Statement of Basis

Permit to Construct No. P-2013.0030
Project ID 61192

Magnolia Nitrogen Idaho LLC (Magnida)
American Falls, Idaho

Facility ID 077-00035

Final

April 21, 2014
Dan Pitman, P.E.
Permit Writer

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

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
BACT	Best Available Control Technology
bhp	break horsepower
Btu	British thermal units
CAA	Clean Air Act
CEMS	continuous emission monitoring systems
CERMS	continuous emission rate monitoring system
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CO	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
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
HHV	higher heating value
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometers
lb/hr	pounds per hour
MACT	Maximum Achievable Control Technology
MMBtu	million British thermal units
MMscf	million standard cubic feet
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
PAH	polyaromatic hydrocarbons
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
POM	polycyclic organic matter
ppm	parts per million
ppmw	parts per million by weight
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
PW	process weight rate
RICE	reciprocating internal combustion engines
Rules	*Rules for the Control of Air Pollution in Idaho*
scf	standard cubic feet
SCL	significant contribution limits
SIA	Significant impact analysis
SIP	State Implementation Plan

SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO_2	sulfur dioxide
SO_x	sulfur oxides
T/day	tons per calendar day
T/hr	tons per hour
T/yr	tons per consecutive 12 calendar month period
TAP	toxic air pollutants
U.S.C.	United States Code
VOC	volatile organic compounds
$\mu g/m^3$	micrograms per cubic meter

FACILITY INFORMATION

Description

Magnolia Nitrogen Idaho LLC ("Magnida") is proposing to construct a new complex for manufacturing nitrogen based fertilizers from natural gas. The facility will produce ammonia, granulated urea, urea ammonium nitrate (UAN), and Diesel Exhaust Fluid (DEF) for commercial sale.

Ammonia

Natural gas and steam are reacted in a reformer to produce hydrogen and carbon dioxide. This gas is then purified by removing the carbon dioxide then cryogenically condensing out excess nitrogen. The remaining hydrogen and nitrogen is combined, over an iron catalyst at high pressure, to synthesize ammonia. This process is called the "Haber" process. The plant will have the capacity to produce 2,500 tons per day of ammonia. The ammonia may be sold or used to produce urea, nitric acid or aqueous ammonium nitrate.

<u>Ammonia Synthesis</u>

$$CH_4 + H_2O \rightarrow 3H_2 + CO$$

$$CO + H_2O \rightarrow CO_2 + H_2$$

$$N_2 + 3H_2 \rightarrow 2NH_3$$

Urea

Urea is produced by reacting ammonia with carbon dioxide that is obtained from the synthetic gas purification process. Two chemical reactions are necessary to produce urea.

<u>Urea Production Chemical Reactions</u>

1st Reaction: $2NH_3 + CO_2 \rightarrow (H_2N)\text{-}COONH_4$

2nd Reaction: $(H_2N)\text{-}COONH_4 \rightarrow CO(NH_2)_2 + H_2O$

The Urea Plant will have the capacity to produce 4,100 tons per day in a liquid solution.

Nitric Acid

Nitric acid is produced by reacting ammonia with oxygen from air over a catalyst at elevated pressure and temperature. The nitric acid plant is capable of producing 1,000 tons per day.

<u>Nitric Acid Production</u>

Overall Reaction: $NH_3 + 2\ O_2 \rightarrow HNO_3 + H_2O$

Ammonium Nitrate

Aqueous ammonium nitrate is produced by reacting nitric acid with ammonia. Production capacity is 1,300 tons per day.

<u>Ammonium Nitrate Production</u>

HNO3 + NH3 → NH4NO3

Urea Ammonium Nitrate

Urea ammonium nitrate is produced by combining aqueous solutions of ammonium nitrate and urea. Production capacity is 2,900 tons per day.

Granulated Urea

Urea solution is granulated by injecting it into a fluidized bed with seed particles. The sprayed urea will solidify, growing a granule. The urea granulation unit will have a capacity of 4,100 tons per day.

Diesel Exhaust Fluid

Diesel exhaust fluid is a urea based solution. The urea produced at the facility is treated to reduce the amount of ammonia entrained in the solution. That purified urea solution is then diluted with water to reduce the urea concentration to 32.5%. Production capacity is 1,050 tons per day.

Combustion Sources

The facility will include the following combustion sources:

- Reformer Heater – 1,170 MMBtu/hr, natural gas fired
- Ammonia/Urea Process Flare – 1.5 MMBtu/hr (Pilot), natural gas fired
- Ammonia Storage Flare – 0.75 MMBtu/hr (Pilot), natural gas fired
- Ammonia Plant Start-up Heater – 27 MMBtu/hr, natural gas fired (limited use, < 100 hr/yr.)
- Package Boiler – 275 MMBtu/hr, natural gas fired
- Emergency Generator Engine – 2,900 bhp, fuel oil
- Fire Water Pump Engine – 500 bhp, fuel oil

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 facility has proposed to construct and operate a facility to produce nitrogen based fertilizer from natural gas.

Application Chronology

April 26, 2013	DEQ received an application and an application fee.
June 24, 2013	DEQ determined that the application was incomplete.
November 1, 2013	DEQ received supplemental information from the applicant.
December 2, 2013	DEQ determined that the application was complete.
January 29, 2014	DEQ made available the draft permit for applicant review.
February 13, 2014	DEQ made available the draft permit and statement of basis for peer and regional office review.
March 5 – April 4, 2014	DEQ provided a public comment period on the proposed action.
April 2, 2014	DEQ provided a public hearing in American Falls.
April 17, 2014	DEQ received the permit processing fee.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Sources	Control Equipment/Restrictions
Reformer Heater: -Natural Gas Fired -1,170 MMBtu/hr	Selective Catalytic Reduction (NO_x control), good combustion practices and efficient use of energy.
Ammonia/Urea Process Flare -Natural Gas Pilot 1.5 MMBtu/hr	Flaring of process gases is limited to startup/shutdown (7 events per year), and upset breakdown conditions
Ammonia Storage Flare -Natural Gas Pilot 0.75 MMBtu/hr	Ammonia emissions only occur during upset/breakdown conditions
MDEA Stripper Strips CO_2 from MDEA	None
Sulfuric Acid Storage Tanks MDEA Tank Nitric Acid Tank UAN Tank UF-85 Tank DEF Tank Diesel Fuel Tanks (2) Gasoline Tank	Fixed roof storage tank
Nitric Acid Plant Capacity of 1,000 T/day	Selective Catalytic Reduction (NOx control) –Must comply with NSPS NO_x limits.
Ammonium Nitrate Plant Capacity of 1,300 T/day	Process condenser and wet scrubber
Urea Granulation Capacity of 4,100 T/day	Wet Scrubber
Granulated Urea Loadout	Fabric Filter
Ammonia Plant Startup Heater: -Natural Gas Fired -27 MMBtu/hr	None –hours of operation limited to 100 hr/yr. at maximum capacity.
Package Boiler: -Natural Gas Fired -275 MMBtu/hr	Low NO_x burners and Flue Gas Recirculation (FGR), good combustion practices and efficient use of energy. Annual tune-up of boiler required.
Diesel Engines: -Emergency Generator Engine, 2,900 bhp, fuel oil -Fire Water Pump Engine – 500 bhp, fuel oil	None – Emergency use except for minimal use during readiness testing, also must comply with New Source Performance Standards
Cooling Towers Wastewater Treatment Plant Process Cooling Tower	Drift Eliminators
Sulfuric Acid Storage Tanks MDEA Tank Nitric Acid Tank UAN Tank UF-85 Tank DEF Tank Diesel Fuel Tanks (2)	Fixed roof storage tank
Plant Roads	Paving roads and road sweeping

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. A summary of the facility's potential to emit criteria air pollutants and greenhouse gases submitted by the Applicant and reviewed by the Department is given in Table 2. See the application for a detailed presentation of the calculations and the assumptions used to determine emissions for each emissions unit.

Table 2 POTENTIAL TO EMIT FOR CRITERIA & GREEHNOUS GAS 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						
Ammonia Plant Reformer Heater	38.2	3.0	59.3	102.5	7.7	599,597
Ammonia/Urea Process Flare (pilot)	0.049	0.004	0.447	2.431	0.035	769
Ammonia/Urea Process Flare (startup/shutdown)	0.1	0.1	5.8	6.3	0.1	11,103
Ammonia Storage Flare (pilot)	0.024	0.002	0.223	1.215	0.018	384
Ammonia Plant MDEA Stripper	-	-	-	9.13	10.038	1,163,438
Ammonia Plant Start-up Heater	0.037	0.001	0.13	0.112	0.007	160
Sulfuric Acid Tanks	1.2E-05	-	-	-	-	-
Amine (aMDEA) Tank	-	-	-	-	0.000	-
Nitric Acid Tail Gas Vent	-	-	91.25	-	-	22,813
Nitric Acid Tank	-	-	0.03	-	-	-
AN Neutralizer Vent	3.08					
Urea Plant Melt Vent	-	-	-	-	-	1,366
Urea Granulation Vent	89.8/71.8	-	-	-	13.0	-
Urea Loadout Vent	1.872	-	-	-	-	-
UF-85 Storage Tank	-	-	-	-	0.312	-
DEF Storage Tank	-	-	-	-	0.0	-
UAN Storage Tanks (4)	-	-	-	-	2.0E-05	-
Emergency Generator Engine	0.025	0.027	0.980	0.434	0.048	87.2
Fire Water Pump Engine	0.009	0.009	0.172	0.149	0.065	30.1
Package Boiler	8.975	0.709	12.045	18.068	6.495	140,931
WWTP Cooling Tower	0.004/0.000	-	-	-	-	-
Process Cooling Tower (all 7 cells)	1.99/0.012	-	-	-	-	-
Diesel Fuel Tank - Fire Pump	-	-	-	-	4.0E-05	-
Diesel Fuel Tank - Generator	-	-	-	-	2.9E-04	-
Gasoline Tank	-	-	-	-	3.8E-01	-
Total, Point Sources	**144.1/124.2**	**3.8**	**170.4**	**140.3**	**38.2**	**1.94E6**
Fugitive Sources						
Source	**$PM_{10}/PM_{2.5}$ T/yr**	**SO_2 T/yr**	**NOx T/yr**	**CO T/yr**	**VOC T/yr**	**CO_2e T/yr**
NH_3 Plant Equipment Leaks	-	-	-	-	20.42	-
Urea Process Equipment Leaks	-	-	-	-	23.87	-
Plant Roads	4.5/1.11	-	-	-	-	-
Total, Fugitive Sources	**4.5/1.11**	**0.00**	**0.00**	**0.00**	**44.29**	**0.00**
Total Potential to Emit	**148.6/125.3**	**3.8**	**170.4**	**140.3**	**82.5**	**1.94E6**

The following table presents the uncontrolled Potential to Emit for HAP pollutants as submitted by the Applicant and reviewed by the Department. See the application for a detailed presentation of the calculations and the assumptions used to determine emissions for each emissions unit. The maximum individual HAP Potential to Emit was determined to be 22 tons per year (methanol), the total HAP emissions were determined to be 34.1 tons per year.

Table 3 POTENTIAL TO EMIT FOR HAZARDOUS AIR POLLUTANTS

Hazardous Air Pollutants	PTE (T/yr)
1,3-Butadiene	7.1E-06
Acetaldehyde	1.5E-04
Acrolein	2.1E-05
Arsenic	1.2E-03
Benzene	1.3E-02
Beryllium	7.4E-05
Cadmium	6.7E-03
Chromium	8.6E-03
Cobalt	5.1E-04
Dichlorobenzene	7.4E-03
Formaldehyde	6.5E-01
Hexane	1.1E+01
Manganese	2.3E-03
Mercury	1.6E-03
Methanol	2.2E+01
Naphthalene	3.8E-03
Nickel	1.3E-02
Selenium	1.5E-04
Toluene	2.1E-02
Xylenes	1.5E-04
POM	5.7E-4
Total	**34.1**

TAP Emissions

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

Table 4 POTENTIAL TO EMIT FOR TOXIC AIR POLLUTANTS

Pollutant	Total (lb/hr)	Screening Emission Level (lb/hr)	Exceeds Screen?
1,3-Butadiene	1.6E-06	2.4E-05	No
2-Methylnaphthalene	3.4E-05	9.1E-05	No
3-Methylchloranthrene	2.5E-06	9.1E-05	No
7,12-Dimethylbenz(a)anthracene	2.2E-05	9.1E-05	No
Acenaphthene	3.1E-06	9.1E-05	No
Acetaldehyde	3.5E-05	3.0E-03	No
Acrolein	4.8E-04	1.7E-02	No
Ammonia	5.2E+02	1.2E+00	Yes
Anthracene	3.6E-06	9.1E-05	No
Arsenic	2.8E-04	1.5E-06	Yes
Barium	1.4E-02	3.3E-02	No
Benzene	3.1E-03	8.0E-04	Yes
Benz(a)anthracene	0.0E+00	9.1E-05	No
Benzo(a)anthracene	2.7E-06	9.1E-05	No
Benzo(a)pyrene	1.7E-06	2.0E-06	No
Benzo(b)fluoranthene	2.7E-06	9.1E-05	No
Benzo(g,h,l)perylene	8.7E-08	9.1E-05	No
Benzo(k)fluoranthene	2.6E-06	9.1E-05	No
Beryllium	1.7E-05	2.8E-05	No
Cadmium	1.5E-03	3.7E-06	Yes
Chromium	2.0E-03	5.6E-07	Yes
Chrysene	2.7E-06	9.1E-05	No
Cobalt	2.6E-04	3.3E-03	No

Copper	2.6E-03	1.3E-02	No
Dibenzo(a,h)anthracene	1.75E-06	9.1E-05	No
Dichlorobenzene	3.7E-03	2.0E+01	No
Ethyl benzene	0.0E+00	2.9E+01	No
Fluoranthene	5.0E-06	9.1E-05	No
Formaldehyde	1.5E-01	5.1E-04	Yes
Hexane	5.6E+00	1.2E+01	No
Nitric acid	1.4E-01	3.3E-01	No
Indeno(1,2,3-cd)pyrene	2.6E-06	9.1E-05	No
Manganese	1.2E-03	6.7E-02	No
Methanol	5.1E+00	1.7E+01	No
Molybdenum	3.4E-03	3.3E-01	No
N_2O	2.4E+01	6.0E+00	Yes
Naphthalene	8.7E-04	9.1E-05	Yes
Nickel	2.9E-03	2.7E-05	Yes
Pentane	8.0E+00	1.2E+02	No
Phenanthrene	3.0E-05	9.1E-05	No
Propylene oxide	0.0E+00	3.2E+00	No
Pyrene	7.6E-06	9.1E-05	No
Sulfuric Acid	4.7E-02	6.7E-02	No
Selenium	7.4E-05	1.3E-02	No
Toluene	1.8E-02	2.5E+01	No
Vanadium	7.1E-03	3.0E-03	Yes
Xylenes	4.9E-03	2.9E+01	No
Zinc	9.0E-02	6.7E-01	No
POM (7-PAH)	1.84E-05	2.00E-06	Yes

a) Polycyclic Organic Matter (POM – 7 PAH) is considered as one TAP comprised of: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indeno(1,2,3-cd)pyrene, benzo(a)pyrene. The total is compared to benzo(a)pyrene.

Estimated emissions of ammonia, arsenic, benzene, cadmium, chromium, formaldehyde, nitrous oxide, naphthalene, nickel, vanadium and the 7-PAH group exceeded their respective toxic air pollutant screening emissions levels. The estimated emissions of these pollutants were modeled and it was determined that ambient impacts are below each of their acceptable ambient concentrations listed in IDAPA 58.01.01.585 & 586.

Ambient Air Quality Impact Analyses

As presented in the Modeling Memo in Appendix A, the estimated emission of criteria and toxic air pollutants from this project were determined to cause ambient impacts less than the acceptable standards.

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 or exceed allowable air quality deterioration increments. 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.

The Ambient Air Impact Analysis for TAP in Appendix A provides that ammonia emissions cause an ambient concentration that is 73% of the acceptable ambient concentration. However, during permit development two additional sources of ammonia emissions were added to the permit. An ammonia emission rate limit equaling 10% of the screening emission rate for ammonia (0.12 lb/hr) was added to the Urea Ammonium Nitrate plant and the Granulated Urea Load-out building. These additional permitted emission rates will cause ambient concentrations less than of 20% of the acceptable ambient concentration (10% for each source). These conservatively determined additional ammonia impacts when added to the impacts shown in Appendix A result in an ambient concentration less than 93% of the acceptable ambient concentration for ammonia.

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is proposed to be located in Power County, in an area that is designated as attainment or unclassifiable for PM_{10}, $PM_{2.5}$, SO_2, NO_2, CO, lead and ozone. Refer to 40 CFR 81.313 for additional information.

Facility Classification

The AIRS/AFS facility classification codes are as follows:

A Actual or potential emissions of a pollutant are greater than or equal to the applicable major source threshold.

SM Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

SM80 Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations and permitted emissions are 80% of the major source threshold.

B Uncontrolled potential to emit is less than major facility thresholds.

C Class is unknown.

Table 5 REGULATED AIR POLLUTANT FACILITY CLASSIFICATION - MAGNIDA

Pollutant	Uncontrolled PTE (T/yr)	PTE (T/yr)	Major Source Thresholds (T/yr)	AIRS/AFS Classification
PM	> 100	172.4	100	A
$PM_{10}/PM_{2.5}$	> 100	148.6/125.3	100	A
SO_2	<100	3.8	100	B
NO_x	>100	170.4	100	A
CO	>100	140.3	100	A
VOC	>100	82.5	100	SM80
CO_2e	>100,000	1.94E6	100,000	A
HAP (single)	>10	22	10	A
HAP (Total)	>25	34.1	25	A

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201 ....Permit to Construct (PTC) Required

The permittee has requested that a PTC be issued to the facility for the proposed new emissions source. In accordance with IDAPA 58.01.01.201 "No owner or operator may commence construction or modification of any stationary source, facility, major facility, or major modification without first obtaining a permit to construct from the Department which satisfies the requirements of Sections 200 through 228 unless the source is exempted in any of Sections 220 through 223…" The source is a proposed new major facility and does not qualify for an exemption; therefore a PTC is required prior to commencing construction.

Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.625 ....Visible Emissions

The sources of particulate emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity.

Standards for New Sources (IDAPA 58.01.01.676)

IDAPA 58.01.01.676 .... Standards for New Sources

The fuel burning equipment located at this facility, with a maximum rated input of ten (10) million BTU per hour or more, are subject to a particulate matter limitation of 0.015 gr/dscf of effluent gas corrected to 3% oxygen by volume when combusting gaseous fuels. Fuel-Burning Equipment is defined as any furnace, boiler, apparatus, stack and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer. All proposed fuel burning equipment combusts gaseous fuels and will inherently be in compliance with the grain loading emission limit of this standard.

Rules for the Control of Odors (IDAPA 58.01.01.775)

IDAPA 58.01.01.775................................ Rules for the Control of Odors

Section 775 of the rules specifies that sources must comply with the General Rules for odors Section 776.01:

> **General Restrictions.** 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.

This restriction on odors has been included in the permit. The permittee is also required to maintain records of all odor complaints received. The permittee shall take appropriate corrective action as expeditiously as practicable. The records shall include, at a minimum, the date that each complaint was received and a description of the following: the complaint, any corrective action taken, and the date the corrective action was taken.

Particulate Matter – New Equipment Process Weight Limitations (IDAPA 58.01.01.701)

IDAPA 58.01.01.701 .... Particulate Matter – New Equipment Process Weight Limitations

For equipment that commenced operation on or after October 1, 1979, the PM allowable emission rate (E) is based on one of the following four equations:

IDAPA 58.01.01.701.01.a: If PW is $< 9{,}250$ lb/hr; $E = 0.045\ (PW)^{0.60}$

IDAPA 58.01.01.701.01.b: If PW is $\geq 9{,}250$ lb/hr; $E = 1.10\ (PW)^{0.25}$

Equipment used in the urea granulation process and granulated urea handling and load out will be subject to this standard. Emissions from the granulation process are controlled by a wet scrubber and emissions from handling and load out of granulated urea are controlled by a baghouse. All process equipment will be in compliance with process weight rate emission standards.

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

IDAPA 58.01.01.301 .... Requirement to Obtain Tier I Operating Permit

Facility-wide emissions from this facility have a potential to emit greater than 100 tons per year (PM_{10}, $PM_{2.5}$, NO_x, CO), 10 tons per year for any one HAP, and greater than 100,000 tons per year of greenhouse gases as demonstrated previously in the Emissions Inventories Section of this analysis. Therefore, this facility is classified as a major facility, as defined in IDAPA 58.01.01.008.10. In accordance with IDAPA 58.01.01.313.01.b, the permittee must submit a complete application to DEQ for an initial Tier I operating permit within 12 months of becoming a Tier I source or commencing operation.

PSD Classification (40 CFR 52.21)

40 CFR 52.21 .... Prevention of Significant Deterioration of Air Quality

The proposed facility is classified major stationary source, because the estimated emissions of PM, PM_{10}, $PM_{2.5}$, NO_x, CO and greenhouse gases have the potential to exceed major stationary source thresholds. The facility is designated facility as defined in 40 CFR 52.21(b)(1)(i)(a). It is a chemical processing plant that includes a nitric acid plant, both of which are listed as a designated facility.

The prevention of significant deterioration requirements apply to regulated New Source Review (NSR) air pollutants.

Best Available Control Technology (40 CFR 52.21(j))

In accordance with 40 CFR 52.21(j)(2) a new major stationary source shall apply best available control technology (BACT) for each regulated NSR pollutant that it would have the potential to emit in significant amount. The pollutants which Magnida proposes to emit in significant amounts are summarized in Table 6.

Table 6 POLLUTANTS SUBJECT TO BACT

Pollutant	Significant Emission Rate (T/yr)	Proposed Emission Rate (T/yr.)
PM	25	148.6
PM_{10}	15	148.6
$PM_{2.5}$	10	125.3
NO_x	40	170.4
CO	100	140.3
VOC	40	82.5
GHG	75,000	1.9E6

Best available control technology is defined by 40 CFR 52.21(b)(12) as "an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under Act which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR parts 60 and 61. If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results.

BACT analyses are made on a case-by-case analysis considering energy, environmental, and economic impacts associated with each control technology. It is the applicant's responsibility to submit a BACT analysis. The supplied BACT analysis was conducted using the "Top-Down Methodology". In the top down approach:

- all available control technologies with a practical potential for application to the emission unit are identified;
- technically infeasible options are eliminated;
- remaining control technologies are ranked by control effectiveness;
- evaluate energy, environmental, and economic impacts associated with the control;
- select BACT - if the most effective control option is not selected determine what the next most effective control option is that has not been eliminated.

DEQ's responsibility is to review the applicant's BACT analysis and determine whether the applicant's proposed limits represent BACT. As part of this review, DEQ:

- Conducted online reviews of recent BACT determinations for comparable processes at other facilities listed in EPA's RBLC[1].

1 RACT/BACT/LAER Clearinghouse (RBLC), http://cfpub1.epa.gov/RBLC/

- Reviewed permit information on other similar projects that have recently been permitted. For example, DEQ reviewed recent BACT determinations for three very similar facilities, two in Iowa[2] and one in Indiana[3].

A summary of the supplied BACT analysis and DEQ's determination of what constitutes BACT follows. More detail is provided in the summaries found below for the higher emitting emission units than for the lower emitting units. The complete BACT analysis may be seen in the application materials.

Ammonia Plant Primary Reformer Heater

The ammonia plant 1,170 MMBtu/hr primary reformer heater is fired on gaseous fuel (natural gas and recycled process gases containing primarily H_2 and CO).

Table 7 Ammonia Plant Primary Reformer Heater BACT Limits

Pollutant	BACT Emission Limitation	Control Type
$PM/PM_{10}/PM_{2.5}$	0.0075 lb/MMBtu, 38.2 T/yr	Good Combustion Practices
NO_x	-0.013 lb/MMBtu, daily rolling 30 day average excluding startup, shutdown, and malfunction as measured by a CEM -0.013 lb/MMBtu, daily rolling 365 day average with no exclusions as measured by a CEM	Low NO_x burner and Selective Catalytic Reduction
CO	0.0194 lb/MMBtu, based on a three test run average	Good Combustion Practices
VOC	0.0015 lb/MMBtu, , based on a three test run average	Good Combustion Practices
GHG	599,022 T/yr CO_2e basis as determined by a CEM	Energy Efficiency, including generation of high pressure steam from excess heat

<u>$PM/PM_{10}/PM_{2.5}$</u>

Particulate matter emissions from combusting gaseous fuel in the primary reformer heater will pose minimal environmental impact. Add on particulate matter controls would provide negligible benefit to an already inherently low emitting source.

