that the permittee allow DEQ inspection and entry pursuant to Idaho Code §39-108.

Initial Permit Condition 5.5 specifies that the permit expires if construction has not begun within two years of permit issuance or if construction has been suspended for a year in accordance with IDAPA 58.01.01.211.02.

Initial Permit Condition 5.6 requires that the permittee notify DEQ of the dates of construction and operation, in accordance with IDAPA 58.01.01.211.03.

Initial Permit Condition 5.7 requires that the permittee notify DEQ at least 15 days prior to any performance test to provide DEQ the option to have an observer present, in accordance with IDAPA 58.01.01.157.03.

Initial Permit Condition 5.8 requires that any performance testing be conducted in accordance with the procedures of IDAPA 58.01.01.157, and encourages the permittee to submit a protocol to DEQ for approval prior to testing.

Initial Permit Condition 5.9 requires that the permittee report any performance test results to DEQ within 30 days of completion, in accordance with IDAPA 58.01.01.157.04-05.

Initial Permit Condition 5.10 requires that the permittee maintain sufficient records to ensure compliance with permit conditions, in accordance with IDAPA 58.01.01.211.

Initial Permit Condition 5.11 requires that the permittee follow the procedures required for excess emissions events, in accordance with IDAPA 58.01.01.130-136.

Initial Permit Condition 5.12 requires that a responsible official certify all documents submitted to DEQ, in accordance with IDAPA 58.01.01.123.

Initial Permit Condition 5.13 requires that no person make false statements, representations, or certifications, in accordance with IDAPA 58.01.01.125.

Initial Permit Condition 5.14 requires that no person render inaccurate any required monitoring device or method, in accordance with IDAPA 58.01.01.126.

Initial Permit Condition 5.15 specifies that this permit to construct is transferable, in accordance with the procedures of IDAPA 58.01.01.209.06.

Initial Permit Condition 5.16 specifies that permit conditions are severable, in accordance with IDAPA 58.01.01.211.

PUBLIC REVIEW

Public Comment Opportunity

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

APPENDIX A – EMISSIONS INVENTORIES

City of Twin Falls Pre-Treatment

Criterial Pollutants and HAPs Summary

Criteria Pollutants	PM10		PM2.5		CO		NOx		SOx		VOC		HAPs
Emissions Unit Name	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(ton/yr)
Flare	0.09	0.39	0.09	0.39	2.58	11.28	0.47	2.07	8.54	37.39	0.44	1.92	4.01
Emergency Generator	0.11	0.005	0.11	0.005	1.86	0.09	2.14	0.11	0.0001	0.000003	1.37	0.07	0.004
Totals	**0.20**	**0.39**	**0.20**	**0.39**	**4.43**	**11.37**	**2.62**	**2.18**	**8.54**	**37.39**	**1.81**	**1.99**	**4.01**

City of Twin Falls Pre-Treatment

Idaho TAPS

Toxics	Uncontrolled Flare Emission Rate (lb/hr)	Controlled Generator Emission Rate (lb/hr)	Facility Wide Emission Rate (lb/hr)	IDAPA 58.01.01.585/586 - EL (lb/hr)	PTE Emission Rate vs. EL
Acetaldehyde		3.01E-03	3.01E-03	3.00E-03	**Exceeds**
Acrolein		3.63E-04	3.63E-04	1.70E-02	Below
Ammonia	3.71E-02		3.71E-02	1.20E+00	Below
Benzene	1.84E-03	3.66E-03	5.50E-03	8.00E-04	**Exceeds**
Formaldehyde	1.36E-02	4.63E-03	1.82E-02	5.10E-04	**Exceeds**
Hydrogen Sulfide	5.05E-01		5.05E-01	9.33E-01	Below
Naphthalene		1.90E-05	1.90E-05	9.10E-05	**Below**
o-Xylenes		1.12E-03	1.12E-03	2.90E+01	Below
Toluene		1.60E-03	1.60E-03	2.50E+01	Below
1,3-Butadiene		1.53E-04	1.53E-04	2.40E-05	**Exceeds**
Total PAH	1.62E-04	1.35E-05	1.76E-04	2.00E-06	**Exceeds**

City of Twin Falls Pre-Treatment

GHG Emissions

Emissions Unit Name	CO_2 Metric Tons/Yr	CO_2 Short Tons/Yr	N_2O Metric Tons/Yr	N_2O Short Tons/Yr	CH_4 Metric Tons/Yr	CH_4 Short Tons/Yr	CO2e Metric Tons/Yr	CO2e Short Tons/Yr
Flare	4531.04	4994.56	0.0085	0.0094	0.085	0.094	4,535.48	4,999.46
Emergency Generator	144.96	159.79	0.0012	0.0013	0.0059	0.0065	145.45	160.33
Total	**4,676.00**	**5,154.36**	0.01	0.01	**0.09**	**0.10**	**4,680.93**	**5,159.79**

City of Twin Falls Pre-Treatment - Biogas Flare

Heat Input (MMBtu/hr)	6.96	
Manufacturer	Varec	
Fuel Type	Biogas	
Biogas Heat Value (Btu/scf)	600	Based on engineering judgement of USAB operating near pH of 7
Max Biogas Production (scf/day) (based on highest expected sulfate concentration)	278,400	Based on Varec maximum flow of 11,600 ft^3/hr
Biogas Primary Fuel Use (MMscf/hr)	0.0116	
Operation (hrs/yr)	8,760	
Biogas Primary Fuel Use (MMscf/yr)	102	
Hydrogen Sulfide (H_2S) Biogas Concentration (ppmv)	5,000	Based on engineering judgement and Agro Farms's NY plant COD/S ratio
H_2S Biogas Concentration (mg/m^3)	6,973	
Uncontrolled H_2S Mass Feedrate (lb/hr)	5.0	
Assumed H_2S Conversion for SO_2 Emissions	90%	

				Uncontrolled Potential to Emit		
Criteria Pollutant	**CAS No.**	**Emission Factor [1]**		**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**
Total Particulate Matter (PM) [2]		7.6	lb MM cf NG	0.09	772	0.39
Nitrogen Oxides (NOx)		0.068	lb/MM Btu	0.47	4,146	2.07
Sulfur Dioxide (SO_2) [3]		H_2S / SO_2 Mass Balance		8.54	74,773	37.39
Carbon Monoxide (CO)		0.37	lb/MM Btu	2.58	22,559	11.28
VOC		0.06	lb/MM Btu	0.44	3,841	1.92

				Primary Fuel - Biogas Controlled Potential to Emit					
Toxic Air Pollutants - H_2S	**CAS No.**	**Emission Factor [4] (% Destruction)**		**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**	**IDAPA 58.01.01.585/586 - EL (lb/hr)**	**PTE Emission Rate vs. EL**	**HAP**
Hydrogen sulfide	7783-06-4	90%		5.05E-01	7.88E+03	3.94E+00	9.33E-01	Below	HAP

				Primary Fuel - Biogas [5] Uncontrolled Potential to Emit					
Toxic Air Pollutants - Others [6]	**CAS No.**	**Digester Gas Emission Factor ($lb/10^6$ scf)**		**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**	**IDAPA 58.01.01.585/586 - EL (lb/hr)**	**PTE Emission Rate vs. EL**	**HAP**
Ammonia	7664-41-7	3.20E+00		3.71E-02	3.25E+02	1.63E-01	1.20E+00	Below	
Benzene	71-43-2	1.59E-01		1.84E-03	1.62E+01	8.08E-03	8.00E-04	Exceeds	HAP
Formaldehyde	50-00-0	1.17E+00		1.36E-02	1.19E+02	5.94E-02	5.10E-04	Exceeds	HAP
Total PAHs	na	1.40E-02		1.62E-04	1.42E+00	7.11E-04	2.00E-06	Exceeds	
Total HAPS						4.01			

Notes:

[1] Criteria pollutants emission rates from AP-42, Section 13.5 (Industrial Flares) w/ exception of PM and SO_2 (see below).

[2] PM is assumed to equal $PM_{2.5}$ and PM_{10} emissions based on natural gas combustion, per AP-42 Natural Gas Combution, Table 1.4-2, due to extreme range and concentration-based format of industrial flare PM factors

[3] SO_2 Emission factor for biogas assumes 90% conversion of H_2S to SO_2 .