The State of Iowa recently issued two permits[4] with numerically lower particulate matter emission rate limits (0.0024 lb/MMBtu). Though the numerical limits in the Iowa permits are lower than the limit proposed by Magnida (0.0075 lb/MMBtu), the actual emissions from the sources are expected to be similar. All these units employee good combustion practices to achieve emission standards. Magnida asserts that the Iowa limits cannot be met for the life of the unit as is required by BACT emission limits. The Iowa limits were established based on the 95% confidence interval on two tests conducted on one emission unit. That is, for a 95% confidence interval, if many samples are collected and the confidence interval computed, in the long run about 95% of these intervals would contain the true mean of the population. The BACT limit must be met at all times and the 0.0024 lb/MMBtu limit is not representative of expected emissions at all times. Regardless, particulate matter emissions from combustion of gaseous fuel are expected to be small and DEQ accepts Magnida's proposed particulate matter BACT limit of 0.0075 lb/MMBtu. Ohio Valley, LLC was issued a PSD permit by the Indiana Department of Environmental Management on September 25, 2013 that includes an equivalent reformer PM_{10} and $PM_{2.5}$ emission limit of 7.6 lb/MMCF (i.e. 0.0075 lb/MMBtu).

<u>NOx</u>

Magnida asserts that an 0.013 lb/MMBtu NO_x emission standard, achieved by employing low NO_x burners and SCR, satisfies the BACT criteria for the maximum degree of reduction achievable taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source. DEQ is not aware of more stringent BACT emission standards and accepts Magnida's proposed BACT limit.

2 Iowa Fertilizer Company (PSD permit issued 10/26/12), and CF Industries Nitrogen, LLC – Port Neal Complex (PSD permit issued 7/12/13)
3 Ohio Valley Resources, LLC (PSD permit issued 9/25/13 by the State of Indiana)
4 Iowa Fertilizer Company (PSD permit issued 10/26/12), and CF Industries Nitrogen, LLC – Port Neal Complex (PSD permit issued 7/12/13)

Iowa Fertilizer Company's PSD permit (issued 10/26/12) includes a 9 ppm_v NO_x emission standard. However, since this standard does not include any provision for correcting the CEMS data to dry basis or to a reference level for a diluent (e.g., O_2 or CO_2) the Iowa permit does not limit the mass emission rate such that it can be compared to the proposed mass based emission standard of 0.013 lb/MMBtu. Similarly, Ohio Valley, LLC was issued a PSD permit by the Indiana Department of Environmental Management on September 25, 2013 that included a 9 ppm_{vd} NOx limit without a reference level for a diluent. In the technical support document for the Ohio Valley, LLC permit it is stated that the 9 ppm_{vd} limit is based on a NOx emission rate of 0.0126 lb/MMBtu which is for all practical purposes equivalent to Magnida's proposed 0.013 lb/MMBtu limit.

VOC & CO

CO and VOC are emitted from the Primary Reformer Heater as a result of incomplete fuel combustion. Because emissions of both of these pollutants are generally addressed by the same control techniques, this subsection presents the BACT analyses for both CO and VOC emissions.

Oxidation catalysts are a well-known control technology for CO and VOC emissions and have been widely applied on natural gas-fired combined cycle gas turbines. The oxidation of CO and VOC to CO_2 and H_2O utilizes excess air present in the combustion exhaust, and the activation energy required for the reaction to proceed is lowered in the presence of a catalyst. Products of combustion are introduced into a catalytic bed, with the optimum temperature range for these systems being approximately 850 °F to 1,100 °F. No chemical reagent addition is required.

The typical oxidation catalyst for CO and VOC control is rhodium or platinum (noble metal) catalyst on an alumina support material. This catalyst is installed in an enlarged duct or reactor with flue gas inlet and outlet distribution plates. Acceptable catalyst operating temperatures range from 400 to 1250 °F, with the optimal range being 850 to 1,100 °F.

While the use of an oxidation catalyst is theoretically possible, it has not been demonstrated in practice on reformer heaters in ammonia plants or similar process heaters. Without reheating the primary reformer exhaust stream, the minimum temperature for an oxidation catalyst cannot be achieved. Reheating the exhaust stream will require additional natural gas combustion, resulting in increased emissions. Creating additional emissions of NO_X and particulate matter in order to reduce the already minimized emissions of CO and VOC from the Primary Reformer Heater is not appropriate.

Given the unique nature of the primary reformer operations, recent BACT determinations (all based on good combustion control), and the relatively large exhaust flow rate from the Primary Reformer Heater, an oxidation catalyst is considered technically infeasible for this application.

Based on the above review, good combustion control is the only technically feasible control strategy for CO and VOC emissions from the Primary Reformer Heater.

Magnida proposed a CO BACT limit of 0.020 lb/MMBtu. However, DEQ is aware of slightly lower CO BACT emission limit of 0.0194 lb/MMBtu that is included in two recently issued PSD permits[5] in Iowa. Therefore DEQ is establishing 0.0194 lb/MMBtu as the CO BACT limit.

Greenhouse Gases (GHG)

As do all units combusting fossil fuels, the Primary Reformer Heater will emit three GHG's: methane (CH_4), carbon dioxide (CO_2), and nitrous oxide (N_2O). All fossil fuels, including natural gas, contain carbon, and the majority of the heat released comes from the oxidation of this fuel carbon content to form CO_2. Methane from the combustion of fossil fuels is a product of incomplete combustion of the fossil fuel and is emitted in much smaller quantities. Trace quantities of N_2O are generated by oxidation of fuel nitrogen content and of nitrogen in the air used for combustion.

There are four broad strategies for reducing GHG emissions from combustion sources such as the Primary Reformer Heater:

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5 Iowa Fertilizer Company (PSD permit issued 10/26/12), and CF Industries Nitrogen, LLC – Port Neal Complex (PSD permit issued 7/12/13)

- Energy efficiency;
- Lower carbon fuel and feedstock;
- Complete combustion; and
- Carbon Capture and Sequestration ("CCS").

An aggressively energy-efficient reformer design in conjunction with an integrated energy management system and good operating and maintenance practices allows the required amount of energy to be delivered to the process to be less, thereby reducing emissions of GHG collectively and each greenhouse gas individually. Because natural gas is the single largest variable cost to Magnida's production operations and because the Magnida facility is in the commodity business of producing fertilizers and other commodity chemicals, there is a fundamental economic incentive to maximize the energy efficiency of the production operations, and in particular the primary reformer design. Energy efficiencies that are part of the plants design are detailed in the application, they include the following:

- Purge gases from the ammonia plant will be combusted in the reformer heater instead of being flared which recovers what would have been otherwise lost energy.
- Magnida will employ an efficient steam system in which high pressure steam is generated from the excess heat. This high pressure steam will be used to power steam turbines driving the synthesis gas compressor.
- Steam generated in the plant, mainly from waste heat, will be used to drive the refrigeration compressor (which is needed for condensation of the ammonia product) and to power the compressor used for pressurizing process air in the secondary reforming step.

Relative to other fossil fuels, the use of natural gas as a fuel and feedstock yields lower emissions of GHG collectively and each greenhouse gas individually. This GHG reduction measure is inherent in the design of the Primary Reformer.

The third control strategy for reducing GHG emissions involves measures designed to achieve more complete combustion, thereby ensuring complete oxidation of the CH_4 in fuel to form CO_2. Good combustion practices that maximize both combustion efficiency and energy efficiency, such as furnace and burner design and maintenance practices for good air/fuel mixing, are the primary measures implemented under this control strategy. These combustion practices have already been proposed as the basis for the BACT limits for emissions of particulate matter, CO, and VOC.

Permanent CO_2 sequestration has not been commercially demonstrated as a GHG control technique and significant technical and legal uncertainties remain. Magnida does not consider this to be a technically feasible GHG control option in the context of determining BACT for the Magnida facility. Nonetheless, in order to ensure that this BACT analysis is conservative, RTP has assumed that CCS using sequestion in depleted oil and gas reservoirs in southwestern Wyoming is technically feasible and has subjected it to an economic review. Because CCS has been determined not to represent BACT for GHG emissions from the MDEA Stripper due to unreasonable costs and adverse energy and economic impacts (see the MDEA BACT discussion), and because the costs and adverse impacts of CCS for the Primary Reformer Heater are proportionally much greater due to the need for a capture system, CCS also does not represent BACT for this heater.

DEQ has established the GHG BACT limit at 599,022 T/yr CO2e basis as determined by a CEM. This limitation is equivalent to the GHG BACT limit of 59.61 T/MMCF for Ohio Valley's reformer heater in the 9/25/13 PSD permit issued by the State of Indiana, and is also equivalent to the BACT limit in the Iowa Fertilizer Company's PSD permit issued 10/26/12.

Ammonia/Urea Process Flare

The Ammonia/ Urea Process Flare are designed to operate constantly with a 1.5 MMBtu/hr natural gas fired pilot flame present at all times. Process gases will only be vented to the elevated, open flare for limited time periods and only during startup, shutdown and malfunction. Establishing emission rate limits to the flare is not practical because source testing of the flare by currently accepted source test methods is not possible. Per the definition of

BACT upon a determination "… that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology." Therefore BACT for the flare has been established as the following operational practices:

- Excluding periods of malfunctions, venting to the flare shall be limited to 7 calendar days per any consecutive 12 calendar months and 12 hours per calendar day;
- The facility shall conduct a root cause analysis and implement corrective actions following any flaring event attributable to malfunction; and
- The flare shall comply with the no visible emissions standard and all other requirements in 40 CFR §60.18 applicable to non-assisted flares.

Ammonia Storage Flare

The Ammonia Storage Flare is designed to operate constantly with a 0.75 MMBtu/hr natural gas fired pilot flame present at all times. Only releases resulting from malfunctions of ammonia storage system will vent to the Ammonia Storage Flare. Establishing emission rate limits to the flare is not practical because source testing of the flare by currently accepted source test methods is not possible. Per the definition of BACT upon a determination "… that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology." Therefore BACT for the flare has been established as the following operational standards:

- Venting to the flare shall not occur except during malfunctions; and
- The facility shall conduct a root cause analysis and implement corrective actions following any flaring event attributable to malfunction.

Ammonia Plant MDEA Stripper

Methyl diethanolamine (MDEA) is used to scrub CO_2 from the shifted process gas prior to the use of that gas in synthesis of ammonia in the Ammonia Plant, and the MDEA is then regenerated in a stripper tower at low pressure and higher temperature. The regeneration process yields a CO_2 stream with 99.8 percent purity (on a dry basis). The stream includes trace quantities of CO and VOC.

Table 7 MDEA Stripper BACT Limits

Pollutant	Ohio Valley Resources Permitting Authority – Indiana Permit Date – 9/25/13	Iowa Fertilizer Permitting Authority – Iowa DNR Permit Date – 10/26/12	Magnida Proposed Standards
CO	0.0117 lb/TNH_3, based on a three test run average	0.020 lb/TNH_3, based on a three test run average	0.020 lb/TNH_3, based on a three test run average
VOC	0.0558 lb /TNH_3, based on a three test run average	0.106 lb /TNH_3, based on a three test run average	0.022 lb /TNH_3, based on a three test run average
GHG	2,550 lb /TNH_3 annual average based on a CEM	2,520 lb /TNH_3 30 day rolling average	2,550 lb /TNH_3 annual average based on a CEM

Magnida's proposed BACT standards are included in Table 7. The most recent BACT permit limits for this type of source are also listed in the table. Neither Ohio Valley Resources nor Iowa Fertilizer has started operation. The Ohio Valley Resources permit includes a CO limit of 0.0117 lb/ton of ammonia. KBR (Kellogg, Brown & Root, Inc.) the vender for the CO_2 stripper at Ohio Valley Resources plant will not guarantee[6] the Ohio Valley Resources plant will meet the CO limit of 0.0117 lb/ton of ammonia and DEQ is not aware that any plant is actually achieving a CO limit of less than 0.02 lb/ton of ammonia. These two facts lead DEQ to accept Magnida's proposed CO standard of 0.020 lb/ton of ammonia, which is equivalent to the Iowa Fertilizer permit limit. The most recent Ohio Valley Resources permit limits GHG emissions to 2,550 lb/TNH_3 which is equivalent to Magnida's proposed limit; DEQ accepts that limit as BACT. Magnida's proposed VOC limit is less than any known limit and DEQ accepts that limit as BACT.

The details of Magnida's GHG BACT determination may be seen in the application materials. In summary Magnida identifies Carbon Capture and Storage (CCS) as a potentially available option to limit CO_2 emissions. Permanent CO_2 sequestration has not been commercially demonstrated as a GHG control technique and significant technical and legal uncertainties are involved with CCS. Therefore Magnida does not consider this to be a technically feasible GHG control option. However, as of April 2011, nine pilot-scale CCS projects were in operation in China, Europe, and the United States. These projects are delivering important insights regarding the prospects for large-scale commercial application of CCS, including the costs of such projects. In light of the existence of pilot-scale CCS projects and the information being generated by those projects, and in order to ensure that this BACT analysis is conservative, Magnida has assumed that CCS using sequestion in depleted oil and gas reservoirs in southwestern Wyoming is technically feasible solely for the purpose of subjecting it to the economic impacts analysis.

Magnida estimated that the annualized cost of CCS to be approximately $26 million per year, or approximately $24 per ton of CO_2 sequestered. Because CCS has not been required as BACT for any project nationally, there is no precedent for determining the costs that are reasonable for CCS as a GHG emission control strategy in the context of a BACT analysis. In the absence of such precedent, market values of these reductions have been used for comparison. Currently, the market price of carbon credits traded on the European Union ("EU") Emissions Trading System ("ETS") is approximately $5.70[7] per short ton. Based on these values, the cost of CCS for the MDEA Stripper exhaust gas stream is not reasonable.

Ammonia Plant Start-up Heater

The Ammonia Plant includes a natural gas-fired startup heater, with heat input capacity of 27 MMBtu/hr (HHV), for heating the synthesis catalyst upon introduction of a new batch of catalyst and following process shutdowns. This heater will be used infrequently; total operation will not exceed 100 hours per year.

Due to limited hours of operation and corresponding low annual pollutant emission rates[8] control technologies, including low NO_x burners, are too costly on a dollar per ton of pollutant controlled basis. For example Magnida estimated that the application of a low-NO_x burner results in a control costs of approximately $60,000 per ton of NO_x controlled. The proposed BACT standard for this emission unit is a work practice requirement – use of pipeline natural gas as fuel. DEQ accepts the proposed standard.

Sulfuric Acid Storage Tanks

Small quantities of sulfuric acid vapor may be emitted from the Sulfuric Acid Storage Tanks as gases are displaced from the tank. These emissions are considered to be condensable particulate matter. Emissions estimates are less than 0.01 tons per year. These emissions are environmentally insignificant and DEQ accepts Magnida's proposed BACT work practice standard is to utilize tanks with a fixed-roof design to store sulfuric acid.

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6 January 20, 2014 letter from JBR to Joseph McCarthy, Magnolia Nitrogen Idaho

7 $4.25 per short ton of carbon was the price included in Magnida's application received April 26, 2013. On August 15, 2013 the credit was worth 4.30 euros per metric ton, or $5.70 per short ton.

8 The maximum emission rate of any pollutant is 0.13 T/yr (NOx).

Under the definition of BACT when it is determined that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Cost and technical difficulties of measuring these relatively insignificant emissions of particulate matter would be excessive therefore an operational standard is acceptable.

Facility-wide sulfuric acid mist emissions are less than 0.01 ton per year which is well below the 7 tons per year PSD significance level therefore BACT is not required for sulfuric acid mist.

Organic Liquid Storage Tanks

Magnida's facility will include the following storage tanks:

Table 7 MDEA Stripper BACT Limits

Tank Contents	VOC PTE (tpy)*
Amine (aMDEA)	<0.01
UF-85 Resin	0.31
DEF	<0.01
UAN (4 tanks)	<0.01
Diesel Fuel	<0.01
Diesel Fuel	<0.01
Gasoline	0.38

* Without controls.

Magnida proposes that a fixed-roof design be established as BACT for VOC emissions from each of the tanks listed in Table 7. Total VOC emissions from all of these tanks combined is less than 0.75 tons per year and DEQ accepts Magnida's proposed BACT standard. Under the definition of BACT when it is determined that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Cost and technical difficulties of measuring these relatively insignificant emissions of particulate matter would be excessive therefore an operational standard is acceptable.

Nitric Acid Tail Gas Vent

NO_x

Nitric acid production is initiated by mixing anhydrous ammonia vapor with compressed air and then reacting the mixture in the presence of a catalyst to produce a gas stream containing a high concentration of nitrogen oxide. The nitrogen oxide rich gas is cooled in a waste heat boiler to recover energy, converted to nitrogen dioxide, and then further cooled before entering the absorption tower where nitrogen oxides are absorbed in water to produce nitric acid. Nearly all of the nitrogen oxides formed in the process are recovered as product acid. However, a small fraction of the NO_2 generated in the process is emitted in gas stream leaving the process (Tail Gas Vent).

Magnida identified selective catalytic reduction (SCR) and non-nonselective catalytic reduction (NSCR) as technically feasible control options. Magnida asserts that each control option offers the same level of emission reduction, but ultimately selected SCR as the control option with a proposed BACT limit of 0.5 lb NOx per ton of nitric acid, 30 day rolling average. DEQ accepts this proposed BACT limit. This emission level is equivalent to the recently promulgated New Source Performance Standards (NSPS) for Nitric Acid Plants that commence construction after October 14, 2011.

The NSPS standard for NOx emissions from nitric acid plants that are constructed prior to October 14, 2011 is 3.0 lb/T of nitric acid (HNO_3), which is a substantially higher emission rate than the updated New Source Performance Standard (0.5 lb/THNO_3) that applies to units constructed after October 14, 2011. In developing the recently updated NOx emissions standard EPA was required by Section 111 of the Clean Air Act[9] to develop standards that reflect the application of the best system of emission reductions (BSER) which (taking into consideration the cost of achieving such emission reductions, any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated. This level of control has sometimes been referred to as ''best demonstrated technology''. In publishing this recently promulgated standard EPA stated[10] that SCR, the technology proposed by Magnida to achieve the BACT standard, "…achieves lower emissions than other control technologies;" and noted that "…that SCR is the only known NO_X control technology being installed in new NAPUs [nitric acid plants] and SCR has been determined to be BACT in several recent BACT determinations." In short, on October 14, 2011 EPA determined that the level of NOx emissions from nitric acid plants that reflects the use of the ''best demonstrated technology'' is 0.5 lb/$THNO_3$, 30 day rolling average.

Prior to the promulgation of the October 14, 2011 NSPS standard for nitric acid plants no NOx BACT limits were found that are more stringent than the updated NSPS NOx standard of 0.5 lb/$THNO_3$. Two PSD permits are known to have been issued for nitric acid plants after promulgation of the updated NSPS standard. The most recent BACT NOx limit for a nitric acid plant was established in the Ohio Valley Resources, LLC PSD permit issued in Indiana on September 25, 2013. The Ohio Valley Resources, LLC NOx BACT limit is established identical to the recently updated NSPS limit (0.5 lb/T HNO_3), and is equivalent to Magnida's proposed BACT limit.

The other BACT NOx limit for a nitric acid plant was established in the Iowa Fertilizer PSD permit issued by the State of Iowa on October 26, 2012. The Iowa Fertilizer nitric acid plant BACT NOx limits are 30 tons per year (12 month rolling average, including periods of startup, shutdown, or malfunction (SSM)) and 5 ppm_v (30 day rolling average not including periods of SSM). The State of Iowa established these BACT limits based upon a review of information on a nitric acid plant manufacturer's webpage (i.e. Uhde). Magnida argued that establishing BACT based on marketing materials provided on Uhde's webpage is not a valid method of establishing BACT and stated these limits cannot be met. Magnida contacted Uhde directly in order to obtain a NOx emission rate guarantee for nitric acid plants. Uhde provided that it is not in a position to guarantee a more stringent emission rate limit than the 0.5 lb/T, 30 day rolling average for all periods of operation (which is equivalent to the NSPS limit). This Uhde guarantee is inconsistent with the 30 tons per 12 month rolling average limit in in the Iowa Fertilizer permit. Regarding the 5 ppm_v concentration limit (30 day rolling average, not including periods of SSM) in the Iowa Fertilizer permit DEQ was not able to determine whether this concentration limit is on a dry basis or whether a diluent correction is applied. The diluent concentration and whether the limit is on a wet or dry basis are necessary in order to compare emission standards.

Considering the facts that:

- the 5 ppm_v concentration limit in the Iowa Fertilizer permit does not limit mass emission rate (it does not have a moisture content correction or diluent correction); and
- neither Uhde or Wetherly (another supplier of nitric acid plants) provided Magnida with a guarantee to meet either NOx limit in the Iowa Fertilizer permit; and
- Magnida's proposed BACT limit is consistent with the recently promulgated NSPS emission limit (that is based on the "best demonstrated technology"); and
- the most recent BACT determination, in the Ohio Valéry Resources permit, is 0.5 lb/T HNO_3;

leads DEQ to accept Magnida's proposed nitric acid plant NOx BACT limit of 0.5 lb/ $THNO_3$, 30 day rolling average.

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9 Section 111of the Clean Air Act grants authority for development of New Source Performance Standards (NSPS).
10 Federal Register/Vol. 77, No. 157/ Tuesday, August 14, 2012 page 48436

N_2O

N_2O emissions from the nitric acid plant are regulated as greenhouse gases (GHG) on a carbon dioxide equivalent basis (CO_2e). Two nitric acid plants PSD permits are known to have been issued since greenhouse gas became a regulated new source review pollutant subject to PSD requirements. The most recent BACT greenhouse gas limit for a nitric acid plant was established in the Ohio Valley Resources, LLC PSD permit issued in Indiana on September 25, 2013. That limit is expressed as 1.05 lb N_2O per ton of nitric acid (3-hour average), which is equivalent to 325.5 lb CO_2e per ton of nitric acid.

The other nitric acid plant GHG PSD limit was established in the Iowa Fertilizer PSD permit issued by the State of Iowa on October 26, 2012. This permit limits N_2O emissions to a concentration of 30 ppm_v and requires a 98% reduction of N_2O emissions. Iowa established these BACT limits based upon a review of information on a nitric acid plant manufacturer's (i.e. Uhde) webpage. Notably, Iowa Fertilizer, after consulting with Uhde, commented on these limits during the permitting process stating there are technical and economic concerns regarding continuous compliance with these emission limits indicating that permit amendments are likely required. Magnida argued that establishing BACT based on marketing materials provided on Uhde's webpage is not a valid method of establishing BACT and that the limits cannot be met.

Magnida has proposed a GHG, or CO_2e, emission limit of 125 lb per ton of nitric acid (annual average). This limit is significantly more stringent than the most recent BACT limit in the Ohio Valley Resources permit. DEQ accepts Magnida's proposed BACT limit.

Nitric Acid Tank

NOx

Estimated NOx emissions from the proposed fix roof nitric acid storage tank are estimated to be 0.03 tons per year. Costs of control options were determined to be significant on a dollar per ton of pollutant controlled basis ($14,959 - $37,475/ton NOx) and DEQ accepts Magnida's proposed BACT work practice standard of storing nitric acid in a fixed roof tank.

Under the definition of BACT when it is determined that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Cost and technical difficulties of measuring these relatively insignificant emissions of particulate matter would be excessive therefore an operational standard is acceptable.

Ammonium Nitrate Neutralizer

Magnida proposed a particulate matter (PM, PM_{10} & $PM_{2.5}$) BACT limit of 0.013 pounds per ton of ammonium nitrate (AN) produced. Total estimated emissions are estimated to be 3.01 tons per year. Particulate matter emission will be controlled by a condenser and wet scrubber.

The proposed BACT limit of 0.013 pounds per ton of AN is accepted as BACT. This limit is for all practical purposes equivalent to the lowest known BACT limit. Ohio Valley, Resources', LLC was issued the most recent PSD permit on September 25, 2013 for an ammonium nitrate plant, it includes a PM, PM_{10} & $PM_{2.5}$ BACT limit of 0.0128 pounds per ton of ammonium nitrate (AN) produced. The Pryor Chemical Company in Oklahoma was issued a PSD permit in 2009 with a BACT limit of 0.217 pounds per ton of AN, and Southeast Idaho Energy was issued a PSD permit in 2009 with a PM BACT limit equivalent to 0.050 pounds per ton of AN.

Urea Plant Melt Vent

Urea melt is a liquid solution of urea that is used to produce granulated urea. The only expected new source review air pollutant from this source is carbon dioxide at an expected rate of 2.7 pounds per ton of urea produced, or 1,366 tons per year. Under the definition of BACT when it is determined that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Cost of measuring these relatively insignificant emissions of carbon dioxide would be excessive therefore an operational standard is acceptable. Magnida proposed that proper equipment design and operation is BACT for carbon dioxide emissions. DEQ accepts Magnida's proposal.

Urea Granulation

Fabric filters, electrostatic precipitators, and cyclone separators are not technically feasible for use with exhaust streams in which the particulate matter is viscid and hygroscopic, which is the case with the Urea Granulator. Use of a fabric filter would result in the filter material becoming irreversibly blinded; similarly, charging wires/plates in an ESP and internal surfaces of an inertial separator would quickly become plugged with urea dust. These control options are not applicable to urea granulation. The only identified, technically feasible control strategy is the use of a wet scrubber. This is consistent with two recent[11] control technologies selected to achieve BACT emission standards for particulate matter emissions from urea granulation processes.

EPA's BACT/LAER Clearinghouse and recent PSD permits were reviewed for particulate matter emission standards for urea granulation processes. Table 8 summarizes these determinations along with Maginda's proposed emission standards.

Table 8 BACT Particulate Matter Determinations and Magnida's Proposed Standards

	CF Industries **Permitting Authority – Iowa DNR** **Permit Date – 7/12/13**	**Iowa Fertilizer** **Permitting Authority – Iowa DNR** **Permit Date – 10/26/12**	**Koch Nitrogen Co.** **Permitting Authority – Oklahoma DEQ** **Permit Date – 5/1/08**	**Magnida Proposed Standards**
PM BACT Standard (lb/T)	0.11[1]	0.2[1]	-	0.12[1]
PM_{10} BACT Standard (lb/T)	0.11[1]	0.2[1]	0.102[2]	0.12[1]
$PM_{2.5}$ BACT Standard (lb/T)	0.108[1]	0.05[1]	-	0.096[1]

1) Based on a three test run average.
2) Based on a visible emission evaluation.

The particulate matter BACT standards issued in the two Iowa Permits, CF Industries and Iowa Fertilizer, are different even though the permits were issued by the same permit authority within one year of each other. As can be seen in Table 8 the most recent of these two permits, issued to CF Industries, includes lower PM and PM_{10} BACT standards and a higher $PM_{2.5}$ BACT standard showing that Iowa DNR changed its determination on what constitutes BACT for Urea Granulators. Eliminating the BACT determination on the Iowa Fertilizer Facility as Iowa did in issuing the subsequent permit, then determining the most stringent remaining numerical emission standards results in the following standards (as underlined in Table 8):

- PM - 0.11 lb/T (CF Industries)
- PM_{10} - 0.102 lb/T (Koch Nitrogen Co.)
- $PM_{2.5}$ - 0.096 lb/T (Magnida proposed standard)

11 Iowa Fertilizer Company (PSD permit issued 10/26/12), and CF Industries Nitrogen, LLC – Port Neal Complex (PSD permit issued 7/12/13)

In assessing the stringency of emissions standards listed above the measurement method specified by the standard must be considered. The CF Industries standard and the Magnida proposed standards are expressed as determined by a three test run average. However, the Koch permit expresses that compliance with the 0.102 lb/T PM_{10} emission standard is determined by a visible emission observation. In effect the Koch PM_{10} emission standard is a visible emission standard because that is the compliance determination method specified by the permit. Visible emission observations are incapable of determining emission rates as precise as expressed by the Koch numerical emission limit therefore the next most stringent practically enforceable numerical PM_{10} limit of 0.11 lb/T is selected by DEQ as the PM_{10} BACT emission standard.

DEQ has determined that the particulate matter BACT emission standards for the Urea Granulation Process are as follows (as determined by three run test average):

- PM - 0.11 lb/T
- PM_{10} - 0.11 lb/T
- $PM_{2.5}$ - 0.096 lb/T

<u>VOC</u>

Volatile organic compounds (VOCs) from the Urea Granulation process result primarily from the use of UF-85, a urea granule stabilizing substance. Magnida has proposed a VOC BACT standard of 0.017 pounds per ton of granulated urea. There is one other known VOC BACT emission standard established on a urea granulator process. EPA's BACT Clearinghouse has an entry for CF Industries, listing a July 12, 2013 PSD BACT VOC standard of 0.05 pounds per ton of urea. Magnida's proposed emission standard is significantly more stringent than that listed in the BACT Clearinghouse for CF Industries. DEQ accepts Magnida's proposed emission standard. Compliance is determined on a 3 test run average.

Urea Loadout

Magnida proposed a Urea Loadout particulate matter (PM, PM_{10} and $PM_{2.5}$) BACT limit of 0.005 gr/dscf, and will achieve this standard by the use of a baghouse or other type of fabric filter.

Iowa DNR recently issued two PSD permits which included granulated urea load-out operations. The Iowa Fertilizer permit includes a BACT limit equivalent to 0.005 grains per dry standard cubic foot and the CF Industries PSD permit includes a particulate matter visible emission standard expressed as no visible emission present. Both facilities will achieve the BACT standard using a baghouse.

DEQ accepts Magnida's proposed particulate matter BACT limit of 0.005 gr/dscf. Compliance will be determined based on 3 test run average. DEQ's standard permit language for fabric filters requires that corrective action shall be taken if any visible emissions are present.

Urea Equipment Leaks

The Urea Plant and portions of the UAN and DEF production processes include piping and associated connectors, valves, pumps, and other components for movement of liquid urea. These components are potential sources of VOC emissions due to leakage from rotary shaft seals, connection interfaces, valve stems, and similar points.

Equipment in VOC service in the Urea Plant will be an affected facility subject to the emission standards under 40 CFR part 60, subpart VVa. The work practice standards at 40 CFR § 60.482-1a through § 60.482-11a, particularly the leak detection and repair ("LDAR") program for equipment in heavy liquid service at § 60.482-8a, represent the least stringent emission standards which would meet BACT requirements for equipment leaks in the Urea Plant.

Two potential enhancements to the baseline LDAR program requirements have been identified:

- Lower definition of a "leaking" component threshold concentration, as measured at the potential leak interface. This has the effect of accelerating or broadening the repair obligations for leaking components to include components that would not otherwise require repair under subpart VVa.

- Extension of the LDAR program requirements applicable under subpart VVa to equipment in VOC service in the UAN or DEF production processes. This has the effect of broadening the repair obligations for leaking components to include components that would not otherwise require repair under subpart VVa.

These enhancements are technically feasible, will not result in any adverse energy or environmental impacts, and are included in the work practices proposed as BACT for VOC emissions due to equipment leaks.

Equipment design or work practice requirements are acceptable under the definition of BACT when technological or economic limitations on the application of measurement methodology would make the imposition of an emissions standard infeasible. That criterion is met with respect to VOC emissions from equipment leaks. Magnida proposes that work practice requirements be established as BACT for VOC emissions from equipment leaks at the Magnida facility. Specifically, the proposed BACT requirement is an LDAR program with the following provisions:

- Comply with work practice standards at 40 CFR § 60.482-1a through § 60.482-11a, as applicable, for all equipment in VOC service in the Urea Plant and in the UAN and DEF production processes.
- Notwithstanding the leak definition at § 60.482-8a(b)[12], attempt and complete repair as required by § 60.482-8a(c) and (d) if an instrument reading of 2,000 ppmv or greater for a pump seal or 500 ppmv or greater for valves, connectors, instrumentation systems, and pressure relief devices is measured.

Diesel Engines

<u>NOx, VOC, CO & PM</u>

The Magnida facility will include one emergency generator with a rated output of 2,000 kWe and one emergency fire water pump with a rated output of 500 brake horsepower ("bhp"). This emergency equipment will be powered by compression-ignition, internal combustion engines. Normal planned operation will be limited to periodic readiness testing.

Both emergency diesel engines will be affected facilities subject to the standards for emergency engines under subpart IIII of 40 CFR part 60. The minimum standards that would meet BACT requirements for NO_X and VOC emissions from these engines are as follows:

- The emergency generator engine, pursuant to 40 CFR §§ 60.4205(b) and 60.4202(a)(2), will be required to meet the combined NO_X and non-methane hydrocarbons emission standard established for nonroad engines of the same model year pursuant to § 89.112. This emission standard is a specification of 6.4 grams per kilowatt hour ("g/kWh"), as determined by the engine manufacturer using the nonroad engine testing procedures set forth at 40 CFR §§ 89.401 to 89.424.
- The fire water pump engine, pursuant to 40 CFR §§ 60.4205(c), will be required to meet the combined NO_X and non-methane hydrocarbons emission standard established for nonroad engines of the same model year pursuant to Table 4 of subpart IIII. The emission standard is a specification of 3.0 g/bhp hr, as determined by the engine manufacturer using the nonroad engine testing procedures set forth at 40 CFR §§ 89.401 to 89.424 and at Table 4 of subpart IIII.

The internal combustion engines at the Magnida facility will be certified by the equipment manufacturers to meet the applicable emission standards for nonroad, compression-ignition engines, as codified in subpart IIII and at 40 CFR § 89.112. Due to the very low emissions from these sources, the fact that they will operate only intermittently, and the availability of engines that are certified to achieve this emission level, and considering the nature of the certification test procedure for the nonroad engine emission standards, Magnida proposes that an equipment design standard rather than an emission rate limit is an appropriate form of expression for the PM, NO_X and VOC BACT requirements for these engines. DEQ accepts Magnida's proposal.

<u>GHG</u>

12 Standards for Pumps, valves, and connectors in heavy liquid service and pressure relief devices in light liquid or heavy liquid service.is10,000 ppm threshold is specified by 60.482-8a(b)

There are no applicable NSPS or NESHAP rules that would establish a baseline emission rate for GHG emissions from either of the emergency diesel engines at the Magnida facility.

Magnida calculated an emission rate of 22.6 lb per gallon, on a CO2e basis, with compliance to be demonstrated using the procedures of 40 CFR § 98.33. DEQ accepts Magnida's proposed estimated emissions as BACT.

Package Boiler

The Package Boiler will provide steam for process heating needs throughout the Magnida facility. This boiler will burn only pipeline natural gas and will have a heat input capacity of 275 MMBtu/hr (HHV basis).

PM

A total PM emission limit of 0.0075 lb/MMBtu heat input (HHV) is representative of good combustion and operational practices and is proposed as BACT for PM, PM_{10}, and $PM_{2.5}$ emissions from the Package Boiler. DEQ accepts Magnida's proposed PM BACT standard.

NOx

The proposed NO_X emission limits representing BACT are as follows:

- 2.75 lb/hr, based on an hourly average, with no exclusion for periods of startup, shutdown, or malfunction; and
- 0.0125 lb/MMBtu heat input (HHV), based on a daily rolling 365-day average, with no exclusion for periods of startup, shutdown, or malfunction.

The emission standard is achieved through the use of low NOx combustion technology and flue gas recirculation. These proposed technologies, and the proposed BACT emission standard of 0.0125 lb/MMBtu, is consistent with a recent BACT determination for a package boiler supporting a nitrogen fertilizer production facility (Iowa Fertilizer PSD permit issued October 26, 2012) and is more stringent than the limit of 0.02 lb/MMBtu which is the most recent BACT limit in the September 25, 2013 Ohio Valley Resources permit. DEQ accepts the proposed NOx BACT standard.

CO & VOC

The proposed limits representing BACT for CO and VOC emissions from the Package Boiler are as follows:

- Maximum CO emission rate of 0.015 lb per MMBtu, based on a three stack test average; and
- Maximum VOC emission rate of 0.0054 lb per MMBtu, based on a three stack test average.

These limits are consistent or more stringent than recent BACT CO and VOC emission limits established for package boilers. Magnida is not aware of any more stringent limits achieved in practice. DEQ accepts Magnida's proposed CO and VOC BACT standards.

GHG

The proposed limit representing BACT for GHG emissions from the Package Boiler is 142,000 tpy on a CO_2e basis. Compliance will be demonstrated using a CO_2 continuous emissions monitoring system ("CEMS") in conjunction with fuel consumption data and emission factors for CH_4 and N_2O developed from stack testing or using the emission factors in 40 CFR 98, subpart C. DEQ accepts Magnida's proposed BACT standard.

The GHG emissions from the Package Boiler are substantially less than the evaluated GHG emissions rate from the Primary Reformer Heater, and they are both substantially less than and much more dilute than those from the MDEA Stripper. The GHG emissions from the Package Boiler are therefore less cost-effective to control.

Because CCS has been determined not to represent BACT for GHG emissions from the MDEA Stripper and Primary Reformer Heater due to unreasonable costs and adverse energy and economic impacts, and because the costs and adverse impacts of CCS for the Package Boiler are proportionally much greater due to the smaller size and the need for a capture system, CCS also does not represent BACT for this boiler.

Cooling Towers

The Magnida facility will include two wet cooling towers of mechanical forced-draft design: a 7-cell Process Cooling Tower with a nominal capacity of 121,000 gallons per minute (EU UT05) and a 1-cell WWTP Cooling Tower with a nominal capacity of 985 gallons per minute (EU UT04). Particulate matter is emitted from wet cooling towers due to the presence of dissolved solids in water droplets that drift from the cooling tower. As a droplet that drifts from the tower evaporates, the total dissolved solids ("TDS") present in the droplet agglomerates into a single particle. The size of the resulting particle depends on the size of the droplet, the mass of the dissolved solids present in the droplet, and the density of the resulting particle.

Equipment design or work practice requirements are acceptable under the definition of BACT when technological or economic limitations on the application of measurement methodology would make the imposition of an emissions standard infeasible. That criterion is met with respect to particulate matter emissions from the cooling towers due to their physical configuration. DEQ accepts Magnida's proposal that a work practice requirement – use of drift eliminators with a maximum drift rate specification of 0.0005 percent or less from the plant cooling tower and 0.001 percent from the WWTP – be established as BACT for particulate matter emissions from each cooling tower.

Plant Roads

Although much of the material that moves in and out of the Magnida facility will be transported by rail, the project will also include the construction and use of plant roads primarily for product shipment. Truck traffic on plant roadways is a potential source of fugitive particulate matter emissions.

Equipment design or work practice requirements are acceptable under the definition of BACT when technological or economic limitations on the application of measurement methodology would make the imposition of an emissions standard infeasible. That criterion is met with respect to emissions from the Plant Roads due to their physical configuration and the nature of their emissions.

Magnida proposes that the following work practices be established as BACT for particulate matter emissions from Plant Roads at the facility:

- Paving of all plant roads that will be used for raw material and product transport.
- Implementation of a road sweeping and monitoring program. Specifically, road sweeping will be implemented on an as-needed basis determined through visual observation of emissions associated with truck movements on the plant site.

DEQ accepts Magnida's proposed BACT standard.

NSPS Applicability (40 CFR 60)

40 CFR Part 60, Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units

In accordance with 40 CFR 60.40b(a), the affected facility to which this subpart applies is each steam generating unit that commences construction, modification, or reconstruction after June 19, 1984, and that has a heat input capacity from fuels combusted in the steam generating unit of greater than 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/hr)).

The 275 MMBtu/hr Package Boiler will be an affected facility under subpart Db. Because the boiler combusts only natural gas, the only applicable provisions are those relating to NO_X emissions, including the emission standard at 40 CFR § 60.44b(l) and the monitoring requirements at § 60.49b.

40 CFR Part 60, Subpart Ga - Standards of Performance for Nitric Acid Plants for Which Construction, Reconstruction, or Modification Commenced After October 14, 2011

In accordance with 40 CFR 60.70a(a & b), this subpart is applicable to any facility producing weak nitric acid by either the pressure or atmospheric pressure process and which commenced construction after October 14, 2011.

The 1,000 ton per day Nitric Acid Plant will be an affected facility subject to the provisions of subpart Ga, notably the NO_X emission standard at 40 CFR § 60.72a and the monitoring requirements at § 60.73a. However, all of the provisions of this Subpart are applicable to Magnida. Following are the provisions that apply with the major provisions underlined.

§ 60.70a Applicability and designation of affected facility.

(a) The provisions of this subpart are applicable to each nitric acid production unit, which is the affected facility.

(b) This subpart applies to any nitric acid production unit that commences construction or modification after October 14, 2011.

§ 60.71a Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act and in subpart A of this part.

Affirmative defense means, in the context of an enforcement proceeding, a response or defense put forward by a defendant, regarding which the defendant has the burden of proof, and the merits of which are independently and objectively evaluated in a judicial or administrative proceeding.

Monitoring system malfunction means a sudden, infrequent, not reasonably preventable failure of the monitoring system to provide valid data. Monitoring system failures that are caused in part by poor maintenance or careless operation are not malfunctions. You are required to implement monitoring system repairs in response to monitoring system malfunctions or out-of-control periods, and to return the monitoring system to operation as expeditiously as practicable.

Nitric acid production unit means any facility producing weak nitric acid by either the pressure or atmospheric pressure process.

Operating day means a 24-hour period beginning at 12:00 a.m. during which the nitric acid production unit operated at any time during this period.

Weak nitric acid means acid which is 30 to 70 percent in strength.

§ 60.72a Standards.

Nitrogen oxides. On and after the date on which the performance test required to be conducted by § 60.73a(e) is completed, you may not discharge into the atmosphere from any affected facility any gases which contain NO_X, expressed as NO_2, in excess of 0.50 pounds (lb) per ton of nitric acid produced, as a 30-day emission rate calculated based on 30 consecutive operating days, the production being expressed as 100 percent nitric acid. The emission standard applies at all times.

§ 60.73a Emissions testing and monitoring.

(a) General emissions monitoring requirements. You must install and operate a NO_X concentration (ppmv) continuous emissions monitoring system (CEMS). You must also install and operate a stack gas flow rate monitoring system. With measurements of stack gas NO_X concentration and stack gas flow rate, you will determine hourly NO_X emissions rate (e.g., lb/hr) and with measured data of the hourly nitric acid production (tons), calculate emissions in units of the applicable emissions limit (lb/ton of 100 percent acid produced). You must operate the monitoring system and report emissions during all operating periods including unit startup and shutdown, and malfunction.

(b) Nitrogen oxides concentration continuous emissions monitoring system. (1) You must install, calibrate, maintain, and operate a CEMS for measuring and recording the concentration of NO_X emissions in accordance with the provisions of § 60.13 and Performance Specification 2 of Appendix B and Procedure 1 of Appendix F of this part. You must use cylinder gas audits to fulfill the quarterly auditing requirement at section 5.1 of Procedure 1 of Appendix F of this part for the NO_X concentration CEMS.

(2) For the NO_X concentration CEMS, use a span value, as defined in Performance Specification 2, section 3.11, of Appendix B of this part, of 500 ppmv (as NO2). If you emit NO_X at concentrations higher than 600 ppmv (e.g., during startup or shutdown periods), you must apply a second CEMS or dual range CEMS and a second span value equal to 125 percent of the maximum estimated NO_X emission concentration to apply to the second CEMS or to the higher of the dual analyzer ranges during such periods.

(3) For conducting the relative accuracy test audits, per Performance Specification 2, section 8.4, of Appendix B of this part and Procedure 1, section 5.1.1, of Appendix F of this part, use either EPA Reference Method 7, 7A, 7C, 7D, or 7E of Appendix A-4 of this part; EPA Reference Method 320 of Appendix A of part 63 of this chapter; or ASTM D6348-03 (incorporated by reference, see § 60.17). To verify the operation of the second CEMS or the higher range of a dual analyzer CEMS described in paragraph (b)(2) of this section, you need not conduct a relative accuracy test audit but only the calibration drift test initially (found in Performance Specification 2, section 8.3.1, of Appendix B of this part) and the cylinder gas audit thereafter (found in Procedure 1, section 5.1.2, of Appendix F of this part).

(4) If you use EPA Reference Method 7E of Appendix A-4 of this part, you must mitigate loss of NO2 in water according to the requirements in paragraphs (b)(4)(i), (ii), or (iii) of this section and verify performance by conducting the system bias checks required in EPA Reference Method 7E, section 8, of Appendix A-4 of this part according to (b)(4)(iv) of this section, or follow the dynamic spike procedure according to paragraph (b)(4)(v) of this section.

(i) For a wet-basis measurement system, you must measure and report temperature of sample line and components (up to analyzer inlet) to demonstrate that the temperatures remain above the sample gas dew point at all times during the sampling.

(ii) You may use a dilution probe to reduce the dew point of the sample gas.

(iii) You may use a refrigerated-type condenser or similar device (e.g., permeation dryer) to remove condensate continuously from sample gas while maintaining minimal contact between condensate and sample gas.

(iv) If your analyzer measures nitric oxide (NO) and nitrogen dioxide (NO2) separately, you must use both NO and NO2 calibration gases. Otherwise, you must substitute NO2 calibration gas for NO calibration gas in the performance of system bias checks.

(v) You must conduct dynamic spiking according to EPA Reference Method 7E, section 16.1, of Appendix A-4 of this part using NO2 as the spike gas.

(5) Instead of a NO_X concentration CEMS meeting Performance Specification 2, you may apply an FTIR CEMS meeting the requirements of Performance Specification 15 of Appendix B of this part to measure NO_X concentrations. Should you use an FTIR CEMS, you must replace the Relative Accuracy Test Audit requirements of Procedure 1 of appendix F of this part with the validation requirements and criteria of Performance Specification 15, sections 11.1.1 and 12.0, of Appendix B of this part.

(c) Determining NO_X mass emissions rate values. You must use the NO_X concentration CEMS, acid production, gas flow rate monitor and other monitoring data to calculate emissions data in units of the applicable limit (lb NO_X /ton of acid produced expressed as 100 percent nitric acid).

(1) You must install, calibrate, maintain, and operate a CEMS for measuring and recording the stack gas flow rates to use in combination with data from the CEMS for measuring emissions concentrations of NO_X to produce data in units of mass rate (e.g., lb/hr) of NO_X on an hourly basis. You will operate and certify the continuous emissions rate monitoring system (CERMS) in accordance with the provisions of § 60.13 and Performance Specification 6 of Appendix B of this part. You must comply with the following provisions in (c)(1)(i) through (iii) of this section.

(i) You must use a stack gas flow rate sensor with a full scale output of at least 125 percent of the maximum expected exhaust volumetric flow rate (see Performance Specification 6, section 8, of Appendix B of this part).

(ii) For conducting the relative accuracy test audits, per Performance Specification 6, section 8.2 of Appendix B of this part and Procedure 1, section 5.1.1, of Appendix F of this part, you must use either EPA Reference Method 2, 2F, or 2G of Appendix A-4 of this part. You may also apply Method 2H in conjunction with other velocity measurements.

(iii) You must verify that the CERMS complies with the quality assurance requirements in Procedure 1 of Appendix F of this part. You must conduct relative accuracy testing to provide for calculating the relative accuracy for RATA and RAA determinations in units of lb/hour.

(2) You must determine the nitric acid production parameters (production rate and concentration) by installing, calibrating, maintaining, and operating a permanent monitoring system (e.g., weigh scale, volume flow meter, mass flow meter, and tank volume) to measure and record the weight rates of nitric acid produced in tons per hour. If your nitric acid production rate measurements are for periods longer than hourly (e.g., daily values), you will determine average hourly production values, tons acid/hr, by dividing the total acid production by the number of hours of process operation for the subject measurement period. You must comply with the following provisions in (c)(2)(i) through (iv) of this section.

(i) You must verify that each component of the monitoring system has an accuracy and precision of no more than ±5 percent of full scale.

(ii) You must analyze product concentration via titration or by determining the temperature and specific gravity of the nitric acid. You may also use ASTM E1584-11 (incorporated by reference, see § 60.17), for determining the concentration of nitric acid in percent. You must determine product concentration daily.

(iii) You must use the acid concentration to express the nitric acid production as 100 percent nitric acid.

(iv) You must record the nitric acid production, expressed as 100 percent nitric acid, and the hours of operation.

(3) You must calculate hourly NO_X emissions rates in units of the standard (lb/ton acid) for each hour of process operation. For process operating periods for which there is little or no acid production (e.g., startup or shutdown), you must use the average hourly acid production rate determined from the data collected over the previous 30 days of normal acid production periods (see § 60.75a).

(d) Continuous monitoring system. For each continuous monitoring system, including NO_X concentration measurement, volumetric flow rate measurement, and nitric acid production measurement equipment, you must meet the requirements in paragraphs (d)(1) through (3) of this section.

(1) You must operate the monitoring system and collect data at all required intervals at all times the affected facility is operating except for periods of monitoring system malfunctions or out-of-control periods as defined in Appendix F, sections 4 and 5, of this part, repairs associated with monitoring system malfunctions or out-of-control periods, and required monitoring system quality assurance or quality control activities including, as applicable, calibration checks and required zero and span adjustments.

(2) You may not use data recorded during monitoring system malfunctions or out-of-control periods, repairs associated with monitoring system malfunctions or out-of-control periods, or required monitoring system quality assurance or control activities in calculations used to report emissions or operating levels. You must use all the data collected during all other periods in calculating emissions and the status of compliance with the applicable emissions limit in accordance with § 60.72a(a).