[4] Conservatively estimated H_2S destruction based on engineering judgement and combustion properties of H_2S

[5] Emission factors from "General Instruction Book for the 2003 - 2004 Annual Emissions Reporting Program", Tables 4 and 10, South Coast Air Quality Managment District (SCAQMD).

GHG Emissions

Compound[6]	Emissions (metric tons)	GWP	CO2e
CO_2	4531.04	1	4531.039
CH_4	0.0855	21	1.795
N_2O	0.00855	310	2.649
Total	4531.13		4535.48

For CO2, Use Equation C-1 from 40 CFR 98 Subpart C:
CO2 = 1x10-3 x Fuel x HHV x EF

CO2 = Annual CO2 mass emissions in Metric Tons	=	4531.04
Fuel = Volume of fuel used (standard cubic feet)	=	101,616,000
HHV = High Heat Value from Table C-1 (mmBTU/scf)	=	0.000841
EFCO2 = Emission factor (kg/mmBTU)	=	53.02

For CH4 and N2O, Use Equation C-8 from 40 CFR 98 Subpart C:
CH4, N2O = 1x10-3 x Fuel x HHV x EF

CH4 = Annual CH4 mass emissions in Metric Tons	=	0.0855
N2O = Annual N2O mass emissions in Metric Tons	=	0.00855
Fuel = Volume of fuel used (standard cubic feet)	=	101,616,000
HHV = High Heat Value from Table C-1 (mmBTU/scf)	=	0.000841
EFCH4 = Emission factor (kg/mmBTU)	=	1.00E-03
EFN2O = Emission factor (kg/mmBTU)	=	1.00E-04

Notes

[6] 40 CFR 98.32 - For stationary fuel combustion sources only, report CO2, CH4, and N2O
GWP = Global Warming Potential - 40 CFR 98 Subpart A, Table A-1

City of Twin Falls Pre-Treatment - Emergency Generator

Generator Name	Cummins	EPA Tier 3
Model No.	QSB7-G5 NR3	
Engine Power Rating (hp)	324	
Fuel Type	Distillate #2	
- maximum sulfur content	0.0015%	Ultra low sulfur diesel fuel
Maximum Firing Rate (gals/hr)	28.0	
Maximum Heat Input Rating (Btu/hr)	3,920,000	
Uncontrolled Max Hours of Operation	500	
Controlled Max Hours of Operation	100	Testing frequency will be limited to 2-hr per week
Annual Firing Rate (gals/yr)	14,000	
Heat Capacity of Fuel (Btu/gal)	140,000	

			Uncontrolled Potential to Emit			Controlled Potential to Emit[1]		
Pollutant	Emission Factor (g/hp-hr)	Emission Factor (lb/MMBtu)	Emission Rate (lb/hr)	Emission Rate (lb/yr)	Emission Rate (ton/yr)	Emission Rate (lb/hr)	Emission Rate (lb/yr)	Emission Rate (ton/yr)
Particulate Matter (PM_{10})[1]	0.15		0.11	54	0.03	0.11	10.7	0.005
Particulate Matter ($PM_{2.5}$)[2]	0.15		0.11	54	0.03	0.11	10.7	0.005
Nitrogen Oxides (NOx)[3]	3.00		2.14	1,071	0.54	2.14	214	0.11
Sulfur Oxides (SO_2)[4]		0.00002	0.0001	0.03	0.00001	0.0001	0.006	0.000003
Carbon Monoxide (CO)[5]	2.60		1.86	929	0.46	1.86	186	0.09
TOC as VOC[6]		0.35	1.37	686	0.34	1.37	137.20	0.07

			Uncontrolled Potential to Emit			Controlled Potential to Emit					
Toxics[7]	CAS Number	Emission Factor (lb/MMBtu)	Emission Rate (lb/hr)	Emission Rate (lb/yr)	Emission Rate (ton/yr)	Emission Rate (lb/hr)	Emission Rate (lb/yr)	Emission Rate (ton/yr)	IDAPA 58.01.01.6 85/586 - EL (lb/hr)	PTE Emission Rate vs. EL	HAP
Benzene	71-43-2	9.33E-04	3.66E-03	1.83E+00	9.14E-04	3.66E-03	3.66E-01	1.83E-04	8.00E-04	Exceeds	HAP
Formaldehyde	50-00-0	1.18E-03	4.63E-03	2.31E+00	1.16E-03	4.63E-03	4.63E-01	2.31E-04	5.10E-04	Exceeds	HAP
Naphthalene[9]	91-20-3	8.48E-05	3.32E-04	1.66E-01	8.31E-05	1.90E-06	1.90E-03	9.49E-07	9.10E-05	Exceeds	HAP
Toluene	108-88-3	4.09E-04	1.60E-03	8.02E-01	4.01E-04	1.60E-03	1.60E-01	8.02E-05	2.50E+01	Below	HAP
o-Xylenes	1330-20-7	2.85E-04	1.12E-03	5.59E-01	2.79E-04	1.12E-03	1.12E-01	5.59E-05	2.90E+01	Below	HAP
Acetaldehyde	75-07-0	7.67E-04	3.01E-03	1.50E+00	7.52E-04	3.01E-03	3.01E-01	1.50E-04	3.00E-03	Exceeds	HAP
Acrolein	107-02-8	9.25E-05	3.63E-04	1.81E-01	9.07E-05	3.63E-04	3.63E-02	1.81E-05	1.70E-02	Below	HAP
1,3-Butadiene	106-99-0	3.91E-05	1.53E-04	7.66E-02	3.83E-05	1.53E-04	1.53E-02	7.66E-06	2.40E-05	Exceeds	HAP
Benz(a)anthracene	56-55-3	1.68E-06	6.59E-06	3.29E-03	1.65E-06	6.59E-06	6.59E-04	3.29E-07			
Benzo(b)fluoranthene	205-99-2	9.91E-08	3.88E-07	1.94E-04	9.71E-08	3.88E-07	3.88E-05	1.94E-08			
Benzo(k)fluoranthene	205-82-3	1.55E-07	6.08E-07	3.04E-04	1.52E-07	6.08E-07	6.08E-05	3.04E-08			
Chrysene	218-01-9	3.53E-07	1.38E-06	6.92E-04	3.46E-07	1.38E-06	1.38E-04	6.92E-08			
Dibenzo(a,h)anthracene	53-70-3	5.83E-07	2.29E-06	1.14E-03	5.71E-07	2.29E-06	2.29E-04	1.14E-07			
Indeno(1,2,3-cd)pyrene	193-39-5	3.75E-07	1.47E-06	7.35E-04	3.68E-07	1.47E-06	1.47E-04	7.35E-08			
Benzo(a)pyrene	50-32-8	1.88E-07	7.37E-07	3.68E-04	1.84E-07	7.37E-07	7.37E-05	3.68E-08			
Total PAH[8]			1.35E-05	6.73E-03	3.36E-06	1.35E-05	1.35E-03	6.73E-07	2.00E-06	Exceeds	
Total HAPS					0.004						

Notes:

[1] Controlled PTE is based on 52 hours per year

[2] PM_{10} is assumed to equal PM (PM emission factor based on *Cummins EPA Tier 3 Exhaust Emission Compliance Statement*)

[3] $PM_{2.5}$ is assumed to equal PM (PM emission factor based on *Cummins EPA Tier 3 Exhaust Emission Compliance Statement*)

[4] NOx is assumed to equal NOx + HC (NOx emission factor based on *Cummins EPA Tier 3 Exhaust Emission Compliance Statement*)

[4] SO_2 is based on AP-42, Section 3.4 Large Stationary Diesel and All Stationary Dual-Fuel Engines, Table 3.4-1, 10/96, multiplied by sulfur content of fuel

[5] CO emission factor is based on *Cummins EPA Tier 3 Exhaust Emission Compliance Statement*

[6] TOC exhaust is based on AP-42, Section 3.3 Gasoline and Diesel Industrial Engines, Table 3.3-1, 10/96, Diesel Fuel