(e) Initial performance testing. You must conduct an initial performance test to demonstrate compliance with the NO_X emissions limit under § 60.72a(a) beginning in the calendar month following initial certification of the NO_X and flow rate monitoring CEMS. The initial performance test consists of collection of hourly NO_X average concentration, mass flow rate recorded with the certified NO_X concentration and flow rate CEMS and the corresponding acid generation (tons) data for all of the hours of operation for the first 30 days beginning on the first day of the first month following completion of the CEMS installation and certification as described above. You must assure that the CERMS meets all of the data quality assurance requirements as per § 60.13 and Appendix F, Procedure 1, of this part and you must use the data from the CERMS for this compliance determination.

§ 60.74a Affirmative defense for violations of emission standards during malfunction.

In response to an action to enforce the standards set forth in § 60.72a, you may assert an affirmative defense to a claim for civil penalties for violations of such standards that are caused by malfunction, as defined at 40 CFR 60.2. Appropriate penalties may be assessed, however, if you fail to meet your burden of proving all of the requirements in the affirmative defense. The affirmative defense shall not be available for claims for injunctive relief.

(a) To establish the affirmative defense in any action to enforce such a standard, you must timely meet the reporting requirements in paragraph (b) of this section, and must prove by a preponderance of evidence that:

(1) The violation:

(i) Was caused by a sudden, infrequent, and unavoidable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner; and

(ii) Could not have been prevented through careful planning, proper design or better operation and maintenance practices; and

(iii) Did not stem from any activity or event that could have been foreseen and avoided, or planned for; and

(iv) Was not part of a recurring pattern indicative of inadequate design, operation, or maintenance; and

(2) Repairs were made as expeditiously as possible when a violation occurred. Off-shift and overtime labor were used, to the extent practicable to make these repairs; and

(3) The frequency, amount, and duration of the violation (including any bypass) were minimized to the maximum extent practicable; and

(4) If the violation resulted from a bypass of control equipment or a process, then the bypass was unavoidable to prevent loss of life, personal injury, or severe property damage; and

(5) All possible steps were taken to minimize the impact of the violation on ambient air quality, the environment, and human health; and

(6) All emissions monitoring and control systems were kept in operation if at all possible, consistent with safety and good air pollution control practices; and

(7) All of the actions in response to the violation were documented by properly signed, contemporaneous operating logs; and

(8) At all times, the affected facility was operated in a manner consistent with good practices for minimizing emissions; and

(9) A written root cause analysis has been prepared, the purpose of which is to determine, correct, and eliminate the primary causes of the malfunction and the violation resulting from the malfunction event at issue. The analysis shall also specify, using best monitoring methods and engineering judgment, the amount of any emissions that were the result of the malfunction.

(b) Report. The owner or operator seeking to assert an affirmative defense shall submit a written report to the Administrator with all necessary supporting documentation, that it has met the requirements set forth in paragraph (a) of this section. This affirmative defense report shall be included in the first periodic compliance, deviation report or excess emission report otherwise required after the initial occurrence of the violation of the relevant standard (which may be the end of any applicable averaging period). If such compliance, deviation report or excess emission report is due less than 45 days after the initial occurrence of the violation, the affirmative defense report may be included in the second compliance, deviation report or excess emission report due after the initial occurrence of the violation of the relevant standard.

§ 60.75a Calculations.

(a) You must calculate the 30 operating day rolling arithmetic average emissions rate in units of the applicable emissions standard (lb NO_X /ton 100 percent acid produced) at the end of each operating day using all of the quality assured hourly average CEMS data for the previous 30 operating days.

(b) You must calculate the 30 operating day average emissions rate according to Equation 1:

Where:

E30 = 30 operating day average emissions rate of NO_X, lb NO_X /ton of 100 percent HNO3 ;

Ci = concentration of NO_X for hour i, ppmv;

Qi = volumetric flow rate of effluent gas for hour i, where Ci and Qi are on the same basis (either wet or dry), scf/hr;

Pi = total acid produced during production hour i, tons 100 percent HNO3 ;

k = conversion factor, 1.194 × 10- 7 for NO_X ; and

n = number of operating hours in the 30 operating day period, i.e., n is between 30 and 720.

§ 60.76a Recordkeeping.

(a) For the NOX emissions rate, you must keep records for and results of the performance evaluations of the continuous emissions monitoring systems.

(b) You must maintain records of the following information for each 30 operating day period:

(1) Hours of operation.

(2) Production rate of nitric acid, expressed as 100 percent nitric acid.

(3) 30 operating day average NO_X emissions rate values.

(c) You must maintain records of the following time periods:

(1) Times when you were not in compliance with the emissions standards.

(2) Times when the pollutant concentration exceeded full span of the NO_X monitoring equipment.

(3) Times when the volumetric flow rate exceeded the high value of the volumetric flow rate monitoring equipment.

(d) You must maintain records of the reasons for any periods of noncompliance and description of corrective actions taken.

(e) You must maintain records of any modifications to CEMS which could affect the ability of the CEMS to comply with applicable performance specifications.

(f) For each malfunction, you must maintain records of the following information:

(1) Records of the occurrence and duration of each malfunction of operation (i.e., process equipment) or the air pollution control and monitoring equipment.

(2) Records of actions taken during periods of malfunction to minimize emissions in accordance with § 60.11(d), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation.

§ 60.77a Reporting.

(a) The performance test data from the initial and subsequent performance tests and from the performance evaluations of the continuous monitors must be submitted to the Administrator at the appropriate address as shown in 40 CFR 60.4.

(b) The following information must be reported to the Administrator for each 30 operating day period where you were not in compliance with the emissions standard:

(1) Time period;

(2) NO_X emission rates (lb/ton of acid produced);

(3) Reasons for noncompliance with the emissions standard; and

(4) Description of corrective actions taken.

(c) You must also report the following whenever they occur:

(1) Times when the pollutant concentration exceeded full span of the NO_X pollutant monitoring equipment.

(2) Times when the volumetric flow rate exceeded the high value of the volumetric flow rate monitoring equipment.

(d) You must report any modifications to CERMS which could affect the ability of the CERMS to comply with applicable performance specifications.

(e) Within 60 days of completion of the relative accuracy test audit (RATA) required by this subpart, you must submit the data from that audit to EPA's WebFIRE database by using the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) (https://cdx.epa.gov/SSL/cdx/EPA_Home.asp). You must submit performance test data in the file format generated through use of EPA's Electronic Reporting Tool (ERT) (http://www.epa.gov/ttn/chief/ert/index.html). Only data collected using test methods listed on the ERT Web site are subject to this requirement for submitting reports electronically to WebFIRE. Owners or operators who claim that some of the information being submitted for performance tests is confidential business information (CBI) must submit a complete ERT file including information claimed to be CBI on a compact disk or other commonly used electronic storage media (including, but not limited to, flash drives) by registered letter to EPA and the same ERT file with the CBI omitted to EPA via CDX as described earlier in this paragraph. Mark the compact disk or other commonly used electronic storage media clearly as CBI and mail to U.S. EPA/OAPQS/CORE CBI Office, Attention: WebFIRE Administrator, MD C404-02, 4930 Old Page Rd., Durham, NC 27703. At the discretion of the delegated authority, you must also submit these reports to the delegated authority in the format specified by the delegated authority. You must submit the other information as required in the performance evaluation as described in § 60.2 and as required in this chapter.

(f) If a malfunction occurred during the reporting period, you must submit a report that contains the following:

(1) The number, duration, and a brief description for each type of malfunction which occurred during the reporting period and which caused or may have caused any applicable emission limitation to be exceeded.

(2) A description of actions taken by an owner or operator during a malfunction of an affected facility to minimize emissions in accordance with § 60.11(d), including actions taken to correct a malfunction.

40 CFR Part 60, Subpart VVa - Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006

In accordance with 40 CFR 60.480a the following are the affected facility:

(a)(1) The provisions of this subpart apply to affected facilities in the synthetic organic chemicals manufacturing industry.

> In accordance with 40 CFR 60.480a (Definitions) *Synthetic organic chemicals manufacturing industry* means the industry that produces, as intermediates or final products, one or more of the chemicals listed in § 60.489. Urea is a listed chemical in § 60.489, therefore Magnida, which produces up to 4,100 tons per day of urea, is an affected facility.

(a)(2) The group of all equipment (defined in § 60.481a) within a process unit is an affected facility.

> On June 2, 2008, the definition of process unit in 40 CFR 60.81a was stayed. In accordance with 40 CFR 60.480a(f)(2)(i) *Stay of Standards* - While the definition of "process unit" is stayed, owners or operators should use the following definition:
>
> > Process unit means components assembled to produce, as intermediate or final products, one or more of the chemicals listed in § 60.489 of this part. A process unit can operate independently if supplied with sufficient feed or raw materials and sufficient storage facilities for the product.

The Urea Plant will be an affected facility subject to the provisions of subpart VVa, including the work practice standards at 40 CFR § 60.482-1a through § 60.482-11a.

Following is a summary of the applicable provisions of § 60.482-1a through § 60.482-11a. For specific details refer the regulation itself.

§ 60.482-1a Standards: General.

(a) Each owner or operator subject to the provisions of this subpart shall demonstrate compliance with the requirements of §§ 60.482-1a through 60.482-10a or § 60.480a(e) for all equipment within 180 days of initial startup.

(b) Compliance with §§ 60.482-1a to 60.482-10a will be determined by review of records and reports, review of performance test results, and inspection using the methods and procedures specified in § 60.485a.

(c) - (g) Include provisions for: the administrator of EPA to approve equivalent standards, exemptions for equipment in vacuum service, equipment in limited service, equipment in batch process service, and storage vessels that are shared with multiple process units.

§ 60.482-2a Standards: Pumps in light liquid service.

(a)(1) Each pump in light liquid service shall be monitored monthly to detect leaks by the methods specified in § 60.485a(b)...

(2) Each pump in light liquid service shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal...

(b)(1) The instrument reading that defines a leak is specified in paragraphs (b)(1)(i) and (ii) of this section.

(i) 5,000 parts per million (ppm) or greater for pumps handling polymerizing monomers;

(ii) 2,000 ppm or greater for all other pumps.

(2) If there are indications of liquids dripping from the pump seal, the owner or operator shall follow the procedure specified in either paragraph (b)(2)(i) or (ii) of this section...

(c)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 60.482-9a.

(2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected. First attempts at repair include, but are not limited to, the practices described in paragraphs (c)(2)(i) and (ii) of this section, where practicable.

(i) Tightening the packing gland nuts;

(ii) Ensuring that the seal flush is operating at design pressure and temperature.

(d) Each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of paragraph (a) of this section, provided the requirements specified in paragraphs (d)(1) through (6) of this section are met...

(e) Any pump that is designated, as described in § 60.486a(e)(1) and (2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraphs (a), (c), and (d) of this section if the pump:

(1) Has no externally actuated shaft penetrating the pump housing;

(2) Is demonstrated to be operating with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background as measured by the methods specified in § 60.485a(c); and

(3) Is tested for compliance with paragraph (e)(2) of this section initially upon designation, annually, and at other times requested by the Administrator.

(f) If any pump is equipped with a closed vent system capable of capturing and transporting any leakage from the seal or seals to a process or to a fuel gas system or to a control device that complies with the requirements of § 60.482-10a, it is exempt from paragraphs (a) through (e) of this section.

(g) Any pump that is designated, as described in § 60.486a(f)(1), as an unsafe-to-monitor pump is exempt from the monitoring and inspection requirements of paragraphs (a) and (d)(4) through (6) of this section if:

(1) The owner or operator of the pump demonstrates that the pump is unsafe-to-monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with paragraph (a) of this section; and

(2) The owner or operator of the pump has a written plan that requires monitoring of the pump as frequently as practicable during safe-to-monitor times, but not more frequently than the periodic monitoring schedule otherwise applicable, and repair of the equipment according to the procedures in paragraph (c) of this section if a leak is detected.

(h) Any pump that is located within the boundary of an unmanned plant site is exempt from the weekly visual inspection ... provided that each pump is visually inspected as often as practicable and at least monthly.

§ 60.482-3a Standards: Compressors.

(a) Each compressor shall be equipped with a seal system that includes a barrier fluid system and that prevents leakage of VOC to the atmosphere...

(b) Each compressor seal system as required in paragraph (a) of this section shall be:

(1) Operated with the barrier fluid at a pressure that is greater than the compressor stuffing box pressure; or

(2) Equipped with a barrier fluid system degassing reservoir that is routed to a process or fuel gas system or connected by a closed vent system to a control device that complies with the requirements of § 60.482-10a; or

(3) Equipped with a system that purges the barrier fluid into a process stream with zero VOC emissions to the atmosphere.

(c) The barrier fluid system shall be in heavy liquid service or shall not be in VOC service.

(d) Each barrier fluid system as described in paragraph (a) shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.

(e)(1) Each sensor as required in paragraph (d) of this section shall be checked daily or shall be equipped with an audible alarm.

(2) The owner or operator shall determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

(f) If the sensor indicates failure of the seal system, the barrier system, or both based on the criterion determined under paragraph (e)(2) of this section, a leak is detected.

(g)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 60.482-9a.

(2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(h) A compressor is exempt from the requirements of paragraphs (a) and (b) of this section, if it is equipped with a closed vent system to capture and transport leakage from the compressor drive shaft back to a process or fuel gas system or to a control device that complies with the requirements of § 60.482-10a, except as provided in paragraph (i) of this section.

(i) Any compressor that is designated, as described in § 60.486a(e)(1) and (2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraphs (a) through (h) of this section if the compressor:

(1) Is demonstrated to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the methods specified in § 60.485a(c); and

(2) Is tested for compliance with paragraph (i)(1) of this section initially upon designation, annually, and at other times requested by the Administrator.

(j) Any existing reciprocating compressor in a process unit which becomes an affected facility under provisions of § 60.14 or § 60.15 is exempt from paragraphs (a) through (e) and (h) of this section, provided the owner or operator demonstrates that recasting the distance piece or replacing the compressor are the only options available to bring the compressor into compliance with the provisions of paragraphs (a) through (e) and (h) of this section.

§ 60.482-5a Standards: Sampling connection systems.

(a) Each sampling connection system shall be equipped with a closed-purge, closed-loop, or closed-vent system, except as provided in § 60.482-1a(c) and paragraph (c) of this section.

(b) Each closed-purge, closed-loop, or closed-vent system as required in paragraph (a) of this section shall comply with the requirements specified in paragraphs (b)(1) through (4) of this section…

(c) In-situ sampling systems and sampling systems without purges are exempt from the requirements of paragraphs (a) and (b) of this section.

Sampling connection system means an assembly of equipment within a process unit used during periods of representative operation to take samples of the process fluid. Equipment used to take nonroutine grab samples is not considered a sampling connection system.

§ 60.482-6a Standards: Open-ended valves or lines.

(a)(1) Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve, except as provided in § 60.482-1a(c) and paragraphs (d) and (e) of this section.

(2) The cap, blind flange, plug, or second valve shall seal the open end at all times except during operations requiring process fluid flow through the open-ended valve or line.

(b) Each open-ended valve or line equipped with a second valve shall be operated in a manner such that the valve on the process fluid end is closed before the second valve is closed.

(c) When a double block-and-bleed system is being used, the bleed valve or line may remain open during operations that require venting the line between the block valves but shall comply with paragraph (a) of this section at all other times.

(d) Open-ended valves or lines in an emergency shutdown system which are designed to open automatically in the event of a process upset are exempt from the requirements of paragraphs (a), (b), and (c) of this section.

(e) Open-ended valves or lines containing materials which would autocatalytically polymerize or would present an explosion, serious overpressure, or other safety hazard if capped or equipped with a double block and bleed system as specified in paragraphs (a) through (c) of this section are exempt from the requirements of paragraphs (a) through (c) of this section.

40 CFR Part 60, Subpart IIII—Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

The diesel engines in the emergency generator and the emergency fire water pump are stationary, compression ignition, internal combustion engines and are affected facilities under this Subpart. At the time of permit issuance the Manufacturer of the engines had not been selected. Following is a regulatory breakdown of 40 CFR 60 Subpart IIII with as much detail as can be determined in light of the fact that the specific engines that will be used have not been selected.

The Magnida facility will include one emergency generator with a rated output of 2,000 kWe (i.e. an engine greater of 2,900 HP) and one emergency fire water pump with a rated output of 500 brake horsepower ("bhp").Both engines are subject to the provisions of subpart IIII for, emergency stationary internal combustion engines.

§ 60.4200 Am I subject to this subpart?

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

(1) Manufacturers of stationary CI ICE with a displacement of less than 30 liters per cylinder where the model year is:

(i) 2007 or later, for engines that are not fire pump engines (makes the 2,000 kWe emergency engine applicable) ;

(ii) The model year listed in Table 3 to this subpart or later model year, for fire pump engines (makes the fire pump engine applicable).

Table 3 lists fire pump engines of between 175 and 750 HP as affected after 2009.

The remainder of this subsection is not applicable to the two proposed engines at the Magnida facility.

§ 60.4201-4203 Apply to engine manufacturers?

Magnida is not a manufacturer of engines and these subsections are 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?

Both of the engines meet the definition of an emergency stationary internal combustion engine, therefore this subsection does not apply.

Emergency stationary internal combustion engine means any stationary reciprocating internal combustion engine that meets all of the criteria in paragraphs (1) through (3) of this definition. All emergency stationary ICE must comply with the requirements specified in § 60.4211(f) in order to be considered emergency stationary ICE. If the engine does not comply with the requirements specified in § 60.4211(f), then it is not considered to be an emergency stationary ICE under this subpart.

(1) The stationary ICE is operated to provide electrical power or mechanical work during an emergency situation. Examples include stationary ICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary ICE used to pump water in the case of fire or flood, etc.

§ 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). (Magnida indicated that this section is not applicable to the emergency generator engine).

(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. (Magnida indicated that this is applicable to the emergency generator engine based on the anticipated engine size).

(c) Owners and operators of fire pump engines with a displacement of less than 30 liters per cylinder must comply with the emission standards in table 4 to this subpart, for all pollutants. (Magnida indicated that the fire pump engine is applicable to these standards)

(d) Owners and operators of emergency stationary CI engines with a displacement of greater than or equal to 30 liters per cylinder must meet the requirements in this section. (This paragraph does not apply because the anticipated engine displacement does not exceed 30 liters)

(e) Owners and operators of emergency stationary CI ICE with a displacement of less than 30 liters per cylinder who conduct performance tests in-use must meet the NTE standards as indicated in § 60.4212.

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

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

Owners and operators of stationary CI ICE must operate and maintain stationary CI ICE that achieve the emission standards as required in §§ 60.4204 and 60.4205 over the entire life of the engine. (This generally applicable requirement applies to Magnida)

§ 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). (The next paragraph applies to Magnida)

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

(c) – (e) The remaining paragraphs do not apply to Magnida. They apply to engines with greater than 30 L displacement and engines used in national security applications.

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

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

(b) – (g) These paragraphs do not apply to Magnida's proposed engines because the engines are greater than 25 HP and they are for emergency use only.

(h) In addition to the requirements specified in ~~§§ 60.4201, 60.4202, 60.4204~~, ~~and~~ 60.4205, it is prohibited to import stationary CI ICE with a displacement of less than 30 liters per cylinder that do not meet the applicable requirements specified in paragraphs (a) through (g) of this section after the dates specified in paragraphs (a) through (g) of this section. (In short the engines must comply with §§60.4205)

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

§ 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.

At the time of permit issuance Magnida had not selected the emergency engines so it is not known if the engines meet the standards applicable to non-emergency engines.

(b) If you are an owner or operator of a stationary CI internal combustion engine equipped with a diesel particulate filter to comply with the emission standards in § 60.4204, the diesel particulate filter must be installed with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached.

At the time of permit issuance Magnida had not selected the emergency engines so it is not known if the engines are equipped with a diesel particulate filter to comply with the emission standards.

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

These paragraphs do not apply to Magnida because they are not an engine manufacturer.

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

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

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

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

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

(b) This paragraph applies to owners or operators of a pre-2007 model year stationary CI internal combustion engines; Magnida's engines are a later model year and these provisions do not apply.

(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 emission-related specifications, except as permitted in paragraph (g) of this section.

(d) If you are an owner or operator and must comply with the emission standards specified in § 60.4204(c) or § 60.4205(d), you must demonstrate compliance according to the requirements specified in paragraphs (d)(1) through (3) of this section. (Emissions standards specified in § 60.4204(c) or § 60.4205(d) do not apply to Magnida, these standards are for non-emergency engines and standards for emergency stationary CI engines with a displacement of greater than or equal to 30 liters per cylinder)

(e) If you are an owner or operator of a modified or reconstructed stationary CI internal combustion engine and must comply with the emission standards specified in § 60.4204(e) or § 60.4205(f), you must demonstrate compliance according to one of the methods specified in paragraphs (e)(1) or (2) of this section. (Magnida has not proposed to modify or reconstruct an engine, therefore these sections do not apply).

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

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

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

(i) Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year.

(ii) Emergency stationary ICE may be operated for emergency demand response for periods in which the Reliability Coordinator under the North American Electric Reliability Corporation (NERC) Reliability Standard EOP-002-3, Capacity and Energy Emergencies (incorporated by reference, see § 60.17), or other authorized entity as determined by the Reliability Coordinator, has declared an Energy Emergency Alert Level 2 as defined in the NERC Reliability Standard EOP-002-3.

(iii) Emergency stationary ICE may be operated for periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency.

(3) Emergency stationary ICE may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing and emergency demand response provided in paragraph (f)(2) of this section. Except as provided in paragraph (f)(3)(i) of this section, the 50 hours per calendar year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

(i) The 50 hours per year for non-emergency situations can be used to supply power as part of a financial arrangement with another entity if all of the following conditions are met:

(A) The engine is dispatched by the local balancing authority or local transmission and distribution system operator;

(B) The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region.

(C) The dispatch follows reliability, emergency operation or similar protocols that follow specific NERC, regional, state, public utility commission or local standards or guidelines.

(D) The power is provided only to the facility itself or to support the local transmission and distribution system.

(E) The owner or operator identifies and records the entity that dispatches the engine and the specific NERC, regional, state, public utility commission or local standards or guidelines that are being followed for dispatching the engine. The local balancing authority or local transmission and distribution system operator may keep these records on behalf of the engine owner or operator.

(ii) [Reserved]

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

(1) If you are an owner or operator of a stationary CI internal combustion engine with maximum engine power less than 100 HP, you must keep a maintenance plan and records of conducted maintenance to demonstrate compliance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, if you do not install and configure the engine and control device according to the manufacturer's emission-related written instructions, or you change the emission-related settings in a way that is not permitted by the manufacturer, you must conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of such action.

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

Magnida's 500 bhp fire pump engine fits this size category.

(3) If you are an owner or operator of a stationary CI internal combustion engine greater than 500 HP, you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of startup, or within 1 year after an engine and control device is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within 1 year after you change emission-related settings in a way that is not permitted by the manufacturer. You must conduct subsequent performance testing every 8,760 hours of engine operation or 3 years, whichever comes first, thereafter to demonstrate compliance with the applicable emission standards.

Magnida's 2,900 bhp emergency generator engine fits this size category.

§ 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?

Owners and operators of stationary CI ICE with a displacement of less than 30 liters per cylinder who conduct performance tests pursuant to this subpart must do so according to paragraphs (a) through (e) of this section.

(Magnida will only be required to conduct performance testing pursuant to this paragraph if the facility fails to install, configure, operate, and maintain the engines and control devices according to the manufacturer's emission-related written instructions, or if emission-related settings changed in a way that is not permitted by the manufacturer.)

§ 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?
(Magnida's engines are less than 30 L displacement therefore these paragraphs do not apply)

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

(a) (Applies only to non-emergency stationary CI ICE which Magnida does propose to use)

(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.

(c) If the stationary CI internal combustion engine is equipped with a diesel particulate filter, the owner or operator must keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached.

(d) If you own or operate an emergency stationary CI ICE with a maximum engine power more than 100 HP that operates or is contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in § 60.4211(f)(2)(ii) and (iii) or that operates for the purposes specified in § 60.4211(f)(3)(i), you must submit an annual report according to the requirements in paragraphs (d)(1) through (3) of this section.

(§ 60.4211(f)(2)(ii) and (iii) & § 60.4211(f)(3)(i) purposes are respectively: emergency demand response - an Energy Emergency Alert Level 2 has been declared, operation during a deviation of voltage or frequency of 5% or more, power is supplied as part of a financial agreement.)

§ 60.4215 What requirements must I meet for engines used in Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands? (Does not apply to Magnida)

§ 60.4216 What requirements must I meet for engines used in Alaska? (Does not apply to Magnida)

§ 60.4217 What emission standards must I meet if I am an owner or operator of a stationary internal combustion engine using special fuels? (Does not apply to Magnida)

NESHAP Applicability (40 CFR 61)

40 CFR 61, Subpart FF—National Emission Standard for Benzene Waste Operations

Subpart FF includes requirements for controlling emissions from equipment used to handle or treat benzene-containing wastes from facilities with substantial quantities of benzene in facility waste. Pursuant to 40 CFR § 61.342(a), Magnida will be exempt from these requirements because its total annual benzene quantity from facility waste will be well below the threshold of 11 tons per year. The Magnida facility is an affected facility because it produces fertilizer through chemical processes. The only provision of subpart FF applicable to the Magnida facility will be the requirement to determine the total annual benzene quantity from facility waste pursuant to 40 CFR § 61.355(a).

§ 61.340 Applicability.

(a) The provisions of this subpart apply to owners and operators of chemical manufacturing plants, coke by-product recovery plants, and petroleum refineries.

> *Chemical manufacturing plant* means any facility engaged in the production of chemicals by chemical, thermal, physical, or biological processes for use as a product, co-product, by-product, or intermediate including but not limited to industrial organic chemicals, organic pesticide products, pharmaceutical preparations, paint and allied products, fertilizers, and agricultural chemicals. Examples of chemical manufacturing plants include facilities at which process units are operated to produce one or more of the following chemicals: benzenesulfonic acid, benzene, chlorobenzene, cumene, cyclohexane, ethylene, ethyl benzene, hydroquinone, linear alklylbenzene, nitrobenzene, resorcinol, sulfolane, or styrene.

(b) The provisions of this subpart apply to owners and operators of hazardous waste treatment, storage, and disposal facilities that treat, store, or dispose of hazardous waste generated by any facility listed in paragraph (a) of this section. The waste streams at hazardous waste treatment, storage, and disposal facilities subject to the provisions of this subpart are the benzene-containing hazardous waste from any facility listed in paragraph (a) of this section. A hazardous waste treatment, storage, and disposal facility is a facility that must obtain a hazardous waste management permit under subtitle C of the Solid Waste Disposal Act.

(c) At each facility identified in paragraph (a) or (b) of this section, the following waste is exempt from the requirements of this subpart:

(1) Waste in the form of gases or vapors that is emitted from process fluids:

(2) Waste that is contained in a segregated stormwater sewer system.

(d) At each facility identified in paragraph (a) or (b) of this section, any gaseous stream from a waste management unit, treatment process, or wastewater treatment system routed to a fuel gas system, as defined in § 61.341, is exempt from this subpart. No testing, monitoring, recordkeeping, or reporting is required under this subpart for any gaseous stream from a waste management unit, treatment process, or wastewater treatment unit routed to a fuel gas system.

§ 61.341 Definitions (Definitions section of the regulation are not repeated in this statement of basis, please refer to the regulation)

§ 61.342 Standards: General.

(a) An owner or operator of a facility at which the total annual benzene quantity from *facility waste* is less than 10 megagrams per year (Mg/yr) (11 ton/yr) shall be exempt from the requirements of paragraphs (b) and (c) of this section. The total annual benzene quantity from facility waste is the sum of the annual benzene quantity for each waste stream at the facility that has a flow-weighted annual average water content greater than 10 percent or that is mixed with water, or other wastes, at any time and the mixture has an annual average water content greater than 10 percent. The benzene quantity in a waste stream is to be counted only once without multiple counting if other waste streams are mixed with or generated from the original waste stream. Other specific requirements for calculating the total annual benzene waste quantity are as follows:

(1) Wastes that are exempted from control under §§ 61.342(c)(2) and 61.342(c)(3) are included in the calculation of the total annual benzene quantity if they have an annual average water content greater than 10 percent, or if they are mixed with water or other wastes at any time and the mixture has an annual average water content greater than 10 percent.

(2) The benzene in a material subject to this subpart that is sold is included in the calculation of the total annual benzene quantity if the material has an annual average water content greater than 10 percent.

(3) Benzene in wastes generated by remediation activities conducted at the facility, such as the excavation of contaminated soil, pumping and treatment of groundwater, and the recovery of product from soil or groundwater, are not included in the calculation of total annual benzene quantity for that facility. If the facility's total annual benzene quantity is 10 Mg/yr (11 ton/yr) or more, wastes generated by remediation activities are subject to the requirements of paragraphs (c) through (h) of this section. If the facility is managing remediation waste generated offsite, the benzene in this waste shall be included in the calculation of total annual benzene quantity in facility waste, if the waste streams have an annual average water content greater than 10 percent, or if they are mixed with water or other wastes at any time and the mixture has an annual average water content greater than 10 percent.

(4) The total annual benzene quantity is determined based upon the quantity of benzene in the waste before any waste treatment occurs to remove the benzene except as specified in § 61.355(c)(1)(i) (A) through (C).

The total annual benzene quantity from Magnida's facility waste is expected to be less than 11 tons per year.

Facility means all process units and product tanks that generate waste within a stationary source, and all waste management units that are used for waste treatment, storage, or disposal within a stationary source

Waste means any material resulting from industrial, commercial, mining or agricultural operations, or from community activities that is discarded or is being accumulated, stored, or physically, chemically, thermally, or biologically treated prior to being discarded, recycled, or discharged.

(b) – (f) Since the annual benzene quantity is expected to be less than 11 tons per year these sections do not apply.

(g) Compliance with this subpart will be determined by review of facility records and results from tests and inspections using methods and procedures specified in § 61.355 of this subpart.

§ 61.343 Standards: Tanks.

(a) Except as provided in paragraph (b) of this section and in § 61.351, the owner or operator must meet the standards in paragraph (a)(1) or (2) of this section for each tank in which the waste stream is placed in accordance with § 61.342 (c)(1)(ii). The standards in this section apply to the treatment and storage of the waste stream in a tank, including dewatering.

§ 61.342 (c)(1)(ii) does not apply - This subsection only applies at facilities with an annual benzene quantity greater than or equal to 11 tons per year; Magnida's annual benzene quantity is expected the be much less than 11 tons per year.

§ 61.344 Standards: Surface impoundments.

(a) The owner or operator shall meet the following standards for each surface impoundment in which waste is placed in accordance with § 61.342(c)(1)(ii) of this subpart:

§ 61.342 (c)(1)(ii) does not apply - This subsection only applies at facilities with an annual benzene quantity greater than or equal to 11 tons per year; Magnida's annual benzene quantity is expected the be much less than 11 tons per year.

§ 61.345 Standards: Containers

(a) The owner or operator shall meet the following standards for each container in which waste is placed in accordance with § 61.342(c)(1)(ii) of this subpart:

§ 61.342 (c)(1)(ii) does not apply - This subsection only applies at facilities with an annual benzene quantity greater than or equal to 11 tons per year; Magnida's annual benzene quantity is expected the be much less than 11 tons per year.

§ 61.346 Standards: Individual drain systems.

(a) Except as provided in paragraph (b) of this section, the owner or operator shall meet the following standards for each individual drain system in which waste is placed in accordance with § 61.342(c)(1)(ii) of this subpart:

§ 61.342 (c)(1)(ii) does not apply - This subsection only applies at facilities with an annual benzene quantity greater than or equal to 11 tons per year; Magnida's annual benzene quantity is expected the be much less than 11 tons per year.

§ 61.347 Standards: Oil-water separators.

(a) Except as provided in § 61.352 of this subpart, the owner or operator shall meet the following standards for each oil-water separator in which waste is placed in accordance with § 61.342(c)(1)(ii) of this subpart:

§ 61.342 (c)(1)(ii) does not apply - This subsection only applies at facilities with an annual benzene quantity greater than or equal to 11 tons per year; Magnida's annual benzene quantity is expected the be much less than 11 tons per year.

§ 61.348 Standards: Treatment processes.

(a) Except as provided in paragraph (a)(5) of this section, the owner or operator shall treat the waste stream in accordance with the following requirements:

Treatment processes are only required to be implemented at facilities with an annual benzene quantity greater than or equal to 11 tons per year; Magnida's annual benzene quantity is expected the be much less than 11 tons per year. Therefore these paragraphs do not apply.

§ 61.349 Standards: Closed-vent systems and control devices.

(a) For each closed-vent system and control device used to comply with standards in accordance with §§ 61.343 through 61.348 of this subpart, the owner or operator shall properly design, install, operate, and maintain the closed-vent system and control device in accordance with the following requirements:

§§ 61.343 through 61.348 of this subpart do not apply to Magnida as detailed above.

§ 61.350-353 Standards: Delay of repair; Alternative standards for tanks; Alternative standards for oil-water separators; Alternative means of emission limitation

Only apply to facilities that are subject to the provisions of this subpart.

§ 61.354 Monitoring of operations.

(a)- (g) These paragraphs do not apply because treatment is not required (benzene quantity is expected to be less than 11 tons per year).

§ 61.355 Test methods, procedures, and compliance provisions.

(a) An owner or operator shall determine the total annual benzene quantity from facility waste by the following procedure:

(1) For each waste stream subject to this subpart having a flow-weighted annual average water content greater than 10 percent water, on a volume basis as total water, or is mixed with water or other wastes at any time and the resulting mixture has an annual average water content greater than 10 percent as specified in § 61.342(a), the owner or operator shall:

(i) Determine the annual waste quantity for each waste stream using the procedures specified in paragraph (b) of this section.

(ii) Determine the flow-weighted annual average benzene concentration for each waste stream using the procedures specified in paragraph (c) of this section.

(iii) Calculate the annual benzene quantity for each waste stream by multiplying the annual waste quantity of the waste stream times the flow-weighted annual average benzene concentration.

(2) Total annual benzene quantity from facility waste is calculated by adding together the annual benzene quantity for each waste stream generated during the year and the annual benzene quantity for each process unit turnaround waste annualized according to paragraph (b)(4) of this section.

(3) If the total annual benzene quantity from facility waste is equal to or greater than 10 Mg/yr (11 ton/yr), then the owner or operator shall comply with the requirements of § 61.342 (c), (d), or (e).

(4) If the total annual benzene quantity from facility waste is less than 10 Mg/yr (11 ton/yr) but is equal to or greater than 1 Mg/yr (1.1 ton/yr), then the owner or operator shall:

(i) Comply with the recordkeeping requirements of § 61.356 and reporting requirements of § 61.357 of this subpart; and

(ii) Repeat the determination of total annual benzene quantity from facility waste at least once per year and whenever there is a change in the process generating the waste that could cause the total annual benzene quantity from facility waste to increase to 10 Mg/yr (11 ton/yr) or more.

(5) If the total annual benzene quantity from facility waste is less than 1 Mg/yr (1.1 ton/yr), then the owner or operator shall:

(i) Comply with the recordkeeping requirements of § 61.356 and reporting requirements of § 61.357 of this subpart; and

(ii) Repeat the determination of total annual benzene quantity from facility waste whenever there is a change in the process generating the waste that could cause the total annual benzene quantity from facility waste to increase to 1 Mg/yr (1.1 ton/yr) or more.

(6) The benzene quantity in a waste stream that is generated less than one time per year, except as provided for process unit turnaround waste in paragraph (b)(4) of this section, shall be included in the determination of total annual benzene quantity from facility waste for the year in which the waste is generated unless the waste stream is otherwise excluded from the determination of total annual benzene quantity from facility waste in accordance with paragraphs (a) through (c) of this section. The benzene quantity in this waste stream shall not be annualized or averaged over the time interval between the activities that resulted in generation of the waste, for purposes of determining the total annual benzene quantity from facility waste.

(b) For purposes of the calculation required by paragraph (a) of this section, an owner or operator shall determine the annual waste quantity at the point of waste generation, unless otherwise provided in paragraphs (b) (1), (2), (3), and (4) of this section, by one of the methods given in paragraphs (b) (5) through (7) of this section.

(1) The determination of annual waste quantity for sour water streams that are processed in sour water strippers shall be made at the point that the water exits the sour water stripper.

(2) The determination of annual waste quantity for wastes at coke by-product plants subject to and complying with the control requirements of § 61.132, 61.133, 61.134, or 61.139 of subpart L of this part shall be made at the location that the waste stream exits the process unit component or waste management unit controlled by that subpart or at the exit of the ammonia still, provided that the following conditions are met:

(i) The transfer of wastes between units complying with the control requirements of subpart L of this part, process units, and the ammonia still is made through hard piping or other enclosed system.

(ii) The ammonia still meets the definition of a sour water stripper in § 61.341.

(3) The determination of annual waste quantity for wastes that are received at hazardous waste treatment, storage, or disposal facilities from offsite shall be made at the point where the waste enters the hazardous waste treatment, storage, or disposal facility.

(4) The determination of annual waste quantity for each process unit turnaround waste generated only at 2 year or greater intervals, may be made by dividing the total quantity of waste generated during the most recent process unit turnaround by the time period (in the nearest tenth of a year) between the turnaround resulting in generation of the waste and the most recent preceding process turnaround for the unit. The resulting annual waste quantity shall be included in the calculation of the annual benzene quantity as provided in paragraph (a)(1)(iii) of this section for the year in which the turnaround occurs and for each subsequent year until the unit undergoes the next process turnaround. For estimates of total annual benzene quantity as specified in the 90-day report, required under § 61.357(a)(1), the owner or operator shall estimate the waste quantity generated during the most recent turnaround, and the time period between turnarounds in accordance with good engineering practices. If the owner or operator chooses not to annualize process unit turnaround waste, as specified in this paragraph, then the process unit turnaround waste quantity shall be included in the calculation of the annual benzene quantity for the year in which the turnaround occurs.

Process unit means equipment assembled and connected by pipes or ducts to produce intermediate or final products. A process unit can be operated independently if supplied with sufficient fuel or raw materials and sufficient product storage facilities.

Process unit turnaround means the shutting down of the operations of a process unit, the purging of the contents of the process unit, the maintenance or repair work, followed by restarting of the process.

(5) Select the highest annual quantity of waste managed from historical records representing the most recent 5 years of operation or, if the facility has been in service for less than 5 years but at least 1 year, from historical records representing the total operating life of the facility;

(6) Use the maximum design capacity of the waste management unit; or

(7) Use measurements that are representative of maximum waste generation rates.

(c) For the purposes of the calculation required by §§ 61.355(a) of this subpart, an owner or operator shall determine the flow-weighted annual average benzene concentration in a manner that meets the requirements given in paragraph (c)(1) of this section using either of the methods given in paragraphs (c)(2) and (c)(3) of this section.

(1) The determination of flow-weighted annual average benzene concentration shall meet all of the following criteria:

(i) The determination shall be made at the point of waste generation except for the specific cases given in paragraphs (c)(1)(i)(A) through (D) of this section.

(A) The determination for sour water streams that are processed in sour water strippers shall be made at the point that the water exits the sour water stripper.

(B) The determination for wastes at coke by-product plants subject to and complying with the control requirements of § 61.132, 61.133, 61.134, or 61.139 of subpart L of this part shall be made at the location that the waste stream exits the process unit component or waste management unit controlled by that subpart or at the exit of the ammonia still, provided that the following conditions are met:

(*1*) The transfer of wastes between units complying with the control requirements of subpart L of this part, process units, and the ammonia still is made through hard piping or other enclosed system.

(*2*) The ammonia still meets the definition of a sour water stripper in § 61.341.

(C) The determination for wastes that are received from offsite shall be made at the point where the waste enters the hazardous waste treatment, storage, or disposal facility.

(D) The determination of flow-weighted annual average benzene concentration for process unit turnaround waste shall be made using either of the methods given in paragraph (c)(2) or (c)(3) of this section. The resulting flow-weighted annual average benzene concentration shall be included in the calculation of annual benzene quantity as provided in paragraph (a)(1)(iii) of this section for the year in which the turnaround occurs and for each subsequent year until the unit undergoes the next process unit turnaround.

(ii) Volatilization of the benzene by exposure to air shall not be used in the determination to reduce the benzene concentration.

(iii) Mixing or diluting the waste stream with other wastes or other materials shall not be used in the determination—to reduce the benzene concentration.

(iv) The determination shall be made prior to any treatment of the waste that removes benzene, except as specified in paragraphs (c)(1)(i)(A) through (D) of this section.

(v) For wastes with multiple phases, the determination shall provide the weighted-average benzene concentration based on the benzene concentration in each phase of the waste and the relative proportion of the phases.

(2) *Knowledge of the waste.* The owner or operator shall provide sufficient information to document the flow-weighted annual average benzene concentration of each waste stream. Examples of information that could constitute knowledge include material balances, records of chemicals purchases, or previous test results provided the results are still relevant to the current waste stream conditions. If test data are used, then the owner or operator shall provide documentation describing the testing protocol and the means by which sampling variability and analytical variability were accounted for in the determination of the flow-weighted annual average benzene concentration for the waste stream. When an owner or operator and the Administrator do not agree on determinations of the flow-weighted annual average benzene concentration based on knowledge of the waste, the procedures under paragraph (c)(3) of this section shall be used to resolve the disagreement.

(3) Measurements of the benzene concentration in the waste stream in accordance with the following procedures:

(i) Collect a minimum of three representative samples from each waste stream. Where feasible, samples shall be taken from an enclosed pipe prior to the waste being exposed to the atmosphere.

(ii) For waste in enclosed pipes, the following procedures shall be used:

(A) Samples shall be collected prior to the waste being exposed to the atmosphere in order to minimize the loss of benzene prior to sampling.

(B) A static mixer shall be installed in the process line or in a by-pass line unless the owner or operator demonstrates that installation of a static mixer in the line is not necessary to accurately determine the benzene concentration of the waste stream.

(C) The sampling tap shall be located within two pipe diameters of the static mixer outlet.

(D) Prior to the initiation of sampling, sample lines and cooling coil shall be purged with at least four volumes of waste.

(E) After purging, the sample flow shall be directed to a sample container and the tip of the sampling tube shall be kept below the surface of the waste during sampling to minimize contact with the atmosphere.

(F) Samples shall be collected at a flow rate such that the cooling coil is able to maintain a waste temperature less than 10 °C (50 °F).

(G) After filling, the sample container shall be capped immediately (within 5 seconds) to leave a minimum headspace in the container.

(H) The sample containers shall immediately be cooled and maintained at a temperature below 10 °C (50 °F) for transfer to the laboratory.

(iii) When sampling from an enclosed pipe is not feasible, a minimum of three representative samples shall be collected in a manner to minimize exposure of the sample to the atmosphere and loss of benzene prior to sampling.

(iv) Each waste sample shall be analyzed using one of the following test methods for determining the benzene concentration in a waste stream:

(A) Method 8020, Aromatic Volatile Organics, in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication No. SW-846 (incorporation by reference as specified in § 61.18 of this part);

(B) Method 8021, Volatile Organic Compounds in Water by Purge and Trap Capillary Column Gas Chromatography with Photoionization and Electrolytic Conductivity Detectors in Series in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication No. SW-846 (incorporation by reference as specified in § 61.18 of this part);

(C) Method 8240, Gas Chromatography/Mass Spectrometry for Volatile Organics in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication No. SW-846 (incorporation by reference as specified in § 61.18 of this part);

(D) Method 8260, Gas Chromatography/Mass Spectrometry for Volatile Organics: Capillary Column Technique in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication No. SW-846 (incorporation by reference as specified in § 61.18 of this part);

(E) Method 602, Purgeable Aromatics, as described in 40 CFR part 136, appendix A, Test Procedures for Analysis of Organic Pollutants, for wastewaters for which this is an approved EPA methods; or

(F) Method 624, Purgeables, as described in 40 CFR part 136, appendix A, Test Procedures for Analysis of Organic Pollutants, for wastewaters for which this is an approved EPA method.

(v) The flow-weighted annual average benzene concentration shall be calculated by averaging the results of the sample analyses as follows:

$$\bar{C} = \frac{1}{Q_t} \times \sum_{i=1}^{n} (Q_i)(C_i)$$

Where:

$\bar{C}$=Flow-weighted annual average benzene concentration for waste stream, ppmw.

Q_t =Total annual waste quantity for waste stream, kg/yr (lb/yr).

n=Number of waste samples (at least 3).

Q_i =Annual waste quantity for waste stream represented by C_i , kg/yr (lb/yr).

C_i =Measured concentration of benzene in waste sample i, ppmw.

(d) – (g) Specify test procedure for treatment systems; Magnida is not required to operate treatment systems because the benzene quantity is expected to be less than 11 tons per year.

(h) An owner or operator shall test equipment for compliance with no detectable emissions as required in §§ 61.343 through 61.347, and § 61.349 of this subpart in accordance with the following requirements:

§§ 61.343 through 61.347 apply to Tanks, Surface Impoundments, Containers, Drain systems, Oil Water Separators, respectively, if the annual benzene quantity is greater than or equal to 11 tons per year. Magnida's annual benzene quantity is expected to be much less than 11 tons per year. Therefore these paragraphs do not apply. Similarly § 61.349, Standards: Closed-vent systems and control devices, does not apply.

(i) An owner or operator using a performance test to demonstrate compliance of a control device with either the organic reduction efficiency requirement or the benzene reduction efficiency requirement specified under § 61.349(a)(2) shall use the following procedures:

§ 61.349 Standards: Closed-vent systems and control devices do not apply to Magnida because the annual benzene quantity is expected to be much less than 11 tons per year.

(j) An owner or operator shall determine the benzene quantity for the purposes of the calculation required by § 61.342 (c)(3)(ii)(B) according to the provisions of paragraph (a) of this section, except that the procedures in paragraph (a) of this section shall also apply to wastes with a water content of 10 percent or less.

Since the annual benzene quantity is expected to be less than 11 tons per year § 61.342 (c)(3)(ii)(B) does not apply.

(k) An owner or operator shall determine the benzene quantity for the purposes of the calculation required by § 61.342(e)(2) by the following procedure:

Since the annual benzene quantity is expected to be less than 11 tons per year § 61.342(e)(2) does not apply.

§ 61.356 Recordkeeping requirements.

(a) Each owner or operator of a facility subject to the provisions of this subpart shall comply with the recordkeeping requirements of this section. Each record shall be maintained in a readily accessible location at the facility site for a period not less than two years from the date the information is recorded unless otherwise specified.

(b) Each owner or operator shall maintain records that identify each waste stream at the facility subject to this subpart, and indicate whether or not the waste stream is controlled for benzene emissions in accordance with this subpart. In addition the owner or operator shall maintain the following records:

(1) For each waste stream not controlled for benzene emissions in accordance with this subpart, the records shall include all test results, measurements, calculations, and other documentation used to determine the following information for the waste stream: waste stream identification, water content, whether or not the waste stream is a process wastewater stream, annual waste quantity, range of benzene concentrations, annual average flow-weighted benzene concentration, and annual benzene quantity.

(2) For each waste stream exempt from § 61.342(c)(1) in accordance with § 61.342(c)(3), the records shall include:

§ 61.342(c)(1) does not apply since the annual benzene quantity is expected to be less than 11 tons per year.

(3) For each facility where process wastewater streams are controlled for benzene emissions in accordance with § 61.342(d) of this subpart, the records shall include for each treated process wastewater stream all measurements, calculations, and other documentation used to determine the annual benzene quantity in the process wastewater stream exiting the treatment process.

§ 61.342(d) does not apply since the annual benzene quantity is expected to be less than 11 tons per year.

(4) For each facility where waste streams are controlled for benzene emissions in accordance with § 61.342(e), the records shall include for each waste stream all measurements, including the locations of the measurements, calculations, and other documentation used to determine that the total benzene quantity does not exceed 6.0 Mg/yr (6.6 ton/yr).

§ 61.342(e) does not apply since the annual benzene quantity is expected to be less than 11 tons per year.

(5) For each facility where the annual waste quantity for process unit turnaround waste is determined in accordance with § 61.355(b)(5), the records shall include all test results, measurements, calculations, and other documentation used to determine the following information: identification of each process unit at the facility that undergoes turnarounds, the date of the most recent turnaround for each process unit, identification of each process unit turnaround waste, the water content of each process unit turnaround waste, the annual waste quantity determined in accordance with § 61.355(b)(5), the range of benzene concentrations in the waste, the annual average flow-weighted benzene concentration of the waste, and the annual benzene quantity calculated in accordance with § 61.355(a)(1)(iii) of this section.

(6) For each facility where wastewater streams are controlled for benzene emissions in accordance with § 61.348(b)(2), the records shall include all measurements, calculations, and other documentation used to determine the annual benzene content of the waste streams and the total annual benzene quantity contained in all waste streams managed or treated in exempt waste management units.

61.348(b)(2) does not apply since the annual benzene quantity is expected to be less than 11 tons per year and treatment systems are not required.

(c) – (n) These paragraphs do not apply since the annual benzene quantity is expected to be less than 11 tons per year.

§ 61.357 Reporting requirements.