[7] Toxic emission factors derived from EPA AP-42, Section 3.3 Gasoline and Diesel Industrial Engines, Table 3.3-2, 10/96

[8] Polynuclear aromatic hydrocarbons is the sum of benz(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and benzo(a)pyrene

[9] Naphthalene is based on an annual average

GHG Emissions

Compound [9]	Emissions (metric tons)	GWP	CO2e
CO_2	144.96	1	144.96
CH_4	0.0059	21	0.12
N_2O	0.0012	310	0.36
Total	144.97		145.45

For CO2, Use Equation C-1 from 40 CFR 98 Subpart C:
CO2 = 1x10-3 x Fuel x HHV x EF

CO2 = Annual CO2 mass emissions in Metric Tons	=	144.96
Fuel = Volume of fuel used (gallons)	=	14,000
HHV = High Heat Value from Table C-1 (mmBTU/gal)	=	0.14
EFCO2 = Emission factor (kg/mmBTU)	=	73.96

For CH4 and N2O, Use Equation C-8 from 40 CFR 98 Subpart C:
CH4, N2O = 1x10-3 x Fuel x HHV x EF

CH4 = Annual CH4 mass emissions in Metric Tons	=	0.0059
N2O = Annual N2O mass emissions in Metric Tons	=	0.0012
Fuel = Volume of fuel used (gallons)	=	14,000
HHV = High Heat Value from Table C-1 (mmBTU/Gal)	=	0.14
EFCH4 = Emission factor (kg/mmBTU)	=	3.00E-03
EFN2O = Emission factor (kg/mmBTU)	=	6.00E-04

Notes

[9] 40 CFR 98.32 - For stationary fuel combustion sources only, report CO2, CH4, and N2O
GWP = Global Warming Potential - 40 CFR 98 Subpart A, Table A-1

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES

MEMORANDUM

DATE: June 18, 2012

TO: Kelli Wetzel, Permit Engineer, Air Program

FROM: Darrin Mehr, Air Quality Analyst, Air Program

PROJECT NUMBER: P-2012.0025 Project 61036

SUBJECT: Modeling Demonstration for the City of Twin Falls 15-Day Pre-Permit Construction Authorization Permit to Construct for a Wastewater Pre-Treatment Facility in Twin Falls, Idaho

1.0 Summary

The City of Twin Falls (Twin Falls) submitted an application for a Permit to Construct (PTC) for a Greenfield wastewater pretreatment plant (WWPTP) in Twin Falls, Idaho. The WWPTP will receive and process wastewater primarily generated by the neighboring Chobani Idaho, Inc. (Chobani) facility. The proposed facility will be located on a parcel of property leased from Chobani. Chobani and the WWPTP are considered to be separate facilities for air quality permitting. Chobani submitted a formal determination that these two facilities qualify as separate facilities. DEQ issued a letter of concurrence on the separate facility determination on January 13, 2012.

Emissions units for the WWPTP facility include:

- One candlestick flare to combust biogas generated in anaerobic digesters at a rate of at least 6.96 million British thermal units per hour (MMBtu/hr)
- One emergency electricity generator set rated at 175 kilowatts (kW) or 234 brake horsepower (bhp).

The project timeline and associated submittals primarily reflecting the modeling demonstration are listed below:

- January 13, 2012: DEQ issued a letter of concurrence recognizing the City of Twin Falls Wastewater Pre-Treatment Plant as a separate facility for air permitting purposes from the Chobani Idaho, Inc., facility.
- March 23, 2012: A modeling protocol was received by DEQ CH2M HILL submitted the protocol on behalf of the City of Twin Falls.
- April 13, 2012: DEQ issued a modeling protocol approval letter, with comments Ozone background, NO_2 background, and nearby source data were provided to CH2M HILL for the project. Twin Falls. Chobani was considered to be a nearby source for the WWPTP's cumulative NO_2 NAAQS compliance Amalgamated Sugar was considered to be a nearby source for the Twin Falls WWPTP's cumulative SO_2 NAAQS demonstration.
- May 2, 2012: DEQ received a 15-Day PTC application for the Twin Falls WWPTP.

- May 15, 2012: DEQ issued the letter authorizing commencement of construction activities for Twin Falls.
- May 18, 2012: DEQ received a permit application addendum consisting of revised modeling files using altered release parameters for the emergency generator engine. Modeling for TAPs and NAAQS was resubmitted.
- May 30, 2012: DEQ declared the application complete.

The facility is not a *designated facility*, as defined in IDAPA 58.01.01.006, Rules for the Control of Air Pollution in Idaho (Idaho Air Rules). The facility's potential to emit (PTE) of particulate matter with an aerodynamic diameter of ten microns or less (PM_{10}), sulfur dioxide (SO_2), carbon monoxide (CO), and nitrogen oxides (NO_x) each is less than 100 tons per year (T/yr). The facility is not a major facility under the New Source Review (NSR) PSD program.

The proposed project is subject to review under Idaho Air Rules Section 200. Idaho Air Rules Section 203.02 requires the facility to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS). Idaho Air Rules Section 210 requires the facility to demonstrate compliance with the toxic air pollutants (TAPs) increments, which are listed in Sections 585 and 586.

The submitted modeling analyses, in combination with DEQ's analyses 1) utilized appropriate methods and models; 2) were conducted using reasonably accurate or conservative model parameters and input data; 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed that predicted pollutant concentrations from emissions associated with the facility when combined with a reasonably conservative background concentration value appropriate for the area were below NAAQS and other applicable increments at all ambient air locations

The submitted modeling analyses were conducted by CH2M HILL, on behalf of Twin Falls. Key assumptions and results that should be considered in the development of the permit are shown in Table 1.

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

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	**Explanation/Consideration**
The candlestick flare was modeled with the following assumptions: • 5,000 parts per million by volume (ppm_v) of hydrogen sulfide; • 11,600 cubic feet biogas per hour; • 600 British thermal units per standard cubic feet (Btu/scf) of biogas; • 90% H_2S destruction efficiency; and, • 8,760 hours per year of operation at maximum capacity.	NAAQS and TAPs compliance was demonstrated using the assumptions applied to the biogas and the flare in the emission estimates and the exhaust parameters.
The emergency electrical generator engine was limited to 100 hours per year for testing and maintenance purposes.	Carcinogenic TAP impacts for naphthalene were modeled using an average emission rate corresponding to roughly 100 hours per year. The annual average NO_x emissions modeled reflected the maximum hourly emission rate limited to 100 hours per year.
The cumulative ambient impact analyses for the 1-hour average SO_2 NAAQS demonstrated that the proposed WWPTP's SO_2 impacts, in combination with the nearby Amalgamated Sugar facility, did not cause or contribute to a predicted violation of the NAAQS.	Amalgamated Sugar's 1-hour average SO_2 design concentration impacts (highest 4th high values of the daily maximum impacts) were paired in space and time with the impacts from the proposed WWPTP facility. The impacts from TASCO and WWPTP's flare do overlap so they do share a temporal and spatial relationship. Impacts for both facilities with background included were at 99% of the 1-hour SO_2 NAAQS. Compliance with the NAAQS was demonstrated using the assumptions establishing the requested emission rates, exhaust parameters, and AERMOD model setup.
The cumulative impact analyses for the 1-hour NO_2 NAAQS demonstrated that the proposed WWPTP's NO_2 impacts, in combination with the impacts from the adjacent Chobani facility, did not cause or contribute to a predicted violation of the NAAQS.	Chobani's 1-hour average NO_2 design concentration impacts (highest 8th high values of the daily maximum impacts) were paired in space and time with the impacts from the proposed WWPTP facility. The impacts do not overlap to cause an exceedence of the NAAQS. WWPTP's requested allowable emissions and source arrangement demonstrates compliance with the 1-hour NO_2 NAAQS. The WWPTP's annual average NO_2 NAAQS demonstration showed that impacts were below the annual average significant impact level. A cumulative impact analysis was not triggered for the annual averaging period.

2.0 Background Information

2.1 Applicable Air Quality Impact Limits and Modeling Requirements

This section identifies applicable ambient air quality limits and analyses used to demonstrate compliance.

2.1.1 Area Classification

The Twin Falls WWPTP facility is located in Twin Falls County, which is designated as an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), ozone (O_3), particulate matter with an aerodynamic diameter less than or equal to a nominal 10

micrometers (PM_{10}), and particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers ($PM_{2.5}$).

There are no Class I areas within 10kilometers of the facility.

2.1.2 Significant and Full Impact Analyses

If estimated maximum pollutant impacts to ambient air from the emissions sources associated with the existing unpermitted facility exceed the significant contribution levels (SCLs) of Section 006 of IDAPA 58.01.01, Rules for the Control of Air Pollution in Idaho (Idaho Air Rules), then a cumulative impact analysis is necessary to demonstrate compliance with National Ambient Air Quality Standards (NAAQS) and Idaho Air Rules Section 203.02 for Permits to Construct and Section 403.02 for Tier II Operating Permits. A cumulative NAAQS impact analysis for attainment area pollutants involves adding ambient impacts from facility-wide emissions, and emissions from any nearby cocontributing sources, to DEQ-approved background concentration values that are appropriate for the criteria pollutant/averaging time at the facility location and the area of significant impact. The resulting maximum pollutant concentrations in ambient air are then comparedto the NAAQS listed in Table 2. The SCLs and the modeled value that must be used for comparison to the NAAQS are also listed in Table 2.

Table 2. APPLICABLE REGULATORY LIMITS				
Pollutant	**Averaging Period**	**Significant Contribution Levels[c] ($\mu g/m^3$)[b]**	**Regulatory Limit[d] ($\mu g/m^3$)[b]**	**Modeled Value Used[g, h]**
PM_{10}[a]	24-hour	5.0	150[f]	Maximum 6th highest[i]
$PM_{2.5}$[a]	Annual	0.3[b]	15[e]	$PM_{2.5}$ –Maximum 1st high[j]
	24-hour	1.2[b]	35	$PM_{2.5}$ –Maximum 1st high[j]
Carbon monoxide (CO)	8-hour	500	10,000[f]	Maximum 2nd highest
	1-hour	2,000	40,000[f]	Maximum 2nd highest
Sulfur Dioxide (SO_2)	3-hour	25	1,300[f]	Maximum 2nd highest
	1-hour	EPA Interim: 3 ppb[m] (~7.8 $\mu g/m^3$)	0.075 ppm[m,n] (196 $\mu g/m^3$)	Maximum 4th highest[m]
Nitrogen Dioxide (NO_2) *NO_2 is the indicator species for NOx*	Annual	1.0	100[f]	Maximum 1st highest
	1-hour[m]	EPA Interim: 4 ppb[l] (7.5 $\mu g/m^3$)	0.100 ppm[l, n] (188 $\mu g/m^3$)	Maximum 8th highest[l]
Lead (Pb)	Rolling 3-month average	NA	0.15[f, k]	Maximum 1st highest

[a] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten (10) or 2.5 micrometers.
[b] Micrograms per cubic meter.
[c] SCLs are defined in Idaho Air Rules Section 006. $PM_{2.5}$ SCLs (75 FR 64864, October 20, 2010) were adopted as an Idaho temporary rule effective April 26, 2011. The pending rule will become final and effective upon adjournment of the 2012 legislative session if approved by the Idaho Legislature.
[d] Federal NAAQS (see 40 CFR 50) in effect as of July 1 of each year are incorporated by reference during the legislative session the following spring. See Idaho Air Rules Section 107.
[e] Never expected to be exceeded in any calendar year.
[f] Never expected to be exceeded more than once in any calendar year. The 3-hr and 24-hr SO_2 standards were revoked (see 75 FR 35520, June 22, 2010) but will remain in effect until one year after the effective date (~late 2012) of initial area designations for the new 1-hour SO_2 NAAQS (i.e., in effect until ~late 2013).
[g] Concentration at any modeled receptor.
[h] The maximum 1st highest modeled value is always used for significant impact analyses.
[i] PM_{10} concentration at any modeled receptor when using five years of meteorological data. Use the maximum 2nd highest value for analyses with less than five years of meteorological data or one year of site-specific met data.
[j] $PM_{2.5}$ concentration at any modeled receptor when using a single year of site-specific meteorological data or a concatenated file with five years of meteorological data. EPA recommends using the high 8th high 3-year average monitored value for background, and using the highest 24-hr average and highest annual averages across five years of met data for the modeled result (Steven Page memo, Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS, March 23, 2010).
[k] Pb: The EPA's October 15, 2008 standard became effective in Idaho's NSR program when it was incorporated by reference into the Idaho Air Rules, i.e., when the Idaho Legislature adjourned *sine die* on March 29, 2010.
[l] NO_2 concentration at any modeled receptor when using complete year(s) of site-specific met data or five consecutive years of representative meteorological data. Compliance is based on the 3-year average of the 98th percentile of the annual distribution of 1-hour average daily maximum concentrations. EPA Interim SIL, Page memo, dated June 29, 2010.
[m] SO_2 concentration at any modeled receptor when using complete year of site-specific met data or five consecutive years of representative meteorological data. Compliance is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. EPA Interim SIL, Page memo, dated August 23, 2010.
[n] EPA's February 10, 2010 1-hour NO_2 standard (75 FR 6474) and June 22, 2010 1-hour SO_2 standard (75 FR 35520) became effective in Idaho on April 7, 2011.

2.1.3 TAPs Analyses

The increase in emissions from theproposed project are required to demonstratecompliance with the toxic air pollutant (TAP) increments with an ambient impact dispersion analysisrequired for any TAP having a

requested potential emission ratethat exceeds the screening emission rate limit(EL) specified by Idaho Air Rules Section 585 or 586.

This project involves the construction of a Greenfield facility. All TAPs emission rate increases are evaluated for compliance with the TAPs ELs, and if greater than any EL, with the allowable TAP increment.

2.2 Background Concentrations

2.2.1 Ambient Background Values

Background concentration values were provided by DEQin the modeling protocol approval letterfor this project. $PM_{2.5}$, NO_x, and SO_2 emissions exceeded modeling applicability thresholds.

$PM_{2.5}$, 24-hour and annual average

DEQ's recommended particulate matter ambient background concentrations follow:

- $PM_{2.5}$: 21.3 $\mu g/m^3$, 24-hour average, based on the three year average of the 98th percentile values.

  7.2 $\mu g/m^3$, annual average, based on the 3-year average of the annualmean value.

  The $PM_{2.5}$ background concentrations were based on Twin Falls monitoring data collected from 2000 through 2002.

NO_2, 1-hour average and annual averagefor Tier I or Tier IIcompliance methods

- NO_2: 81.5 $\mu g/m^3$, 1-hour average; and
  24.5 $\mu g/m^3$, annual average.

NO_2 NAAQS modeling demonstrated compliance using the Tier2 Ambient Ratio Method(ARM) in the revised modeling demonstration received on May 18, 2012The ambient background concentration provided by DEQ for the 1-hour NO_2 NAAQS using a Tier I or Tier II NO_2 NAAQS compliance method was 81.5 $\mu g/m^3$, 1-hour average. The 1-hour background value was based on the average of three years of data collected at the St. Luke's Meridian monitoring site from 2009, 2010, and 2011The ozone and NO_2 data varying by hour for a 24-hour period, presented in DEQ's April 13, 2012 modeling protocol approval letter, was not necessary because a Tier III Ozone Limiting Method or Plume Volume Molar Ratio Method was not used for the final compliance demonstration.

The annual average NO_2 background concentration was based on the default values from thecurrent ambient background concentration documentation[1]. The proposed facility will be located in an area with a mix of agricultural, residential, andan increasing density of industrial sources.An average of the default background values for small town/suburban areas and rural agricultural values of 32 and 17$\mu g/m^3$, annual average, respectively, was recommended, resulting in a value of 24.5$\mu g/m^3$, annual average.

[1] Hardy, Rick and Schilling, Kevin. *Background Concentrations for Use in New Source Review Dispersion Modeling*. Memorandum to Mary Anderson, March 14, 2003.