(a) Each owner or operator of a chemical plant, petroleum refinery, coke by-product recovery plant, and any facility managing wastes from these industries shall submit to the Administrator within 90 days after January 7, 1993, or by the initial startup for a new source with an initial startup after the effective date, a report that summarizes the regulatory status of each waste stream subject to § 61.342 and is determined by the procedures specified in § 61.355(c) to contain benzene. Each owner or operator subject to this subpart who has no benzene onsite in wastes, products, by-products, or intermediates shall submit an initial report that is a statement to this effect. For all other owners or operators subject to this subpart, the report shall include the following information:

(1) Total annual benzene quantity from facility waste determined in accordance with § 61.355(a) of this subpart.

(2) A table identifying each waste stream and whether or not the waste stream will be controlled for benzene emissions in accordance with the requirements of this subpart.

(3) For each waste stream identified as not being controlled for benzene emissions in accordance with the requirements of this subpart the following information shall be added to the table:

(i) Whether or not the water content of the waste stream is greater than 10 percent;

(ii) Whether or not the waste stream is a process wastewater stream, product tank drawdown, or landfill leachate;

(iii) Annual waste quantity for the waste stream;

(iv) Range of benzene concentrations for the waste stream;

(v) Annual average flow-weighted benzene concentration for the waste stream; and

(vi) Annual benzene quantity for the waste stream.

(4) The information required in paragraphs (a) (1), (2), and (3) of this section should represent the waste stream characteristics based on current configuration and operating conditions. An owner or operator only needs to list in the report those waste streams that contact materials containing benzene. The report does not need to include a description of the controls to be installed to comply with the standard or other information required in § 61.10(a).

(b) If the total annual benzene quantity from facility waste is less than 1 Mg/yr (1.1 ton/yr), then the owner or operator shall submit to the Administrator a report that updates the information listed in paragraphs (a)(1) through (a)(3) of this section whenever there is a change in the process generating the waste stream that could cause the total annual benzene quantity from facility waste to increase to 1 Mg/yr (1.1 ton/yr) or more.

(c) - (d) These paragraphs do not apply to facilities with annual benzene quantity is less than 1.1 tons per year. Benzene waste quantities from Magnida are expected to be less than 1.1 tons per year.

(e) - (g) These paragraphs only apply to facilities that are complying with alternative standards that apply if the annual benzene quantity is expected to be equal to or greater than 11 tons per year.

MACT Applicability (40 CFR 63)

Subpart FFFF—National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing

§ 63.2435 Am I subject to the requirements in this subpart?

(a) You are subject to the requirements in this subpart if you own or operate miscellaneous organic chemical manufacturing process units (MCPU) that are located at, or are part of, a major source of hazardous air pollutants (HAP) emissions as defined in section 112(a) of the Clean Air Act (CAA).

Magnida is a major source of HAPs; hexane and methanol potential emissions are greater than 10 tons per year, and total potential HAP emissions are greater than 25 tons per year. The facility is a miscellaneous organic chemical manufacturing process units (MCPU) as defined below in § 63.2435(b) (discussed in the following paragraph). Therefore the facility is an affected source.

(b) An MCPU includes equipment necessary to operate a miscellaneous organic chemical manufacturing process, as defined in § 63.2550, that satisfies all of the conditions specified in paragraphs (b)(1) through (3) of this section. An MCPU also includes any assigned storage tanks and transfer racks; equipment in open systems that is used to convey or store water having the same concentration and flow characteristics as wastewater; and components such as pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, and instrumentation systems that are used to manufacture any material or family of materials described in paragraphs (b)(1)(i) through (v) of this section.

(1) The MCPU produces material or family of materials that is described in paragraph (b)(1)(i), (ii), (iii), (iv), or (v) of this section.

(i) An organic chemical(s) classified using the 1987 version of SIC code 282, 283, 284, 285, 286, 287, 289, or 386, except as provided in paragraph (c)(5) of this section.

Magnida will produce several chemicals listed SIC code industry group 287 including ammonium nitrate, anhydrous ammonia, nitric acid, nitrogenous fertilizer and urea.

(ii) An organic chemical(s) classified using the 1997 version of NAICS code 325, except as provided in paragraph (c)(5) of this section.

(iii) Quaternary ammonium compounds and ammonium sulfate produced with caprolactam.

(iv) Hydrazine.

(v) Organic solvents classified in any of the SIC or NAICS codes listed in paragraph (b)(1)(i) or (ii) of this section that are recovered using nondedicated solvent recovery operations.

(2) The MCPU processes, uses, or generates any of the organic HAP listed in section 112(b) of the CAA or hydrogen halide and halogen HAP, as defined in § 63.2550.

Magnida's process uses formaldehyde in producing granulated urea and methanol emissions are estimated to occur from the MDEA stripper; formaldehyde methanol are listed HAPs in section 112(b) of the CAA.

(3) The MCPU is not an affected source or part of an affected source under another subpart of this part 63, except for process vents from batch operations within a chemical manufacturing process unit (CMPU), as identified in § 63.100(j)(4).

The MCPU is not an affected source or part of an affected source under another subpart of 40 CFR 63 and therefore does not meet the criteria for this exception to applicability.

(c) The requirements in this subpart do not apply to the operations specified in paragraphs (c)(1) through (7) of this section.

Magnida is not subject to any of the exceptions to applicability described in (c)(1) through (7) of this section. Those sections are not repeated as part of this statement of basis.

(d) – (e) includes provisions for non-dedicated equipment.

At the time of permit issuance it appears that the formaldehyde storage and handling equipment is dedicated to distributing and storing the formaldehyde containing resin UF-85, thereby making paragraphs (d) & (e) irrelevant because there isn't any non-dedicated equipment.

§ 63.2440 What parts of my plant does this subpart cover?

(a) This subpart applies to each miscellaneous organic chemical manufacturing affected source.

Miscellaneous organic chemical manufacturing process means all equipment which collectively function to produce a product or isolated intermediate that are materials described in § 63.2435(b). For the purposes of this subpart, process includes any, all or a combination of reaction, recovery, separation, purification, or other activity, operation, manufacture, or treatment which are used to produce a product or isolated intermediate. A process is also defined by the following:

(1) Routine cleaning operations conducted as part of batch operations are considered part of the process;

(2) Each nondedicated solvent recovery operation is considered a single process;

(3) Each nondedicated formulation operation is considered a single process that is used to formulate numerous materials and/or products;

(4) Quality assurance/quality control laboratories are not considered part of any process; and

(5) Ancillary activities are not considered a process or part of any process.

(6) The end of a process that produces a solid material is either up to and including the dryer or extruder, or for a polymer production process without a dryer or extruder, it is up to and including the extruder, die plate, or solid-state reactor, except in two cases. If the dryer, extruder, die plate, or solid-state reactor is followed by an operation that is designed and operated to remove HAP solvent or residual HAP monomer from the solid, then the solvent removal operation is the last step in the process. If the dried solid is diluted or mixed with a HAP-based solvent, then the solvent removal operation is the last step in the process.

Note that in order to be an affected source the following 3 criteria must be met as described in § 63.2435(b):

1) The MCPU produces material listed in§ 63.2435(b)(1) – in this case Magnida produces products included in SIC code industry group 287 including ammonium nitrate, anhydrous ammonia, nitric acid, nitrogenous fertilizer and urea.
2) The MCPU processes, uses, or generates any of the organic HAP listed in section 112(b) of the CAA.
3) The MCPU is not an affected source or part of an affected source under another subpart of this part 63 – none of the processes at the facility regulated by another subpart of 40 CFR 63.

From § 63.2435(b)(1) an "…MCPU also includes any assigned storage tanks and transfer racks; equipment in open systems that is used to convey or store water having the same concentration and flow characteristics as wastewater; and components such as pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, and instrumentation systems that are used to manufacture any.." ammonium nitrate, anhydrous ammonia, nitric acid, nitrogenous fertilizer and urea if criteria 2 & 3 listed above are met

Processes at the Magnida facility that may be affected sources include:

Ammonia production, including product or intermediate handling and storage.

Urea production, granulation, including product or intermediate handling and storage.

Nitric acid production, including product or intermediate handling and storage.

Ammonium nitrate production, including product or intermediate handling and storage.

Urea ammonium nitrate production, including product or intermediate handling and storage.

Following is an applicability determination for each of these potentially affected sources based on the three applicability criteria: 1)Produces a material listed in § 63.2435(b)(1); 2) processes, uses, or generates any organic HAP; 3) is not a affected source in any other Subpart of 40 CFR 63. All of the processes are associated with producing a material listed in§ 63.2435(b)(1) and none of the listed sources are affected by any other Subpart of 40 CFR 63. Therefore the first and third criteria are met for all potentially affected sources and the following discussion only addresses the second criteria (i.e. whether or not an organic HAP is processed, used, or generated).

Ammonia production, including product or intermediate handling and storage

Magnida estimated methanol emissions from the ammonia plant MDEA stripper and AP-42 Section 8.1.2.3 indicates that methanol is generated and emitted during the production of ammonia. Therefore the ammonia process is an affected unit because an organic HAP is generated.

Urea production, granulation, including product or intermediate handling and storage.

The urea production processes uses and produces organic HAPs and they are therefore affected sources.

Nitric acid production, including product or intermediate handling and storage.

Organic HAPs are not used or known to be produced in the nitric acid production process therefore these units are not affected sources.

Urea ammonium nitrate (UAN) production, including product or intermediate handling and storage.

Organic HAPs are not used or known to be produced in UAN blending operations therefore these are not affected sources.

As specified in 40 CFR 63.2435(b) "An MCPU also includes any assigned storage tanks and transfer racks; equipment in open systems that is used to convey or store water having the same concentration and flow characteristics as wastewater; and components such as pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, and instrumentation systems that are used to manufacture any…" ammonium nitrate, anhydrous ammonia, nitric acid, nitrogenous fertilizer and urea. Following are applicability determinations based on these criteria.

Storage Tanks

As defined in § 63.2550 *Storage tank* means a tank or other vessel that is used to store liquids that contain organic HAP and/or hydrogen halide and halogen HAP and that has been assigned to an MCPU according to the procedures in § 63.2435(d). The following are not considered storage tanks for the purposes of this subpart:

(1) Vessels permanently attached to motor vehicles such as trucks, railcars, barges, or ships;

(2) Pressure vessels designed to operate in excess of 204.9 kilopascals and without emissions to the atmosphere;

(3) Vessels storing organic liquids that contain HAP only as impurities;

(4) Wastewater storage tanks;

(5) Bottoms receivers;

(6) Surge control vessels; and

(7) Process tanks.

The only known storage tank at the facility that meets this definition is the UF-85 resin tank associated with the production of granulated urea. This tank holds liquid formaldehyde.

Transfer Racks

There are no transfer racks used to fill tank trucks and/or rail cars with organic liquids that contain one or more of the organic HAP listed in section 112(b) of the CAA at the Magnida facility.

Open systems used to convey or store water having the same concentration and flow characteristics as wastewater

As defined in § 63.2550 "*Wastewater* means water that is discarded from an MCPU or control device through a POD [point of determination] and that contains either: an annual average concentration of compounds in tables 8 and 9 to this subpart of at least 5 ppmw and has an annual average flowrate of 0.02 liters per minute or greater; or an annual average concentration of compounds in tables 8 and 9 to this subpart of at least 10,000 ppmw at any flowrate. Wastewater means process wastewater or maintenance wastewater. The following are not considered wastewater for the purposes of this subpart:

(1) Stormwater from segregated sewers;

(2) Water from fire-fighting and deluge systems, including testing of such systems;

(3) Spills;

(4) Water from safety showers;

(5) Samples of a size not greater than reasonably necessary for the method of analysis that is used;

(6) Equipment leaks;

(7) Wastewater drips from procedures such as disconnecting hoses after cleaning lines; and

(8) Noncontact cooling water."

Magnida identified wastewater from the urea plant as meeting this definition. No other sources were identified in the application for the air permit.

Components such as pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, and instrumentation systems that are used to manufacture any ammonium nitrate, anhydrous ammonia, nitric acid, nitrogenous fertilizer and urea.

Collectively the following terms mean "equipment" when they are in organic HAP service: Pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, and instrumentation systems. As defined at § 63.2550 "*Equipment* means each pump, compressor, agitator, pressure relief device, sampling connection system, open-ended valve or line, valve, connector, and instrumentation system in organic HAP service..."

As defined at § 63.2550" *In organic HAP service* means that a piece of equipment either contains or contacts a fluid (liquid or gas) that is at least 5 percent by weight of total organic HAP as determined according to the provisions of § 63.180(d). The provisions of § 63.180(d) also specify how to determine that a piece of equipment is not in organic HAP service."

§ 63.180(d) Each piece of equipment within a process unit that can reasonably be expected to contain equipment in organic HAP service is presumed to be in organic HAP service unless an owner or operator demonstrates that the piece of equipment is not in organic HAP service. For a piece of equipment to be considered not in organic HAP service, it must be determined that the percent organic HAP content can be reasonably expected not to exceed 5 percent by weight on an annual average basis. For purposes of determining the percent organic HAP content of the process fluid that is contained in or contacts equipment, Method 18 of 40 CFR part 60, appendix A shall be used.

Magnida identified equipment (e.g. valves, pumps, and connectors) from the UF-85 Storage Tank through where it is introduced to the process as affected sources. UF-85 resin is a liquid that includes formaldehyde exceeding 5 percent by weight. Magnida will be required to submit the results of any applicability determinations, emission calculations, or analyses used to identify and quantify HAP usage or HAP emissions from the affected source in accordance with 40 CFR 63.2520(d).

(b) The miscellaneous organic chemical manufacturing affected source is the facility wide collection of MCPU and heat exchange systems, wastewater, and waste management units that are associated with manufacturing materials described in § 63.2435(b)(1).

Following are discussions regarding the applicability of heat exchange systems. Wastewater applicability is discussed in the previous section, and "waste management units" are units that convey, store, treat or dispose of wastewater.

Magnida identified a heat exchange system in the urea plant as an affected unit; no other heat exchangers were identified. The term heat exchange system is not specifically defined in this subpart. However, through references in Table 10 of this Subpart heat exchange systems are defined at § 63.101 - *Heat exchange system* means any cooling tower system or once-through cooling water system (e.g., river or pond water). A heat exchange system can include more than one heat exchanger and can include an entire recirculating or once-through cooling system.

(c) A new affected source is described by either paragraph (c)(1) or (2) of this section.

(1) Each affected source defined in paragraph (b) of this section for which you commenced construction or reconstruction after April 4, 2002, and you meet the applicability criteria at the time you commenced construction or reconstruction.

Magnida meets these criteria and is a new affected source.

(2) Each dedicated MCPU that has the potential to emit 10 tons per year (tpy) of any one HAP or 25 tpy of combined HAP, and you commenced construction or reconstruction of the MCPU after April 4, 2002. For the purposes of this paragraph, an MCPU is an affected source in the definition of the term "reconstruction" in § 63.2.

This paragraph is irrelevant because the source has been determined to be a new affected source by the preceding paragraph.

(d) An MCPU that is also a CMPU under § 63.100 is reconstructed for the purposes of this subpart if, and only if, the CMPU meets the requirements for reconstruction in § 63.100(l)(2).

Magnida is not reconstructing, they are installing a new source.

Summary of Affected Sources

The preceding applicability determinations are summarized with the following list of affected sources.

- Ammonia production, including product or intermediate handling and storage.
- Urea production, granulation, including product or intermediate handling and storage.
- UF-85 resin storage tank.

- Wastewater from the urea plant.
- UF-85 handling equipment (e.g. valves, pumps, and connectors) from the UF-85 Storage Tank through where it is introduced to the process.
- Heat exchange system (cooling tower)

§ 63.2445 When do I have to comply with this subpart?

(a) If you have a new affected source, you must comply with this subpart according to the requirements in paragraphs (a)(1) and (2) of this section.

(1) If you startup your new affected source before November 10, 2003, then you must comply with the requirements for new sources in this subpart no later than November 10, 2003.

(2) If you startup your new affected source after November 10, 2003, then you must comply with the requirements for new sources in this subpart upon startup of your affected source.

(b) If you have an existing source on November 10, 2003, you must comply with the requirements for existing sources in this subpart no later than May 10, 2008.

(c) You must meet the notification requirements in § 63.2515 according to the dates specified in that section and in subpart A of this part 63. Some of the notifications must be submitted before you are required to comply with the emission limits, operating limits, and work practice standards in this subpart.

(d) If you have a Group 2 emission point that becomes a Group 1 emission point after the compliance date for your affected source, you must comply with the Group 1 requirements beginning on the date the switch occurs. An initial compliance demonstration as specified in this subpart must be conducted within 150 days after the switch occurs.

(e) If, after the compliance date for your affected source, hydrogen halide and halogen HAP emissions from process vents in a process increase to more than 1,000 lb/yr, or HAP metals emissions from a process at a new affected source increase to more than 150 lb/yr, you must comply with the applicable emission limits specified in Table 3 to this subpart and the associated compliance requirements beginning on the date the emissions exceed the applicable threshold. An initial compliance demonstration as specified in this subpart must be conducted within 150 days after the switch occurs.

The affected source at Magnida does not use hydrogen halide or a halogen, or HAPs metals, therefore no emissions of these pollutants are expected.

(f) If you have a small control device for process vent or transfer rack emissions that becomes a large control device, as defined in § 63.2550(i), you must comply with monitoring and associated recordkeeping and reporting requirements for large control devices beginning on the date the switch occurs. An initial compliance demonstration as specified in this subpart must be conducted within 150 days after the switch occurs.

§ 63.2450 What are my general requirements for complying with this subpart?

(a) You must be in compliance with the emission limits and work practice standards in tables 1 through 7 to this subpart at all times, except during periods of startup, shutdown, and malfunction (SSM), and you must meet the requirements specified in §§ 63.2455 through 63.2490 (or the alternative means of compliance in § 63.2495, § 63.2500, or § 63.2505), except as specified in paragraphs (b) through (s) of this section. You must meet the notification, reporting, and recordkeeping requirements specified in §§ 63.2515, 63.2520, and 63.2525.

- Table 1includes provisions for continuous process vents. As discussed in § 63.2455 below Magnida asserts that they do not have a continuous process vent as those terms are defined in this subpart.
- Table 2 includes provisions for batch process vents. As discussed in § 63.2460 below Magnida process flow diagrams or process descriptions do not include batch process vents as those terms are defined in this subpart.

- Table 3 includes provisions for process vents that have uncontrolled hydrogen halide and halogen HAP emissions from process vents ≥1,000 lb/yr and provisions for with uncontrolled emissions from process vents ≥150 lb/yr of HAP metals. As discussed in § 63.2465 below Magnida does not have hydrogen halide, halogen HAP or HAP metal emissions that meet these criteria for applicability.
- Table 4 includes provisions for Group 1 storage tanks. As discussed in § 63.2470 below Magnida will be required to submit the results of any Group 1 applicability determinations including emission calculations, or analyses used to identify and quantify HAP usage or HAP emissions from the affected source in accordance with 40 CFR 63.2520(d).
- Table 5 includes limits and requirements for Transfer Racks. As discussed in § 63.2475 below Magnida does not have Transfer Racks are those terms are defined in this subpart.
- Table 6 includes requirements for leaks for equipment in organic HAP service. See the discussion in § 63.2480 below for a discussion on applicability.
- Table 7 includes requirements for wastewater streams in open systems. As discussed in § 63.2485 below Magnida did not identify any streams that meet the applicability criteria.

(b) *Determine halogenated vent streams.* You must determine if an emission stream is a halogenated vent stream, as defined in § 63.2550, by calculating the mass emission rate of halogen atoms in accordance with § 63.115(d)(2)(v). Alternatively, you may elect to designate the emission stream as halogenated.

Halogenated vent stream means a vent stream determined to have a mass emission rate of halogen atoms contained in organic compounds of 0.45 kilograms per hour or greater determined by the procedures presented in §63.115(d)(2)(v).

Halogen atoms mean chlorine and fluorine.

Chlorine and fluorine emission were not identified as occurring from the affected source nor is chlorine or fluorine known to be used in the affected source.

(c) *Requirements for combined emission streams.* When organic HAP emissions from different emission types (e.g., continuous process vents, batch process vents, storage tanks, transfer operations, and waste management units) are combined, you must comply with the requirements of either paragraph (c)(1) or (2) of this section.

Magnida's application did not include any combined emissions streams.

(d) [Reserved]

(e) Requirements for control devices. (1) Except when complying with § 63.2485, if you reduce organic HAP emissions by venting emissions through a closed-vent system to any combination of control devices (except a flare) or recovery devices, you must meet the requirements of § 63.982(c) and the requirements referenced therein.

Magnida did not indicate that controls are being used to comply with this MACT.

(2) Except when complying with § 63.2485, if you reduce organic HAP emissions by venting emissions through a closed-vent system to a flare, you must meet the requirements of § 63.982(b) and the requirements referenced therein.

Magnida did not indicate that controls are being used to comply with this MACT.

(3) If you use a halogen reduction device to reduce hydrogen halide and halogen HAP emissions from halogenated vent streams, you must meet the requirements of § 63.994 and the requirements referenced therein. If you use a halogen reduction device before a combustion device, you must determine the halogen atom emission rate prior to the combustion device according to the procedures in § 63.115(d)(2)(v).

Magnida did not indicate that controls are being used to comply with this MACT.

§ 63.2455 What requirements must I meet for continuous process vents?

Continuous process vent means the point of discharge to the atmosphere (or the point of entry into a control device, if any) of a gas stream if the gas stream has the characteristics specified in § 63.107(b) through (h), or meets the criteria specified in § 63.107(i), except:

(1) The reference in § 63.107(e) to a chemical manufacturing process unit that meets the criteria of § 63.100(b) means an MCPU that meets the criteria of § 63.2435(b);

(2) The reference in § 63.107(h)(4) to § 63.113 means Table 1 to this subpart;

(3) The references in § 63.107(h)(7) to §§ 63.119 and 63.126 mean tables 4 and 5 to this subpart; and

(4) For the purposes of § 63.2455, all references to the characteristics of a process vent (*e.g.*, flowrate, total HAP concentration, or TRE index value) mean the characteristics of the gas stream.

(5) The reference to "total organic HAP" in § 63.107(d) means "total HAP" for the purposes of this subpart FFFF.

(6) The references to an "air oxidation reactor, distillation unit, or reactor" in § 63.107 mean any continuous operation for the purposes of this subpart.

(7) A separate determination is required for the emissions from each MCPU, even if emission streams from two or more MCPU are combined prior to discharge to the atmosphere or to a control device.

In order to be a continuous process vent the gas stream must meet all the characteristics specified in §63.107(b) through (h), or meet the criteria specified in § 63.107(i).

§ 63.107(d) specifies "The gas stream contains greater than 0.005 weight percent total organic HAP at the point of discharge to the atmosphere (or at the point of entry into a control device, if any)."

Magnida asserts that there are not vents at the facility meet the definition of a "continuous process vent". Since the gas stream does not meet § 63.107(d) it does not meet all of the requirements of §63.107(b) through (h). Magnida will be required to submit the results of any applicability determinations, emission calculations, or analyses used to identify and quantify HAP usage or HAP emissions from the affected source in accordance with 40 CFR 63.2520(d).

The gas stream may be considered continuous process vent based on the criteria at § 63.107(i). In order to meet the criteria of § 63.107(i) the gas stream would meet the characteristics specified in § 63.107(b) through (h), but, for purposes of avoiding applicability, has been deliberately interrupted, temporarily liquefied, routed through any item of equipment for no process purpose, or disposed of in a flare that does not meet the criteria in § 63.11(b), or an incinerator that does not reduce emissions of organic HAP by 98 percent or to a concentration of 20 parts per million by volume, whichever is less stringent. Emissions from the granulation process pass through a wet scrubber prior to being emitted. For applicability purposes, if this scrubber is assumed to remove 99% (a conservatively high value) of the methanol and formaldehyde (i.e. total HAP) that has been estimated to be emitted from the granulation process uncontrolled emissions would be 204 pounds per hour. That is an organic HAP content of 0.001%[13] by weight, which is below the applicability threshold of 0.005%.

The emissions from the granulation process do not fit the definition of a continuous process vent and the provisions of § 63.2455 do not apply.

§ 63.2460 What requirements must I meet for batch process vents?

Batch operation means a noncontinuous operation involving intermittent or discontinuous feed into equipment, and, in general, involves the emptying of the equipment after the operation ceases and prior to beginning a new operation. Addition of raw material and withdrawal of product do not occur simultaneously in a batch operation.

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13 Weight of gas flow at granulator stack is: ((441,60 ft3/min)(60min/hr)/383.8ft3/lb.mole)x29 (MW of air)=2,002,052 lb/hr gas flow. (204 lb HAP/hr)/2,002,052 lb/hr)x100%=0.001%

Magnida's process description did not include any batch operations, consistent with that description they assert that batch operations, as that term is defined, do not occur at the facility. Therefore, the provisions of § 63.2460 do not apply.