SO_2, 1-hour average and annual average

- SO_2: 33.1 µg/m^3, 1-hour average; and,
  2.6 µg/m^3, annual average;

2.2.2 Nearby Source Analyses

A nearby source analysis models the emissions one or more facilities nearby or neighboring the facility being permitted to verify that ambient impacts of a pollutant do not exceed a NAAQS. If the combined ambient impact from all facilities and ambient background concentration, exceed the NAAQS, the proposed source being permitted is allowed to have an ambient impact at any receptor exceeding the NAAQS of up to the significant impact level (SIL) for the pollutant and averaging period being analyzed. If the proposed source's impacts exceed the SIL at a receptor where the combined ambient impact from the nearby source and the proposed source exceeds a NAAQS, NAAQS compliance has not been demonstrated for the proposed project.

DEQ requested that SO_2 emissions from The Amalgamated Sugar Company (TASCO) facility be included in a full impact analysis if a significant impact analysis showed that a full impact analysis was required This request was based on the magnitude of the TASCO facility's emissions and the proximity of the TASCO facility to the WWPTP facility. The modeling inputs provided for the TASCO facility are listed in Table 3. Source PD1A—Pulp Dryer—was assumed to operate from September through March each year. The Pulp Dryer is removed from the analyses from April through August by applying an operational factor of zero for each of these months. This affects both the hourly and annual average NAAQS demonstrations.

The emission rates supplied by DEQ for TASCO were found on file with the facility's Tier I operating permit as a worst-case modeling demonstration of potential hourly SO_2 emissions. TASCO operates under two distinct operating scenarios—the sugar beet processing campaign, and when all of the crop sugar beets have been processed, sugar production under the "juice campaign" occurs. Emission rates and emission unit operating schedules differ for each campaign, which is the reason the pulp dryer emissions were not modeled from April through August.

Table 3. TASCO SULFUR DIOXIDE EMISSIONS AND EXHAUST PARAMETERS

Source ID	Source Description	UTM[a] Coordinates, Zone 11		Base Elevation (m)	Stack Height (m)	Temperature (Kelvin)	Exit Velocity (m/s)[c]	Stack Diameter (m)	SO_2[d] Emssion Rate (lb/hr)[e]
		Easting (X) (m)[b]	Northing (Y) (m)						
PB1	Foster Wheeler Boiler	710,939	4,711,971	1,160.68	47.85	416.48	15.06	2.01	344
PB2	Babcock and Wilcox Boiler	710,914	4,712,058	1,160.68	66.14	456.48	22.56	2.74	474
PD1A	Pulp Dryer	710,833	4,712,111	1,160.68	28.04	347.59	6.87	2.44	34

a. Universal Transverse Mercator Coordinate System.
b. Meters.
c. Meters per second.
d. Sulfur dioxide
e. Pounds per hour.

In addition, based on the fact that the WWPTP will operate on land leased from the neighboring Chobani facility and the quantity of Chobani's NQ emissions, DEQ requested that the Chobani facility beincluded in the cumulative impact analyses as nearby sourcefor the 1-hour and annual average NO_2 NAAQS demonstrations. The modeling inputs provided for theChobani facility are listed in Tables 4 and 5. The same hourly emission rates are used for the hourly and annal average NAAQS.

Table 4. CHOBANI NITROGEN DIOXIDE EMISSIONS AND EXHAUST PARAMETERS FOR POINT SOURCES

Source ID	Source Description	UTM[a] Coordinates, Zone 11		Base Elevation (m)	Stack Height (m)	Temperature (Kelvin)	Exit Velocity (m/s)[c]	Stack Diameter (m)	NO_x[d] Emssion Rate (lb/hr)[e]
		Easting (X) (m)[b]	Northing (Y) (m)						
BOILER1	Boiler 1	712,670	4,713,665	1,162	15.85	472.04	18.86	0.6096	2.32
BOILER2	Boiler 2	712,670	4,713,660	1,162	15.85	472.04	18.86	0.6096	2.32
BOILER3	Boiler 3	712,670	4,713,655	1,162	15.85	472.04	18.86	0.6096	2.32
BOILER4	Boiler 4	712,670	4,713,650	1,162	15.85	472.04	18.86	0.6096	2.32
BOILER5	Boiler 5	712,670	4,713,645	1,162	15.85	472.04	18.86	0.6096	2.32
BRMAU1	Boiler Room Makeup Air Heater	712,618.9	4,713,634	1,162	14.63	313	15.24	1.27	0.35
LABMAU	Lab Makeup Air Unit	712,683.5	4,713,621	1,162	14.63	313	15.24	0.5	0.08
BATTMAU	Battery Makeup Air Unit	712,618.9	4,713,615	1,162	14.63	313	15.24	1.27	0.35
RTU1	Rooftop Heater 1	712,535	4,713,635	1,162	14.63	313	15.24	0.5	0.05
RTU2	Rooftop Heater 2	712,555	4,713,635	1,162	14.63	313	15.24	0.5	0.05
RTU3	Rooftop Heater 3	712,575	4,713,635	1,162	14.63	313	15.24	0.5	0.05
RTU4	Rooftop Heater 4	712,535	4,713,650	1,162	14.63	313	15.24	0.5	0.05
RTU5	Rooftop Heater 5	712,555	4,713,650	1,162	14.63	313	15.24	0.5	0.05
RTU6	Rooftop Heater 6	712,575	4,713,650	1,162	14.63	313	15.24	0.5	0.05
PLANT	Office Area Rooftop Heater	712,683.5	4,713,608	1,162	14.63	313	15.24	0.5	0.03
MAINT	Maintenance Rooftop Heater	712,670.6	4,713,621	1,162	14.63	313	15.24	0.5	0.11

a. Universal Transverse Mercator Coordinate System
b. Meters.
c. Meters per second.
d. Nitrogen oxides.
e. Pounds per hour.

Table 5. CHOBANI NITROGEN DIOXIDE EMISSIONS AND EXHAUST PARAMETERS FOR VOLUME SOURCES								
Source ID	Source Description	UTM[a] Coordinates, Zone 11		Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)	NO_x[c] Emissions (lb/hr)[d]
		Easting (X) (m)[b]	Northing (Y) (m)					
IRH1	Infrared Heater	712,635	4,713,745	1,162	8.53	0.0236	3.97	0.02
IRH2	Infrared Heater	712,635	4,713,750	1,162	8.53	0.0236	3.97	0.02
IRH3	Infrared Heater	712,635	4,713,755	1,162	8.53	0.0236	3.97	0.02
IRH4	Infrared Heater	712,635	4,713,760	1,162	8.53	0.0236	3.97	0.02
IRH5	Infrared Heater	712,675	4,713,745	1,162	8.53	0.0236	3.97	0.02
IRH6	Infrared Heater	712,675	4,713,750	1,162	8.53	0.0236	3.97	0.02
IRH7	Infrared Heater	712,675	4,713,755	1,162	8.53	0.0236	3.97	0.02
IRH8	Infrared Heater	712,675	4,713,760	1,162	8.53	0.0236	3.97	0.02

a. Universal Transverse Mercator Coordinate System
b. Meters.
c. Nitrogen oxides.
d. Pounds per hour.

3.0 Modeling Impact Assessment

3.1 Modeling Methodology

Table 6 provides a summary of the modeling parameters used in the submitted modeling analyses.

Table 6. MODELING PARAMETERS		
Parameter	Description/ Values	Documentation/Additional Description
Model	AERMOD	AERMOD, Version 12060, was used for the analyses.
Meteorological data	2006-2010	The AERMOD-ready five-year dataset that DEQ provided was based on Twin Falls Joslin Airport surface data and Boise airport upper air data. 1-minute ASOS data collected at Joslin Field was used for additional on-site data.
Terrain	Considered	Three-dimensional receptor coordinates were obtained by CH2M HILL from United States Geological Survey (USGS) National Elevation Dataset (NED) files for the surrounding area. The file was a 1/3 arc second dataset containing a resolution of 10 meters. The NED file data was evaluated using AERMAP Version 11103.
Building downwash	Downwash algorithm	AERMOD, Version 12060, uses the PRIME algorithms to evaluate structure-induced downwash effects.
Receptor grid	Grid 1	25 meter spacing surrounding the facility fenceline serving as the ambient air boundary.
	Grid 2	50 meter spacing in 550 meter (X) by 550 meter (Y) grid centered on the facility.
	Grid 3	100 meter spacing in a 2,200 (X) by 2,200 meter (Y) grid centered on the facility and Grid 2.
	Grid 4	500 meter spacing in a 10,500 meter (X) by 10,500 meter (Y) coarse grid centered on the WWPTP facility and Grids 2 and 3.