§ 63.2465 What requirements must I meet for process vents that emit hydrogen halide and halogen HAP or HAP metals?

None of the process vents emit hydrogen halide and halogen HAP or HAP metals. Therefore, § 63.2465 does not apply.

§ 63.2470 What requirements must I meet for storage tanks?

(a) You must meet each emission limit in Table 4 to this subpart that applies to your storage tanks, and you must meet each applicable requirement specified in paragraphs (b) through (e) of this section.

Table 4 only includes standards for Group 1 storage tanks. By definition Group 1 storage tanks are "... a storage tank with a capacity greater than or equal to 10,000 gal storing material that has a maximum true vapor pressure of total HAP greater than or equal to 6.9 kilopascals at an existing source or greater than or equal to 0.69 kilopascals at a new source." Magnida will be required to submit the results of any applicability determinations, emission calculations, or analyses used to identify and quantify HAP usage or HAP emissions from the affected source in accordance with 40 CFR 63.2520(d).

§ 63.2475 What requirements must I meet for transfer racks?

Transfer rack means the collection of loading arms and loading hoses, at a single loading rack, that are assigned to an MCPU according to the procedures specified in § 63.2435(d) and are used to fill tank trucks and/or rail cars with organic liquids that contain one or more of the organic HAP listed in section 112(b) of the CAA of this subpart. Transfer rack includes the associated pumps, meters, shutoff valves, relief valves, and other piping and valves. Organic liquids that may be loaded into trucks or rail cars at the Magnida facility are urea and urea ammonium nitrate. However, neither of these loading processes is known to use, or generate any of the organic HAP listed in section 112(b) of the CAA or hydrogen halide and halogen HAP (as specified in § 63.2435(d)). Therefore there are no known transfer racks at the facility and the provisions of § 63.2475 do not apply.

§ 63.2480 What requirements must I meet for equipment leaks?

(a) You must meet each requirement in table 6 to this subpart that applies to your equipment leaks, except as specified in paragraphs (b) through (d) of this section.

Table 6 to Subpart FFFF of Part 63—Requirements for Equipment Leaks

As required in § 63.2480, you must meet each requirement in the following table that applies to your equipment leaks:

For all . . .	And that is part of . . .	You must . . .
1. Equipment that is in organic HAP service	a. Comply with the requirements of subpart UU of this part 63 and the requirements referenced therein, except as specified in § 63.2480(b) and (d); or	
	b. Comply with the requirements of subpart H of this part 63 and the requirements referenced therein, except as specified in § 63.2480(b) and (d); or	
	c. Comply with the requirements of 40 CFR part 65, subpart F and the requirements referenced therein, except as specified in § 63.2480(c) and (d).	
2. Equipment that is in organic HAP service at a	a. Any MCPU	i. Comply with the requirements of subpart UU of this part 63[requirements for equipment leaks] and the

new source		requirements referenced therein; or ii. Comply with the requirements of 40 CFR part 65, subpart F [equipment leaks].

Equipment at Magnida that is known to be in organic HAP service as defined in 40 CFR 63.180(d) (e.g. the percent organic HAP content can be reasonably expected not to exceed 5 percent by weight on an annual average basis) is the UF-85 resin handling equipment (e.g. valves, pumps, and connectors).

Magnida will also be required, where applicable, to comply with the exceptions detailed in paragraphs (b) through (d) of this section.

§ 63.2485 What requirements must I meet for wastewater streams and liquid streams in open systems within an MCPU?

(a) You must meet each requirement in table 7 to this subpart that applies to your wastewater streams and liquid streams in open systems within an MCPU, except as specified in paragraphs (b) through (o) of this section.

As defined in § 63.2550 "*Wastewater* means water that is discarded from an MCPU or control device through a POD [point of determination] and that contains either: an annual average concentration of compounds in tables 8 and 9 to this subpart of at least 5 ppmw and has an annual average flowrate of 0.02 liters per minute or greater; or an annual average concentration of compounds in tables 8 and 9 to this subpart of at least 10,000 ppmw at any flowrate. Wastewater means process wastewater or maintenance wastewater. The following are not considered wastewater for the purposes of this subpart:

(1) Stormwater from segregated sewers;

(2) Water from fire-fighting and deluge systems, including testing of such systems;

(3) Spills;

(4) Water from safety showers;

(5) Samples of a size not greater than reasonably necessary for the method of analysis that is used;

(6) Equipment leaks;

(7) Wastewater drips from procedures such as disconnecting hoses after cleaning lines; and

(8) Noncontact cooling water."

Magnida identified wastewater from the urea plant as meeting this definition. No other sources were identified in the application for the air permit.

Open systems are used to convey or store water having the same concentration and flow characteristics as wastewater. Magnida did not identify any open systems in the application.

Table 7 to Subpart FFFF of Part 63—Requirements for Wastewater Streams and Liquid Streams in Open Systems Within an MCPU

As required in § 63.2485, you must meet each requirement in the following table that applies to your wastewater streams and liquid streams in open systems within an MCPU:

For each . . .	You must . . .
1. Process wastewater stream	Comply with the requirements in §§ 63.132 through 63.148 and the requirements referenced therein, except as specified in § 63.2485.
2. Maintenance wastewater stream	Comply with the requirements in § 63.105 and the requirements referenced therein, except as specified in § 63.2485.

3. Liquid streams in an open system within an MCPU	Comply with the requirements in § 63.149 and the requirements referenced therein, except as specified in § 63.2485.

Magnida asserts that the process wastewater is a Group 2 wastewater. Magnida will have to follow the procedures specified below to appropriately classify the wastewater. For process wastewater streams, as specified in Table 7 above, sources must comply with §§ 63.132 through 63.148. These subsections do not include any requirements for emissions reductions or work practice standards for Group 2 wastewater from Magnida's facility. The only requirements that apply for Group 2 wastewater generated at the Magnida facility are procedures for determining whether a wastewater is Group 1 or 2, recordkeeping and reporting requirements specified in §§ 63.146(b)(1) and 63.147(b)(8).

(b) *Wastewater HAP.* Where § 63.105 and §§ 63.132 through 63.148 refer to compounds in table 9 of subpart G of this part 63, the compounds in tables 8 and 9 to this subpart apply for the purposes of this subpart.

Magnida's application did not specify the compounds that will be in the wastewater. However, Magnida will be required to keep records to substantiate the determination.

(c) Group 1 wastewater. Section 63.132(c)(1) (i) and (ii) do not apply. For the purposes of this subpart, a process wastewater stream is Group 1 for compounds in tables 8 and 9 to this subpart if any of the conditions specified in paragraphs (c) (1) through (3) of this section are met.

(1) The total annual average concentration of compounds in table 8 to this subpart is greater than or equal to 10,000 ppmw at any flowrate, and the total annual load of compounds in table 8 to this subpart is greater than or equal to 200 lb/yr.

(2) The total annual average concentration of compounds in table 8 to this subpart is greater than or equal to 1,000 ppmw, and the annual average flowrate is greater than or equal to 1 l/min.

(3) The combined total annual average concentration of compounds in tables 8 and 9 to this subpart is greater than or equal to 30,000 ppmw, and the combined total annual load of compounds in tables 8 and 9 to this subpart is greater than or equal to 1 tpy.

Magnida states that the wastewater will be a Group 2 wastewater. That is, by definition, the wastewater does not meet the definition of a Group 1 wastewater.

Group 1 wastewater stream means a wastewater stream consisting of process wastewater at an existing or new source that meets the criteria for Group 1 status in § 63.2485(c) for compounds in Tables 8 and 9 to this subpart and/or a wastewater stream consisting of process wastewater at a new source that meets the criteria for Group 1 status in § 63.132(d) for compounds in Table 8 to subpart G of this part 63.

§ 63.132(d) -How to determine Group 1 or Group 2 status for Table 8 compounds. This paragraph provides instructions for determining whether a wastewater stream is Group 1 or Group 2 for Table 8 compounds. Annual average concentration for each Table 8 compound shall be determined according to the procedures specified in § 63.144(b) of this subpart. Annual average flow rate shall be determined according to the procedures specified in § 63.144(c) of this subpart.

(1) A wastewater stream is a Group 1 wastewater stream for Table 8 compounds if the annual average flow rate is 0.02 liter per minute or greater and the annual average concentration of any individual table 8 compound is 10 parts per million by weight or greater.

(2) A wastewater stream is a Group 2 wastewater stream for Table 8 compounds if the annual average flow rate is less than 0.02 liter per minute or the annual average concentration for each individual Table 8 compound is less than 10 parts per million by weight.

Magnida is required to follow the procedures for determining the Group status of the waste stream.

(3) The owner or operator of a Group 2 wastewater shall re-determine group status for each Group 2 stream, as necessary, to determine whether the stream is Group 1 or Group 2 whenever process changes are made that could reasonably be expected to change the stream to a Group 1 stream. Examples of

process changes include, but are not limited to, changes in production capacity, production rate, feedstock type, or whenever there is a replacement, removal, or addition of recovery or control equipment. For purposes of this paragraph (d)(3), process changes do not include: Process upsets; unintentional, temporary process changes; and changes that are within the range on which the original determination was based.

(d) *Wastewater tank requirements…*

The wastewater tank requirements are only applicable to sources with Group 1 wastewater. Since Magnida asserts that the wastewater is Group 2 these provisions do not apply and are not repeated in this statement of basis.

(e) *Individual drain systems.*

Individual drain systems requirements are only applicable to sources with Group 1 wastewater. Since Magnida asserts that the wastewater is Group 2 these provisions do not apply and are not repeated in this statement of basis.

(f) *Closed-vent system requirements.*

Closed vent systems are only applicable to sources with Group 1 wastewater. Since Magnida asserts that the wastewater is Group 2 these provisions do not apply and are not repeated in this statement of basis.

(g) *Halogenated vent stream requirements.*

Halogenated vent streams are not expected to occur from an affected source are these requirements are not repeated in this statement of basis.

Halogenated vent stream means a vent stream determined to have a mass emission rate of halogen atoms contained in organic compounds of 0.45 kilograms per hour or greater determined by the procedures presented in §63.115(d)(2)(v).

Halogen atoms mean chlorine and fluorine.

Chlorine and fluorine emission were not identified as occurring from the affected source nor is chlorine or fluorine known to be used in the affected source.

(h) *Alternative test methods.*

The alternative test methods are detailed in this section and are not repeated in this statement of basis. They are available for Magnida's use as applicable.

(i) *Offsite management and treatment option.*

Magnida asserts the wastewater is a Group 2 wastewater; no treatment is required for Group 2 wastewater therefore these provisions are not included in this statement of basis.

(j) You must determine the annual average concentration and annual average flowrate for wastewater streams for each MCPU. The procedures for flexible operation units specified in §63.144 (b) and (c) do not apply for the purposes of this subpart.

(k) The requirement to correct outlet concentrations from combustion devices to 3 percent oxygen in §§63.139(c)(1)(ii) and 63.146(i)(6) applies only if supplemental gases are combined with a vent stream from a Group 1 wastewater stream. If emissions are controlled with a vapor recovery system as specified in §63.139(c)(2), you must correct for supplemental gases as specified in §63.2460(c)(6).

Magnida asserts the wastewater is a Group 2 wastewater; no treatment or control is required for Group 2 wastewater.

(l) *Requirements for liquid streams in open systems.*

Open systems are used to convey or store water having the same concentration and flow characteristics as wastewater. Magnida did not identify any open systems in the application.

(m) When §63.132(f) refers to "a concentration of greater than 10,000 ppmw of table 9 compounds," the phrase "a concentration of greater than 30,000 ppmw of total partially soluble HAP (PSHAP) and soluble HAP (SHAP) or greater than 10,000 ppmw of PSHAP" shall apply for the purposes of this subpart.

(n) *Alternative requirements for wastewater that is Group 1 for soluble HAP only.*

Magnida asserts the wastewater is a Group 2 wastewater, therefore these provisions are not repeated in this statement of basis.

(o) *Compliance records.* For each CPMS used to monitor a nonflare control device for wastewater emissions, you must keep records as specified in §63.998(c)(1) in addition to the records required in §63.147(d).

Control devices are not required for Group 2 wastewater.

§63.2490 What requirements must I meet for heat exchange systems?

(a) You must comply with each requirement in Table 10 to this subpart that applies to your heat exchange systems, except as specified in paragraphs (b) and (c) of this section.

(b) The phrase "a chemical manufacturing process unit meeting the conditions of §63.100 (b)(1) through (b)(3) of this section" in §63.104(a) means "an MCPU meeting the conditions of §63.2435" for the purposes of this subpart.

(c) The reference to §63.100(c) in §63.104(a) does not apply for the purposes of this subpart.

Table 10 to Subpart FFFF of Part 63—Work Practice Standards for Heat Exchange Systems

As required in §63.2490, you must meet each requirement in the following table that applies to your heat exchange systems:

For each . . .	You must . . .
Heat exchange system, as defined in §63.101	Comply with the requirements of §63.104 and the requirements referenced therein, except as specified in §63.2490.

Magnida will be subject to leak requirements including monitoring of the heat exchange system unless characteristics of the system meet the criteria specified in §63.104 to exempt the facility from monitoring.

ALTERNATIVE MEANS OF COMPLIANCE

§63.2495 How do I comply with the pollution prevention standard?

Alternative pollution prevention standards are only available for source which initial startup occurred before April 4, 2002. Since these alternatives are not available for Magnida they are not detailed in this statement of basis, nor are the compliance provisions of §63.2505 for the alternative standard detailed.

NOTIFICATION, REPORTS, AND RECORDS

§63.2515 What notifications must I submit and when?

(a) You must submit all of the notifications in §§63.6(h)(4) and (5), 63.7(b) and (c), 63.8(e), (f)(4) and (6), and 63.9(b) through (h) that apply to you by the dates specified.

(b) *Initial notification.* As specified in §63.9(b)(2), if you startup your affected source before November 10, 2003, you must submit an initial notification not later than 120 calendar days after November 10, 2003.

(2) As specified in §63.9(b)(3), if you startup your new affected source on or after November 10, 2003, you must submit an initial notification not later than 120 calendar days after you become subject to this subpart.

(c) *Notification of performance test.* If you are required to conduct a performance test, you must submit a notification of intent to conduct a performance test at least 60 calendar days before the performance test is scheduled to begin as required in §63.7(b)(1). For any performance test required as part of the initial compliance procedures for batch process vents in table 2 to this subpart, you must also submit the test plan required by §63.7(c) and the emission profile with the notification of the performance test.

At the time of permit issuance no source testing is known to be applicable.

§63.2520 What reports must I submit and when?

Magnida must submit reports as specified in this subsection. The reporting requirements are not repeated in this statement of basis. However, it is noted that Magnida will be required to submit the results of any applicability determinations, emission calculations, or analyses used to identify and quantify HAP usage or HAP emissions from the affected source in accordance with 40 CFR 63.2520(d).

§63.2525 What records must I keep?

Magnida must keep records as specified in this subsection. The record keeping requirements are not repeated in this statement of basis.

OTHER REQUIREMENTS AND INFORMATION

§63.2535 What compliance options do I have if part of my plant is subject to both this subpart and another subpart?

For any equipment, emission stream, or wastewater stream subject to the provisions of both this subpart and another rule, you may elect to comply only with the provisions as specified in paragraphs (a) through (l) of this section. You also must identify the subject equipment, emission stream, or wastewater stream, and the provisions with which you will comply, in your notification of compliance status report required by §63.2520(d).

(a) Compliance with other subparts of this part 63. (1) If you have an MCPU that includes a batch process vent that also is part of a CMPU as defined in subparts F and G of this part 63, you must comply with the emission limits; operating limits; work practice standards; and the compliance, monitoring, reporting, and recordkeeping requirements for batch process vents in this subpart, and you must continue to comply with the requirements in subparts F, G, and H of this part 63 that are applicable to the CMPU and associated equipment.

Magnida is not an affected source in accordance with 40 CFR 63 subparts F, G, and H. The source does not manufacture as a primary product any of the chemicals listed or referenced in 40 CFR 63.100(b)(1).

(b) Compliance with 40 CFR parts 264 and 265, subparts AA, BB, and/or CC.

Magnida is not an hazardous waste treatment, storage or disposal facility; Subparts AA, BB, and/or CC do not apply.

(c) *Compliance with 40 CFR part 60, subpart Kb and 40 CFR part 61, subpart Y.*

Magnida's storage tanks do not meet the criteria (e.g. size and vapor pressure) to be applicable to 40 CFR 60 subpart Kb Magnida does not store industrial grade benzene and is not applicable to 40 CFR 61 Subpart I.

(d) *Compliance with subpart I, GGG, or MMM of this part 63.*

Magnida does not produce: any of the chemicals listed in 40 CFR 63 subpart I and is not an affected facility; pharmaceuticals and is not a 40 CFR 63 subpart GGG affected facility; pesticide active ingredients and is not a 40 CFR 63 subpart MMM affected facility.

(e) *Compliance with subpart GGG of this part 63 for wastewater.*

Magnida does not produce pharmaceuticals and is not a 40 CFR 63 subpart GGG affected facility.

(f) *Compliance with subpart MMM of this part 63 for wastewater.*

Magnida does not produce pesticide active ingredients and is not a 40 CFR 63 subpart MMM affected facility.

(g) *Compliance with other regulations for wastewater.*

These provisions reference requirements for hazardous waste systems and are not applicable; wastewater from Magnida is not known subject to hazardous wastewater requirements.

(h) *Compliance with 40 CFR part 60, subpart DDD, III, NNN, or RRR.*

Magnida does not produce polypropylene, polyethylene, polystyrene, or poly (ethylene terephthalate) and is therefore not a 40 CFR 60 subpart DDD affected source. Magnida does not produce any of the chemicals listed in 40 CFR §60.617 as a product, co-product, by-product, or intermediate and is not an affected facility by 40 CFR 60 subpart III. Magnida does not produce any of the chemicals listed in 40 CFR §60.667 as a product, co-product, by-product, or intermediate and is not an affected facility by 40 CFR 60 subpart NNN. Magnida does not produce any of the chemicals listed in §60.707 as a product, co-product, by-product, or intermediate and is not an affected facility by 40 CFR 60 subpart RRR.

(i) *Compliance with 40 CFR part 61, subpart BB.*

Magnida does not transfer benzene subject to the requirements of 40 CFR 61 subpart BB.

(j) *Compliance with 40 CFR part 61, subpart FF.* After the compliance date specified in §63.2445, for a Group 1 or Group 2 wastewater stream that is also subject to the provisions of 40 CFR 61.342(c) through (h), and is not exempt under 40 CFR 61.342(c)(2) or (3), you may elect to comply only with the requirements for Group 1 wastewater streams in this subpart FFFF. If a Group 2 wastewater stream is exempted from 40 CFR 61.342(c)(1) under 40 CFR 61.342(c)(2) or (3), then you are required to comply only with the reporting and recordkeeping requirements specified in this subpart for Group 2 wastewater streams, and you are exempt from the requirements in 40 CFR part 61, subpart FF.

Magnida is not subject to the provisions of 40 CFR 61.342(c) through (h) because the annual benzene quantity is expected to be less than 11 tons per year, therefore the provisions of this paragraph do not apply.

(k) *Compliance with 40 CFR part 60, subpart VV, and 40 CFR part 61, subpart V.*

The provisions of 40 CFR 60 subpart VV do not apply because Magnida did not commence construction, reconstruction, or modification after January 5, 1981, and on or before November 7, 2006. Magnida does not have a volatile hazardous air pollutant in service as those terms are defined in 40 CFR 61 subpart V because a piece of equipment does not either contain or contact a fluid (liquid or gas) that is at least 10 percent by weight benzene or vinyl chloride.

§63.2540 What parts of the General Provisions apply to me?

Table 12 to this subpart shows which parts of the General Provisions in §§63.1 through 63.15 apply to you.

Table 12 is not repeated as part of this statement of basis.

§63.2545 Who implements and enforces this subpart?

The State of Idaho has been delegated authority to implement and enforce this subpart.

§63.2550 What definitions apply to this subpart?

The definitions are not repeated in this statement of basis.

Subpart ZZZZ—National Emission Standards for Hazardous Air Pollutants: Stationary Reciprocating Internal Combustion Engines

§63.6585 Am I subject to this subpart?

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

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

Magnida has proposed to operate two RICE, a 2,900 bhp emergency generator and a 500 bhp fire water pump engine. These engines will only operate for readiness testing and under emergency conditions.

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

Magnida's proposed operations has the potential to emit a single HAP at a rate greater than 10 tons per year and a combination of HAPs greater than 25 tons per year.

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

As previously described Magnida is a major source of HAP emissions.

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

Magnida is a required to obtain a part 70 permit because it has the potential to emit at major facility thresholds for both HAP and criteria air pollutants.

(e) If you are an owner or operator of a stationary RICE used for national security purposes, you may be eligible to request an exemption from the requirements of this subpart as described in 40 CFR part 1068, subpart C.

Magnida does not operate for national security purposes and is not eligible to request an exemption.

(f) The emergency stationary RICE listed in paragraphs (f)(1) through (3) of this section are not subject to this subpart. The stationary RICE must meet the definition of an emergency stationary RICE in §63.6675, which includes operating according to the provisions specified in §63.6640(f).

Paragraphs (f)(1) through (3) of this section describe residential, commercial and institutional RICE. Magnida's RICE do not fit these descriptions and are not subject to the exclusion of the provisions of this subpart.

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

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

(1) *Existing stationary RICE.*

(i) For stationary RICE with a site rating of more than 500 brake horsepower (HP) located at a major source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before December 19, 2002.

Magnida's 2,900 bhp emergency engine is constructed after December 19, 2002 and is not an existing RICE.

(ii) For stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006.

Magnida's 500 bhp emergency fire water pump engine is constructed after June 12, 2006 and is not an existing RICE.

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

Magnida is not an area source of HAP emissions.

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

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

> Magnida's 2,900 bhp emergency engine is constructed after December 19, 2002 and is a new RICE.

(ii) A stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions is new if you commenced construction of the stationary RICE on or after June 12, 2006.

> Magnida's 500 bhp emergency fire water pump engine is constructed after June 12, 2006 and is new RICE.

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

> Magnida is not an area source of HAP emissions.

(3) *Reconstructed stationary RICE.* (i) A stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions is reconstructed if you meet the definition of reconstruction in §63.2 and reconstruction is commenced on or after December 19, 2002.

> Magnida has not proposed to reconstruct a RICE.

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

(i) The stationary RICE is a new or reconstructed emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions that does not operate or is not contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in §63.6640(f)(2)(ii) and (iii).

> Magnida's 2,000 bhp emergency generator engine, based on information supplied in the application, qualifies as an emergency engine that does not provide power more than 15 hours per year.

(ii) The stationary RICE is a new or reconstructed limited use stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions.

(2) A new or reconstructed stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions which combusts landfill or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis must meet the initial notification requirements of §63.6645(f) and the requirements of §§63.6625(c), 63.6650(g), and 63.6655(c). These stationary RICE do not have to meet the emission limitations and operating limitations of this subpart.

> Magnida's engines do not combust landfill or digester gas and not subject to the exclusion.

(3) The following stationary RICE do not have to meet the requirements of this subpart and of subpart A of this part, including initial notification requirements:

(i) Existing spark ignition 2 stroke lean burn (2SLB) stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions;

> Magnida's engines are not spark ignition.

(ii) Existing spark ignition 4 stroke lean burn (4SLB) stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions;

> Magnida's engines are not spark ignition.

(iii) Existing emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions that does not operate or is not contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in §63.6640(f)(2)(ii) and (iii).

Magnida's 2,900 bhp emergency generator engine, based on information supplied in the application, qualifies as an emergency engine that does not provide power more than 15 hours per year.

(iv) Existing limited use stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions;

Magnida's application indicated that the 2,900 bhp emergency generator would be operated less than 100 hours per year. Note that this engine qualifies for the exclusion of requirements because it meets the criteria for emergency RICE in the previous paragraph.

(v) Existing stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions that combusts landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis;

Magnida's engines do not combust landfill or digester gas and not subject to the exclusion.

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

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

(2) A new or reconstructed 2SLB stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions;

(3) A new or reconstructed 4SLB stationary RICE with a site rating of less than 250 brake HP located at a major source of HAP emissions;

(4) A new or reconstructed spark ignition 4 stroke rich burn (4SRB) stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions;

(5) A new or reconstructed stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions which combusts landfill or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis;

(6) A new or reconstructed emergency or limited use stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions;

Magnida's 500 bhp fire water pump engine is an emergency RICE subject to regulation under 40 CFR Part 60.

In summary, for 40 CFR 63 Subpart ZZZZ the 2,900 bhp emergency generator engine is exempt from the provisions of this subpart and the 500 bhp fire water pump engine will meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII.