3.1.1 *Modeling Protocol*

A modeling protocol was submitted to DEQ by CH2M HILL, on behalf of Twin Falls, on March 23, 2012. A modeling protocol approval letter, with comments, was issued by DEQ on April 13, 2012.

Modeling was conducted using methods documented in the modeling protocol and the *State of Idaho Guideline for Performing Air Quality Analyses*, Doc. ID AQ-011, revision 2, July 2011.

3.1.2 *Model Selection*

AERMOD, Version 12060, was used to conduct the ambient air analyses for NAAQS and TAPs compliance demonstrations. This is the appropriate regulatory guideline model for these analyses.

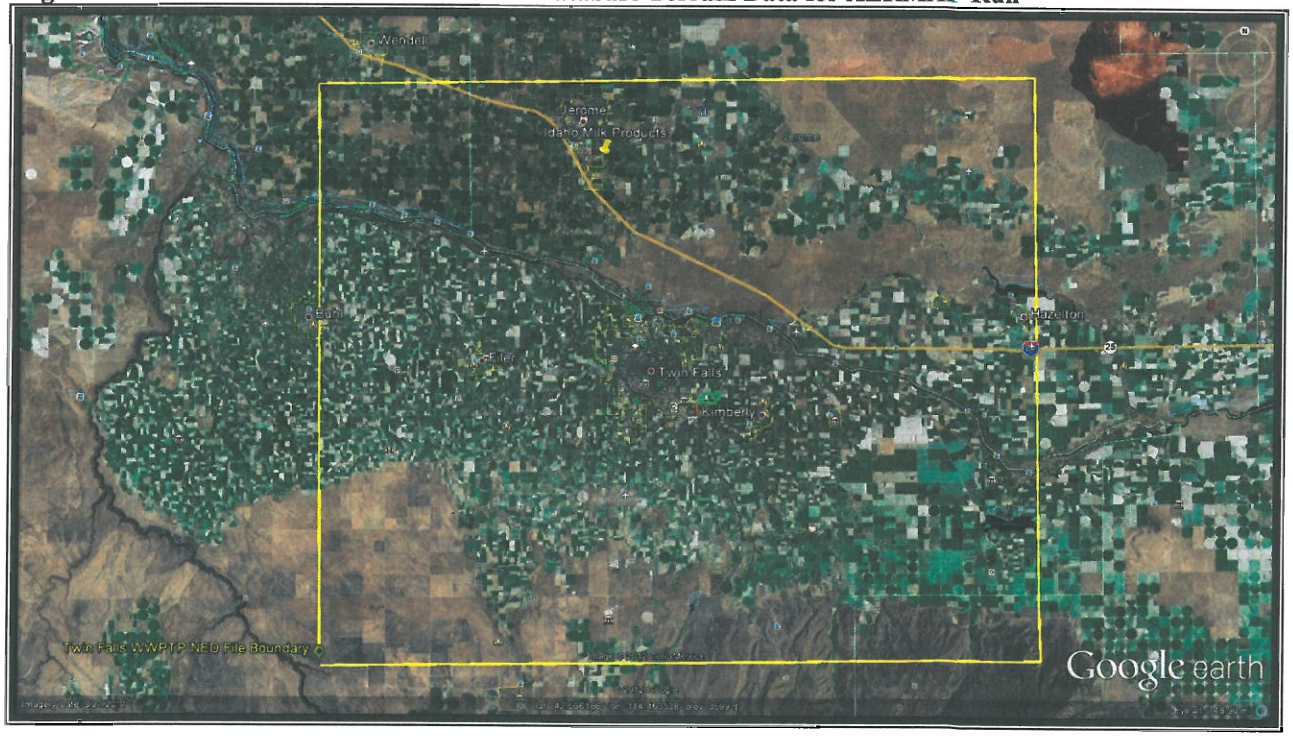
3.1.3 *Meteorological Data*

DEQ provided a pre-processed met dataset based on Twin Falls Joslin Airport surface data and Boise airport upper air data. 1-minute ASOS data collected at Joslin Field was used for additional on-site data. The 5–year dataset covers the years 2006 through 2010.

3.1.4 *Terrain Effects*

The modeling analyses considered elevated terrain. Twin Falls' modeling demonstration used a National Elevation Dataset (NED) file and AERMAP Version 11103 to determine receptor elevations and hill height scale values for inputs to the AERMOD dispersion model. Figure 1 depicts the extent of the terrain data used in this modeling analysis.

Figure 1. Extent of USGS National Elevation Database Terrain Data for AERMAP Run



3.1.5 Facility Layout

This project involves the construction of a Greenfield facility with sources and buildings yet to be constructed. The application's site plan was used to verify the locations of the sources represented in the modeling setup. The locations of the emissions unit and property boundary in the modeling setup appeared to match the site plan.

3.1.6 Building Downwash

Plume downwash effects caused by structures at the facility were accounted for in the modeling analyses. The Building Profile Input Program-Plume Rise and Building Downwash Model (BPIP-PRIME), Version 04274, was used by the applicant to calculate direction-specific building dimensions and Good Engineering Practice (GEP) stack height information from building dimensions/configurations and emissions release parameters The output from BPIP-PRIME was used as input to AERMOD, Version 12060, to account for building-induced downwash effects

Buildings and other structures may cause plume downwash of nearby emissions points. Modeling guidance indicates that emissions points located within "5L" of a building, where "L" is the lesser dimension of building height or projected width, may be affected by downwash. The BPIP-PRIME building analysis included all buildings in the area that could reasonably be expected to cause plume downwash.

3.1.7 Ambient Air Boundary

Chobani will lease a parcel of its property to the City of Twin Falls for the purpose of the construction and operation of a facility to pretreat wastewater from the Chobani facility. Chobani is viewed as the lessor of the Twin Falls WWPTP site and Twin Falls as the lessee. Per EPA policy on the interpretation of ambient air boundaries for leased properties Chobani's facility is considered to be located in ambient air for the WWPTP. The area enclosed by fencing for the WWPTP facility is not considered to be ambient air for the Chobani facility.

Figures 1 and 2 of the permit application contained a facility site plan. The ambient air boundary was established using fencing provided by the permittee and a section of fencing to be provided by the neighboring Chobani Idaho facility, entirely enclosing the facility. Ambient air for the WWPTP was assumed to exist exterior to the fence. The methods used to prevent public access within the ambient air boundary, meet the requirements specified in he *State of Idaho Guideline for Performing Air Quality Analyses.*

3.1.8 Receptor Network

The receptor grid used by Twin Falls met the minimum recommendations specified in the *State of Idaho Guideline for Performing Air Quality Analyses* The receptor grid was adequate to reasonably resolve the maximum modeled ambient impacts.

3.2 Emission Rates

3.2.1 Modeled Emission Rates

Emissions rates used in the dispersion modeling analyses submitted by the applicant were reviewed against those in the permit application The following approach wasused for the Twin Falls modeling demonstration:

- All modeled criteria air pollutant and TAP emissions rates were equal to or greater than the facility's emissions calculated in the PTC applicationand the permit allowable emission rates listed in the proposed air quality permit
- DEQ requested a nearby source analysis for The Amalgamated Sugar Company (TASCO) located approximately 0.7 miles to the southeast of the proposed facilityat the nearest point of each facility's property boundaries and approximately 1 mile between emission pointsfor each facility, was requested by DEQ. The nearby source analysis was limited toTASCO SO_2 emissions and the modeled emission rates for TASCO are listed above in Table4. Chobani's potential SO_2 emissions are negligible in comparison to TASCO and the WWPTP emissions.
- DEQ requested a nearby source analysis for Chobani for NOx emissions. The WWPTP will be immediately adjacent to Chobani on property leased from Chobani.

Table 7 lists the hourly SO_2, $PM_{2.5}$, and NO_x emission rates that were modeled toevaluate whether ambient impacts demonstrate compliance withthe applicable NAAQS. NO_x emission rates are total NO_x rather than NO_2. The emission rates listed in Table 7 were modeled continuously for 24 hours per day.

Emissions of PM_{10}, CO, and lead were below modeling thresholds.

Table 7. MODELED TWIN FALLS WWPTP SHORT-TERM EMISSIONS RATES

Source ID	Source Description	$PM_{2.5}$[a], 24-hour average (lb/hr)[b]	NO_x[c], 1-hour average (lb/hr)	SO_2[d], 1-hour average (lb/hr)
FLARE	Candlestick Flare	0.09	0.47	8.54
GEN	Emergency Generator	0.11	2.14	5.94E-05

a. Particulate matter with a mean aerodynamic diameter of 2.5 microns or less, including condensables.
b. Pounds per hour.
c. Nitrogen oxides.
d. Sulfur dioxide.

Table 8 lists hourly emission rates that were modeled toevaluate whether maximum impacts exceededthe significant contribution levels (SCLs)and to demonstrate compliancewith the NAAQS in the cumulative impact analysis for the annual average NO_2 NAAQS. These emission rates are total NO_x rather than NO_2. The hourly emission rates listed in Table8 were modeled continuously for 8,760 hours per year.

Table 8. MODELED TWIN FALLS WWPTP ANNUAL AVERAGE EMISSIONS RATES

Source ID	Description	NO_x[c] (lb/hr)[b]	SO_2[c] (lb/hr)
FLARE	Candlestick Flare	0.47	8.54
GEN	Emergency Generator	0.025	5.94E-05

a. Nitrogen oxides.
b. Pounds per hour.
c. Sulfur dioxide.

The carcinogenic TAP emission rates listed in Table 9 were modeled to demonstrate compliance withthe applicable acceptable ambient concentration (AACC) increments. The emission rates were modeled continuously for 8,760 hours per year without any additional restrictions on the emission rates or hours of operation. Emissions of all other TAPs were estimated to be below emissions screening levels (ELs) listed in Idaho Air Rules Sections 585 and 586, and air impact analyses were not required.

Table 9. MODELED CARCINOGENIC TOXIC AIR POLLUTANTS EMISSIONS RATES

Pollutant	Sources	
	FLARE – Candlestick Flare (lb/hr)[a]	GEN – Emergency Generator (lb/hr)
1,3–Butadiene	NA[b]	1.53E-04
Acetaldehyde	NA[b]	3.01E-03
Benzene	1.84E-03	3.66E-03
Formaldehyde	1.36E-02	4.63E-03
Naphthalene	NA[b]	3.79E-06
Total Polyaromatic Hydrocarbons	1.62E-04	1.35E-05

a. Pounds per hour.
b. Pollutant not emitted from this source.

3. 3 Emission Release Parameters

Table 10 provides emissions release parameters, including stack height, stack diameter, exhaust temperature, and exhaust velocityfor point sources at the WWPTP.

Table 10. POINT SOURCE STACK PARAMETERS

Release Point	Description	UTM[a] Coordinates, Zone 11			Stack Height (m)	Stack Gas Flow Temperature (K)[b]	Stack Gas Flow Velocity (m/sec)[c]	Stack Diameter (m)	Release Orientation[d]
		Easting (X) (m)[b]	Northing (Y) (m)	Base Elevation (m)					
FLARE	Candlestick Flare	711,876.1	4,713,405.9	1,163.1	7.26	1,273.2	20.0	0.46	Default
GEN	Emergency Generator	711,840	4,713,370	1,163.2	4.57	654.3	15.4	0.20	Default

a. Universal Transverse Mercator Coordinate System.
b. Meters.
c. Meters per second.
d. Default stack release orientation represents a vertical stack with an uninterrupted release for the exhaust stream.

The application contained a detailed explanation of the release parameters used for the emergency generator. The release parameters included conservative assumptions and justifications for the exit velocity and temperature based on a stack height of 15 feetabove base elevation.

The flare used release parameters determined using the EPA SCREEN3 guidance for candlestick flares. The effective release height and stack diameter were based on the heat release of the combusted biogas, which were used for the modeling demonstration.Exit temperature and velocity are default values in the guidance. A full load condition was the only scenario presented.

DEQ accepted the modeled exit temperatures, stack release heights, and diameters as submitted.

3.4 Results for Ambient Impact Analyses

3.4.1 Significant Impact Analyses

A significant impact analysis wasnot performed for this project Twin Falls presented a cumulative impact analysis in the PTC application.

3.4.2 Cumulative Impact Analyses

A cumulative impact analysis was performed by Twin Falls for the proposed project. The WWPTP facility's ambient impact design values based on requested potential emissions were added to the ambient background concentrations provided by DEQ The results of the impact analysis for the WWPTP alone, as submitted in the application, are listed in Table 11. Results for the cumulative impact analysis considering the ambient impacts of the TASCO facility's SO_2 ambient impacts are listed in Tables12 and 13. Results for the cumulative impact analysisconsidering the impacts of the Chobani facility's NO_2 ambient impacts are listed in Tables 14 and 15.

Table 11. RESULTS OF THE WWPTP FULL IMPACT ANALYSES

Pollutant	Averaging Period	Modeled Design Concentration ($\mu g/m^3$)[a]	Background Concentration ($\mu g/m^3$)	Total Ambient Impact ($\mu g/m^3$)	NAAQS[b] ($\mu g/m^3$)	Percent of NAAQS
$PM_{2.5}$[c]	24-hour	4.65	21.3	26.0	35	74%
	Annual	0.87	7.2	8.1	15	54%
NO_2[d]	1-hour	105.1	81.5	186.6	188	99%
	Annual	0.39[h]	24.5	24.9	100	25%
SO_2[e]	1-hour	120.8[f] (109.4)[g]	33.1	153.9[f] (142.5)[g]	196	79%[f] (73%)[g]
	Annual	6.33	2.6	8.9	80	11%

a. Micrograms per cubic meter.
b. National Ambient Air Quality Standards.
c. Particulate matter with a mean aerodynamic diameter of 2.5 microns or less, including condensables.
d. Nitrogen dioxide.
e. Sulfur dioxide.
f. The design concentration used by Twin Falls was the high first high maximum daily impact of any of the 5 years of modeling. This is a conservative approach.
g. Values in parentheses are based on the 4th high maximum daily impacts from each of the 5 years of data averaged over 5 years consistent with the EPA guidance for demonstrating compliance with the 1-hour average SO_2 NAAQS.
h. The NO_2 annual average impact is below the significant impact level of 1.0 $\mu g/m^3$, annual average. This impact assumed 100% conversion of NO_x to NO_2.

3.4.3 Nearby Source Analyses

SO_2

The cumulative TASCO and WWPTP 1-hour average SO_2 impact analyses predicted a relatively high impact at a single receptor located on the Chobani facility's property. The receptor was located approximately 115 meters to thenorthwest of the WWPTP facility fencelinenorthwestern corner. While 1-hour average SO_2 ambient impacts for these two facilities overlapped to some extent at a number of other discrete receptors where WWPTP impacts exceeded the 1hour average SO_2 significant impact level(SIL), this was the only receptor where the impacts from the proposed WWPTP were close to the NAAQS when combined with TASCO's impacts and the DEQ-approved ambient background concentration

DEQ ran a sensitivity run specifying ranks 5 through 10 of the maximum daily 1-hour average SO_2 impacts for Chobani and the WWPTP in the MAXDCONT (maximum daily contribution) table that pairs each facility's impacts in time and space. The sensitivity run in combination with the MAXDCONT run by Twin Falls for the 4th rank values, verified that the Twin Falls WWPTP impact at all other receptors that exceeded the NAAQS did not exceed the SIL of 7.8 $\mu g/m^3$, 1-hour average. The WWPTP was not predicted to have an ambient impact above the SIL at any receptor where the TASCO impacts were expected to exceed the 1-hour SO_2 NAAQS.

Ambient impacts spread over an annual averaging period were located close to each of the respective facilities. Compliance was easily demonstrated for the annual SO_2 averaging period. The WWPTP facility's impact at the TASCO's point of maximum annual average impact was well below the SIL of 1.0 $\mu g/m^3$, annual average.

Table 12. CUMULTIVE IMPACT ANALYSES FOR THE 1-HOUR AVERAGE SO_2 NAAQS

UTM[a] Coordinates		Ranking	TASCO[c] Impact[d] ($\mu g/m^3$)[e]	Twin Falls WWPTP[f] Impact[d] ($\mu g/m^3$)	Ambient Background ($\mu g/m^3$)	Total Ambient Impact ($\mu g/m^3$)	SO_2[g] 1-Hour Average NAAQS[h] ($\mu g/m^3$)
Easting (m)[b]	Northing (m)						
711,950	4,713,500	4th high	71.55	89.57	33.1	194.2	196

a. Universal Transverse Mercator coordinate system.
b. Meters.
c. The Amalgamated Sugar Company.
d. Fourth highest maximum daily impact averaged over of five years.
e. Micrograms per cubic meter.
f. Wastewater Pretreatment Plant.
g. Sulfur Dioxide.
h. National Ambient Air Quality Standard.

Table 13. CUMULATIVE IMPACT ANALYSES FOR THE ANNUAL AVERAGE SO_2 NAAQS

UTM[a] Coordinates		Ranking	TASCO[c] Impact[d] ($\mu g/m^3$)[e]	Twin Falls WWPTP[f] Impact[i] ($\mu g/m^3$)	Ambient Background ($\mu g/m^3$)	Total Ambient Impact ($\mu g/m^3$)	SO_2[g] Annual Average NAAQS[h] ($\mu g/m^3$)
Easting (m)[b]	Northing (m)						
710,900	4,712,300	1st High	15.267	0.059	2.6	17.93	80

a. Universal Transverse Mercator coordinate system.
b. Meters.
c. The Amalgamated Sugar Company.
d. Maximum impact at any receptor during any one of the 5 individual years of ambient impacts
e. Micrograms per cubic meter.
f. Wastewater Pretreatment Plant.
g. Sulfur Dioxide.
h. National Ambient Air Quality Standard.
i. Impact attributed to the WWPTP at the same receptor with the maximum impact for TASCO.

NO_2

Twin Falls analyzed the Chobani facility's NO_x emissions in combination with the WWPTP's NOx emissions to verify that the WWPTP's ambient impacts did not exceed the SIL at any location where the Chobani facility's impacts were predicted to exceed the NAAQS. The May 18, 2012 submittal used a Tier II Ambient Ratio Method to establish compliance with the 1-hour NO_2 NAAQS.

The modeling run using only the WWPTP emissions predicted there were no 1-hour or annual average NO_2 NAAQS exceedances on the Chobani facility property. Chobani is not required to evaluate ambient impacts on their own property so all receptors within the Chobani ambient air boundary were deleted. The contribution from the WWPTP facility to any predicted violation was determined using the MAXDCONT model output option that pairs each facility's impacts in location and time for NO with a 1-hour averaging period. The May 18, 2012 submittal's MAXDCONT output files verified that the WWPTP facility will not have an ambient impact exceeding the SIL of 7.5 µg/m^3, 1-hour average. All impacts from the WWPTP were negligible at those receptors where Chobani was expected to exceed the 1-hour NO_2 NAAQS. The cumulative impact analyses used the Tier II ARM compliance method, which is a more conservative approach than the Tier III Plume Volume Molar Ratio Method used in the Chobani's facility PTC modeling analysis.

Table 14. CUMULATIVE IMPACT ANALYSES FOR THE 1-HOUR AVERAGE NO_2 NAAQS

UTM[a] Coordinates		Ranking	Chobani Impact[d] (µg/m^3)[e]	Twin Falls WWPTP[f] Impact[d] (µg/m^3)	Ambient Background (µg/m^3)	Total Ambient Impact (µg/m^3)	NO_2[g] 1-Hour Average NAAQS[h] (µg/m^3)
Easting (m)[b]	Northing (m)						
712,700	4,713,900	8th high	107.2	0.010	81.5	188.7	188
712,700	4,714,000	8th high	115.0	0.006	81.5	196.5	188
712,700	4,714,100	8th high	109.8	0.008	81.5	191.3	188
712,700	4,714,000	9th high	112.7	0.008	81.5	194.2	188
712,700	4,714,100	9th high	108.0	0.007	81.5	189.5	188
712,700	4,714,000	10th high	111.4	0.003	81.5	192.9	188

a. Universal Transverse Mercator coordinate system.
b. Meters.
d. The Tier II Ambient Ratio Method 80% NO_2 to NO_x ratio has been applied to the model output.
e. Micrograms per cubic meter.
f. Wastewater Pretreatment Plant.
g. Sulfur Dioxide.
h. National Ambient Air Quality Standard.

Table 15. NEARBY SOURCE RESULTS FOR THE ANNUAL AVERAGE NO_2 NAAQS

Ranking	Chobani and Twin Falls WWPTP[a] Combined Impact[b] (µg/m^3)[c]	Ambient Background (µg/m^3)	Total Ambient Impact (µg/m^3)	NO_2[d] Annual Average NAAQS[e] (µg/m^3)
1st high	13.2[f]	24.5	37.7	100

a. Wastewater Pretreatment Plant.
b. Maximum impact at any receptor during any one of the 5 individual years of ambient impacts
c. Micrograms per cubic meter.
d. Nitrogen dioxide.
e. National Ambient Air Quality Standard.
f. Maximum impact for both facilities combined. Maximum ambient impacts attributed to each facility do not occur at the same receptor. The WWPTP's maximum annual average ambient impact is only 0.39 µg/m^3.

3.4.4 Toxic Air Pollutant Impact Analyses

Dispersion modeling for TAPs was required to demonstrate compliance with TAP increments specified by Idaho Air Rules Section 586 for carcinogenic TAPs. This project is expected to cause emission increases that exceeded the screening emission rate limits for carcinogenic TAPs only. The requested emission increases were modeled to demonstrate compliance with the allowable TAP increment and the results of the TAPs analyses are listed in Table 16. The predicted ambient TAPs impacts were below allowable increments. The maximum predicted ambient impact is compared against the allowable increment.

Naphthalene was modeled as a carcinogenic TAP regulated under Idaho Air Rules Section 585. The hourly emission rate was compared against the screening emission rate limit for benzo(a) pyrene according to DEQ policy. The maximum ambient impact was compared to the increment for benzo(a)pyrene.

At 1.9E-05 lb/hr of naphthalene, the facility-wide requested emissions for this project were below the screening emission level of 3.33 lb/hr for the case where naphthalene is also regulated as a non-carcinogenic TAP under Section 585 of the Idaho Air Rules.

Table 16. RESULTS OF TAPs ANALYSES

Toxic Air Pollutant	CAS No.[a]	Maximum Modeled Concentration ($\mu g/m^3$)[b]	AACC[c] ($\mu g/m^3$)	Percent of AACC
1,3-Butadiene	106-99-0	1.20E-03	3.6E-03	33%
Acetaldehyde	75-07-0	2.36E-02	4.5E-01	5%
Benzene	71-43-2	2.89E-02	1.2E-01	24%
Formaldehyde	50-00-0	3.73E-02	7.7E-02	48%
Naphthalene	NA	3.00E-05	3.0E-04	10%
Total Polyaromatic Hydrocarbons	NA	1.40E-04	3.0E-04	47%

a. Chemical Abstract Service Number
b. Micrograms per cubic meter,
c. Acceptable ambient concentration for carcinogens, annual average

4.0 Conclusions

The ambient air impact analysis submitted demonstrated to DEQ's satisfaction that emissions from the facility, as represented by the applicant in the permit application, will not cause or significantly contribute to a violation of any air quality standard.

APPENDIX C – FACILITY DRAFT COMMENTS

The following comments were received from the facility on July 11, 2012:

Facility Comment: Permit Condition 2.1 - change the process description to "The facility may operate up to two anaerobic digesters."

DEQ Response: This change has been made to the permit.

Facility Comment: Permit Condition 2.8 – take out the word boilers in the first bullet point.

DEQ Response: This change has been made to the permit.

APPENDIX D – PROCESSING FEE