40 CFR 63 Subpart DDDDD—National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters

§63.7485 Am I subject to this subpart?

You are subject to this subpart if you own or operate an industrial, commercial, or institutional boiler or process heater as defined in §63.7575 that is located at, or is part of, a major source of HAP, except as specified in §63.7491. For purposes of this subpart, a major source of HAP is as defined in §63.2, except that for oil and natural gas production facilities, a major source of HAP is as defined in §63.7575.

Magnida, a major source of HAP, will operate a natural gas fired industrial boiler, ammonia plant heater, and ammonia startup heater that are subject to certain provisions of this subpart. These units do not qualify for the exclusions provided at §63.7491.

§63.7491 Are any boilers or process heaters not subject to this subpart?

Magnida's natural gas fired industrial boiler, ammonia plant heater, and ammonia startup heater are not of a type listed in this paragraph as not subject to this subpart.

§63.7495 When do I have to comply with this subpart?

(a) If you have a new or reconstructed boiler or process heater, you must comply with this subpart by January 31, 2013, or upon startup of your boiler or process heater, whichever is later.

> Magnida's boiler, ammonia plant heater, and ammonia startup heater are new and must comply upon startup.

Paragraphs (b) and (c) do not apply.

(d) You must meet the notification requirements in §63.7545 according to the schedule in §63.7545 and in subpart A of this part. Some of the notifications must be submitted before you are required to comply with the emission limits and work practice standards in this subpart.

> Magnida is required to submit all applicable notifications.

Paragraph (e) does not apply because solid waste is not being combusted.

Paragraph (f) does not apply because a utility steam generating unit is not being installed.

Paragraph (g) does not apply because Magnida is has not qualified for the exemption in §63.7491(i).

§63.7499 What are the subcategories of boilers and process heaters?

The subcategory of the boiler and process heaters at the facility are listed in paragraph (l) - units designed to burn gas 1 and other gas 1 fuels (e.g. natural gas and gaseous fuel that does not exceed a maximum mercury concentration of 40 $\mu g/m^3$).

§63.7500 What emission limitations, work practice standards, and operating limits must I meet?

(a) You must meet the requirements in paragraphs (a)(1) through (3) of this section, except as provided in paragraphs (b), through (e) of this section. You must meet these requirements at all times the affected unit is operating, except as provided in paragraph (f) of this section.

(1) You must meet each emission limit and work practice standard in Tables 1 through 3, and 11 through 13 to this subpart that applies to your boiler or process heater, for each boiler or process heater at your source, except as provided under §63.7522. The output-based emission limits, in units of pounds per million Btu of steam output, in Tables 1 or 2 to this subpart are an alternative applicable only to boilers and process heaters that generate steam. The output-based emission limits, in units of pounds per megawatt-hour, in Tables 1 or 2 to this subpart are an alternative applicable only to boilers that generate electricity. If you operate a new boiler or process heater, you can choose to comply with alternative limits as discussed in paragraphs (a)(1)(i) through (a)(1)(iii) of this section, but on or after January 31, 2016, you must comply with the emission limits in Table 1 to this subpart.

> This paragraph states that affected units must comply with emission limits and work practice standards in Tables 1 through 3, and 11 through 13 that apply to the boiler. However, paragraph (e) of this section, listed below, states that units that burn gas 1 fuels (including other gas 1 fuel) are not subject to the emission limits in Tables 1 and 2 or 11 through 13. Since Magnida burns natural gas in the boiler and startup heater, and gas1 and other gas 1 fuel in the ammonia plant heater, the work practice standards of Table 3 are the only referenced requirements that apply. The exceptions provided under §63.7522 are for alternative emissions limits and since emission limits do not apply to gas 1 fuels these exceptions do not apply. Similarly the alternative limits in paragraphs (a)(1)(i) through (a)(1)(iii) of this section do not apply and are not repeated in this statement of basis.

(2) You must meet each operating limit in Table 4 to this subpart that applies to your boiler or process heater. If you use a control device or combination of control devices not covered in Table 4 to this subpart, or you wish to establish and monitor an alternative operating limit or an alternative monitoring parameter, you must apply to the EPA Administrator for approval of alternative monitoring under §63.8(f).

> Table 4 does not apply since the boiler and process heaters are not required to meet an emission standards listed in Tables 1, 2 or 11 through 13.

(3) At all times, you must operate and maintain any affected source (as defined in §63.7490), including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air

pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

The facility must comply with this paragraph though it is not required to operate air pollution control equipment.

(b) As provided in §63.6(g), EPA may approve use of an alternative to the work practice standards in this section.

Magnida has not obtained approval for an alternative to the work practice standards.

(c) Limited-use boilers and process heaters must complete a tune-up every 5 years as specified in §63.7540. They are not subject to the emission limits in Tables 1 and 2 or 11 through 13 to this subpart, the annual tune-up, or the energy assessment requirements in Table 3 to this subpart, or the operating limits in Table 4 to this subpart.

Limited-use boiler or process heater means any boiler or process heater that burns any amount of solid, liquid, or gaseous fuels and has a federally enforceable average annual capacity factor of no more than 10 percent. Magnida has not indicated that the boiler or process heaters are limited use.

(d) Boilers and process heaters with a heat input capacity of less than or equal to 5 million Btu per hour in the units designed to burn gas 2 (other) fuels subcategory or units designed to burn light liquid fuels subcategory must complete a tune-up every 5 years as specified in §63.7540.

Magnida's boiler and process heaters are greater than 5 million Btu per hour.

(e) Boilers and process heaters in the units designed to burn gas 1 fuels subcategory with a heat input capacity of less than or equal to 5 million Btu per hour must complete a tune-up every 5 years as specified in §63.7540. Boilers and process heaters in the units designed to burn gas 1 fuels subcategory with a heat input capacity greater than 5 million Btu per hour and less than 10 million Btu per hour must complete a tune-up every 2 years as specified in §63.7540. Boilers and process heaters in the units designed to burn gas 1 fuels subcategory are not subject to the emission limits in Tables 1 and 2 or 11 through 13 to this subpart, or the operating limits in Table 4 to this subpart.

Magnida's boiler and process heaters are of greater input capacity than any of the capacities mentioned in this paragraph; consequently none of those provisions apply. The boiler and process heater are designed to burn gas 1 fuel and are not subject to the emission limits in Tables 1 and 2 or 11 through 13 to this subpart, or the operating limits in Table 4 to this subpart.

(f) These standards apply at all times the affected unit is operating, except during periods of startup and shutdown during which time you must comply only with Table 3 to this subpart.

Magnida must comply with the work practice standards of Table 3 at all times.

§63.7501 Affirmative Defense for Violation of Emission Standards During Malfunction.

These paragraphs describe response to actions to enforce the standard and are not repeated in this statement of basis.

General Compliance Requirements

§63.7505 What are my general requirements for complying with this subpart?

(a) You must be in compliance with the emission limits, work practice standards, and operating limits in this subpart. These limits apply to you at all times the affected unit is operating except for the periods noted in §63.7500(f).

Since Magnida's boiler and process heaters burn gas 1 fuel the only substantive requirements are the work practice standards of Table 3 which must be complied with at all times including startup and shutdown.

(b) [Reserved]

(c) & (d) These paragraphs do not apply because Magnida is not subject to an applicable emission limit listed in Tables 1, 2, or 11 through 13 to this subpart.

Testing, Fuel Analyses, and Initial Compliance Requirements

§63.7510 What are my initial compliance requirements and by what date must I conduct them?

(a)– (j) Subsection 63.7510 does not apply because the boiler is not subject to any emission limitation.

§63.7515 When must I conduct subsequent performance tests, fuel analyses, or tune-ups?

Paragraphs (a) through (c) and (e) through (i) do not apply because the boiler is not subject to an applicable emission limit.

(d) If you are required to meet an applicable tune-up work practice standard, you must conduct an annual, biennial, or 5-year performance tune-up according to §63.7540(a)(10), (11), or (12), respectively. Each annual tune-up specified in §63.7540(a)(10) must be no more than 13 months after the previous tune-up. Each biennial tune-up specified in §63.7540(a)(11) must be conducted no more than 25 months after the previous tune-up. Each 5-year tune-up specified in §63.7540(a)(12) must be conducted no more than 61 months after the previous tune-up. For a new or reconstructed affected source (as defined in §63.7490), the first annual, biennial, or 5-year tune-up must be no later than 13 months, 25 months, or 61 months, respectively, after the initial startup of the new or reconstructed affected source.

The boiler and process heaters will be required to be tuned-up annually as specified in §63.7540(a)(10).

§63.7520 What stack tests and procedures must I use?

(a)– (f) Subsection 63.7520 does not apply because the boiler is not subject to any emission limitation.

§63.7521 What fuel analyses, fuel specification, and procedures must I use?

(a) …You are required to conduct fuel analyses only for fuels and units that are subject to emission limits for mercury, HCl, or TSM in Tables 1 and 2 or 11 through 13 to this subpart.

The boiler and process heaters burn gas 1 fuel and are not subject to emission limits for mercury, HCl, or TSM in Tables 1 and 2 or 11 through 13 to this subpart therefore fuel analysis is not required; nor is the boiler subject to the provisions of paragraph (b) though (i) of this subsection.

§63.7522 Can I use emissions averaging to comply with this subpart?

Emission limits do not apply to the boiler therefore emissions averaging provisions of this subsection are not applicable.

§63.7525 What are my monitoring, installation, operation, and maintenance requirements?

(a) The provisions of paragraph (a) do not apply because the boiler is not subject to a CO emission limit.

(b) The provisions of paragraph (b) do not apply because the boiler is not designed to burn coal/solid fossil fuel or designed to burn heavy liquid.

(c) The provisions of paragraph (c) do not apply because the boiler is not subject to an opacity limit.

(d) – (j) The provisions of paragraphs (d) – (f) do not apply because the boiler and process heaters re not required to use any of the equipment referenced in these paragraphs.

(k) The provisions of paragraph (k) do not apply because Magnida's boiler does not meet the definition of limited-use boiler.

(l) & (m) The provisions of paragraph (l) 7 (m) do not apply because there are no emission limits on the boiler.

§63.7530 How do I demonstrate initial compliance with the emission limitations, fuel specifications and work practice standards?

(a) – (c) Paragraphs (a) – (c) do not apply because the boiler is not subject to any emission or operating limit.

(d) Paragraph (d) does not apply because the boiler has a rated input capacity greater than 10 million Btu per hour.

(e) You must include with the Notification of Compliance Status a signed certification that the energy assessment was completed according to Table 3 to this subpart and is an accurate depiction of your facility at the time of the assessment.

Magnida must comply with this requirement.

(f) Paragraph (f) does not apply because a source test is not required.

(g) Paragraph (g) does not apply because the boilers burns gas 1 fuel.

(h) & (i) Paragraphs (h) & (i) do not apply because the boiler is not subject to an emission limit.

§63.7533 Can I use efficiency credits earned from implementation of energy conservation measures to comply with this subpart?

None of the requirements of this subsection apply because the boiler does not have emission limits.

§63.7535 Is there a minimum amount of monitoring data I must obtain?

None of the requirements of this subsection apply because the boiler does not have any monitoring requirements.

§63.7540 How do I demonstrate continuous compliance with the emission limitations, fuel specifications and work practice standards?

(a) You must demonstrate continuous compliance with each emission limit in Tables 1 and 2 or 11 through 13 to this subpart, the work practice standards in Table 3 to this subpart, and the operating limits in Table 4 to this subpart that applies to you according to the methods specified in Table 8 to this subpart and paragraphs (a)(1) through (19) of this section.

The boiler is only subject to the work practice standards in Table 3.

(1) – (9) Paragraphs (1) –(9) do not apply because the boiler is not subject to emission limits or operating limits.

(10) If your boiler or process heater has a heat input capacity of 10 million Btu per hour or greater, you must conduct an annual tune-up of the boiler or process heater to demonstrate continuous compliance as specified in paragraphs (a)(10)(i) through (vi) of this section. This frequency does not apply to limited-use boilers and process heaters, as defined in §63.7575, or units with continuous oxygen trim systems that maintain an optimum air to fuel ratio.

In absence of a demonstration that the boiler is a limited use boiler or a demonstration that the boiler is equipped with a continuous oxygen trim system Magnida must conduct annual tune-ups of the boiler and follow the applicable procedures listed below in paragraphs (a)(10)(i) through (vi) of this section.

(i) As applicable, inspect the burner, and clean or replace any components of the burner as necessary (you may delay the burner inspection until the next scheduled unit shutdown). Units that produce electricity for sale may delay the burner inspection until the first outage, not to exceed 36 months from the previous inspection. At units where entry into a piece of process equipment or into a storage vessel is required to complete the tune-up inspections, inspections are required only during planned entries into the storage vessel or process equipment.

(ii) Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available;

(iii) Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly (you may delay the inspection until the next scheduled unit shutdown). Units that produce electricity for sale may delay the inspection until the first outage, not to exceed 36 months from the previous inspection;

(iv) Optimize total emissions of CO. This optimization should be consistent with the manufacturer's specifications, if available, and with any NO_X requirement to which the unit is subject;

(v) Measure the concentrations in the effluent stream of CO in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer; and

(vi) Maintain on-site and submit, if requested by the Administrator, an annual report containing the information in paragraphs (a)(10)(vi)(A) through (C) of this section,

(A) The concentrations of CO in the effluent stream in parts per million by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler or process heater;

(B) A description of any corrective actions taken as a part of the tune-up; and

(C) The type and amount of fuel used over the 12 months prior to the tune-up, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel used by each unit.

(11) Paragraph (11) does not apply because the boiler has rated input capacity greater than 10 million Btu per hour.

(12) If your boiler or process heater has a continuous oxygen trim system that maintains an optimum air to fuel ratio, or a heat input capacity of less than or equal to 5 million Btu per hour and the unit is in the units designed to burn gas 1; units designed to burn gas 2 (other); or units designed to burn light liquid subcategories, or meets the definition of limited-use boiler or process heater in §63.7575, you must conduct a tune-up of the boiler or process heater every 5 years as specified in paragraphs (a)(10)(i) through (vi) of this section to demonstrate continuous compliance. You may delay the burner inspection specified in paragraph (a)(10)(i) of this section until the next scheduled or unscheduled unit shutdown, but you must inspect each burner at least once every 72 months.

If Magnida demonstrates that the boiler is a limited use boiler, or demonstrates that the boiler is equipped with a continuous oxygen trim system, boiler tune-ups must occur every 5 years.

(13) If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 calendar days of startup.

(14) – (19) Paragraphs (14) through (19) do not apply because there are no emission limits on the boiler.

(b) You must report each instance in which you did not meet each emission limit and operating limit in Tables 1 through 4 or 11 through 13 to this subpart that apply to you. These instances are deviations from the emission limits or operating limits, respectively, in this subpart. These deviations must be reported according to the requirements in §63.7550.

This paragraph does not apply because there are no emission limits on the boiler.

(c) If you elected to demonstrate that the unit meets the specification for mercury for the unit designed to burn gas 1 subcategory, you must follow the sampling frequency specified in paragraphs (c)(1) through (4) of this section and conduct this sampling according to the procedures in §63.7521(f) through (i).

(c) If you elected to demonstrate that the unit meets the specification for mercury for the unit designed to burn gas 1 subcategory, you must follow the sampling frequency specified in paragraphs (c)(1) through (4) of this section and conduct this sampling according to the procedures in §63.7521(f) through (i).

Magnida will combust natural gas in the boiler and will not be required to demonstrate that the unit meets the specification for mercury for the unit - §63.7521(f)(1).

(d) For startup and shutdown, you must meet the work practice standards according to item 5 of Table 3 of this subpart.

Item 5 of Table 3 does not apply because emissions limits in Table 1 or 2 or 11 through 13 to this subpart do not apply.

§63.7541 How do I demonstrate continuous compliance under the emissions averaging provision?

Emission limits do not apply to the boiler therefore emissions averaging provisions of this subsection are not applicable.

NOTIFICATION, REPORTS, AND RECORDS

§63.7545 What notifications must I submit and when?

(a) You must submit to the Administrator all of the notifications in §§63.7(b) and (c), 63.8(e), (f)(4) and (6), and 63.9(b) through (h) that apply to you by the dates specified.

Magnida must comply with all applicable notification requirements.

(b) As specified in §63.9(b)(2), if you startup your affected source before January 31, 2013, you must submit an Initial Notification not later than 120 days after January 31, 2013.

Magnida will startup after January 31, 2013.

(c) As specified in §63.9(b)(4) and (5), if you startup your new or reconstructed affected source on or after January 31, 2013, you must submit an Initial Notification not later than 15 days after the actual date of startup of the affected source.

This notification schedule will apply to Magnida.

(d) – (f) Paragraphs (d) – (f) do not apply because Magnida is not required to conduct a performance test and they do not intend to combust anything but natural gas in the boiler.

(h) This paragraph applies if Magnida switches fuels or makes physical change to the boiler.

§63.7550 What reports must I submit and when?

(a) You must submit each report in Table 9 to this subpart that applies to you.

(b) Unless the EPA Administrator has approved a different schedule for submission of reports under §63.10(a), you must submit each report, according to paragraph (h) of this section, by the date in Table 9 to this subpart and according to the requirements in paragraphs (b)(1) through (4) of this section. For units that are subject only to a requirement to conduct an annual, biennial, or 5-year tune-up according to §63.7540(a)(10), (11), or (12), respectively, and not subject to emission limits or operating limits, you may submit only an annual, biennial, or 5-year compliance report, as applicable, as specified in paragraphs (b)(1) through (4) of this section, instead of a semi-annual compliance report.

Magnida is only subject to the requirement to tune-up the boiler, therefore a semi-annual report is not required. Magnida may elect to submit only an annual report because annual tune-ups of the boiler are required.

(1) The first compliance report must cover the period beginning on the compliance date that is specified for each boiler or process heater in §63.7495 and ending on July 31 or January 31, whichever date is the first date that occurs at least 180 days (or 1, 2, or 5 years, as applicable, if submitting an annual, biennial, or 5-year compliance report) after the compliance date that is specified for your source in §63.7495.

Magnida's boiler is considered a new boiler and the compliance date is the date of startup. Only an annual report is required since the boiler is not subject to an emission standard and annual tune-ups are required.

(2) The first compliance report must be postmarked or submitted no later than July 31 or January 31, whichever date is the first date following the end of the first calendar half after the compliance date that is specified for each boiler or process heater in §63.7495. <u>The first annual, biennial, or 5-year compliance report must be postmarked or submitted no later than January 31.</u>

(3) Each subsequent compliance report must cover the semiannual reporting period from January 1 through June 30 or the semiannual reporting period from July 1 through December 31. <u>Annual, biennial, and 5-year compliance reports must cover the applicable 1-, 2-, or 5-year periods from January 1 to December 31.</u>

(4) Each subsequent compliance report must be postmarked or submitted no later than July 31 or January 31, whichever date is the first date following the end of the semiannual reporting period. Annual, biennial, and 5-year compliance reports must be postmarked or submitted no later than January 31.

(c) A compliance report must contain the following information depending on how the facility chooses to comply with the limits set in this rule.

(1) If the facility is subject to a the requirements of a tune up they must submit a compliance report with the information in paragraphs (c)(5)(i) through (iv) and (xiv) of this section.

Magnida is subject the tune-up requirements.

(2) – (4) Paragraphs (2) through (4) do not apply because fuel analysis and emission limits are not applicable requirements.

(5)(i) Company and Facility name and address.

(ii) Process unit information, emissions limitations, and operating parameter limitations.

(iii) Date of report and beginning and ending dates of the reporting period.

(iv) The total operating time during the reporting period.

(xiv) Include the date of the most recent tune-up for each unit subject to only the requirement to conduct an annual, biennial, or 5-year tune-up according to §63.7540(a)(10), (11), or (12) respectively. Include the date of the most recent burner inspection if it was not done annually, biennially, or on a 5-year period and was delayed until the next scheduled or unscheduled unit shutdown.

§63.7555 What records must I keep?

This statement of basis only recites the record keeping requirements that apply the boiler.

(a) You must keep records according to paragraphs (a)(1) and (2) of this section.

(1) A copy of each notification and report that you submitted to comply with this subpart, including all documentation supporting any Initial Notification or Notification of Compliance Status or semiannual compliance report that you submitted, according to the requirements in §63.10(b)(2)(xiv).

§63.7560 In what form and how long must I keep my records?

(a) Your records must be in a form suitable and readily available for expeditious review, according to §63.10(b)(1).

(b) As specified in §63.10(b)(1), you must keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.

(c) You must keep each record on site, or they must be accessible from on site (for example, through a computer network), for at least 2 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to §63.10(b)(1). You can keep the records off site for the remaining 3 years.

Other Requirements and Information

§63.7565 What parts of the General Provisions apply to me?

Table 10 to this subpart shows which parts of the General Provisions in §§63.1 through 63.15 apply to you.

Table 10 is not repeated in this statement of basis.

§63.7570 "Who implements and enforces this subpart?" and §63.7575 "What definitions apply to this subpart?" are not repeated in this statement of basis.

Permit Conditions Review

This section describes the permit conditions for this initial permit.

1. Permit Scope

Permit Conditions 1.1 and 1.2

These permit conditions describe the purpose of this permitting action and the process units and control equipment regulated by this permit. The information included reflects design, equipment, and operational information presented in the application.

2. Ammonia Plant

Permit Conditions 2.1 and 2.2

These permit conditions describe the process unit, emissions units, control equipment, and emission points regulated by this section of the permit. The information included reflects design, equipment, and operational information presented in the application.

Permit Condition 2.3

This permit condition establishes short-term and annual emission limits for the MDEA Stripper. The CO and ammonia emission limits were also used as the basis for preconstruction modeling compliance demonstrations. Refer to the Emission Inventories and the Ambient Air Quality Impact Analyses sections for additional information. The ton per year limits are inherently complied with by complying with the pound per hour emission limits.

Compliance with these limits is ensured by complying with monitoring and performance testing requirements in the permit.

Permit Condition 2.4

This permit condition establishes BACT emission limits for the MDEA Stripper.

Refer to the *Best Available Control Technology* Section of this Statement of Basis for additional information concerning BACT determinations.

Compliance with these limits is ensured by complying with monitoring and performance testing requirements.

Permit Condition 2.5

This permit condition limits ammonia production consistent with the emission inventory that was provided and used to demonstrate compliance with ambient standards and toxic air pollutant increments.

Permit Condition 2.6

This permit condition prevents scrubbing CO_2 from processes gases in the MDEA scrubber downstream of ammonia synthesis. It will prevent the potential for ammonia emissions from the MDEA stripper because the process gases scrubbed are prior to ammonia synthesis.

Permit Condition 2.7

This permit condition establishes equipment design standards, work practice requirements, operational limits, and monitoring requirements for the Process Flare. Startup/shut down events are limited to 12 hours per day, 7 days per year.

The equipment design standards and work practice requirements were established as BACT. Refer to the *Best Available Control Technology* Section of this Statement of Basis for additional information concerning BACT determinations. The flare is not actually subject to the NSPS flare requirements as an affected source but the facility has proposed and accepted those requirements as BACT permit conditions.

The operational limits were used as the basis for preconstruction modeling compliance demonstrations. Refer to the Emission Inventories and the Ambient Air Quality Impact Analyses sections for additional information.

Permit Condition 2.8

This permit condition requires monitoring and recordkeeping of ammonia production rate in order to assure compliance with the throughput restriction that is established to assure emissions are consistent with estimated emissions that were used in the air dispersion model to demonstrate compliance with ambient standards and toxic air pollutant increments.

Permit Condition 2.9

This permit condition requires continuous monitoring and recordkeeping of CO_2 emission rate from the MDEA Stripper in order to ensure compliance with the GHG BACT emission limit (Permit Conditions 2.3 and 2.4). Emissions of other GHG constituents are not present in MDEA stripper exhaust, so GHG emissions (CO_2e basis) are equal to CO_2 emissions.

Permit Condition 2.10

This permit condition requires performance testing of the MDEA Stripper to demonstrate compliance with short-term CO, VOC and ammonia emission limits in accordance with IDAPA 58.01.01.211.04. Alternative test conditions or methods may be approved by DEQ, in accordance with IDAPA 58.01.01.157. Monitoring of ammonia production rate concurrent with performance testing is required. Ongoing testing is required depending on how close the initial and subsequent testing is to the emission limit. Testing is only required for the pound per hour and pound per ton of ammonia emission limits. Monitoring and recordkeeping of ammonia production rate concurrent with required performance testing is required in order to allow demonstration of compliance with CO and VOC BACT emission limits.

Permit Condition 2.11

This permit condition requires the facility comply the applicable provisions of 40 CFR Part 63, Subpart FFFF - Miscellaneous Organic Chemical Manufacturing MACT.

3. Ammonia Plant – Primary Reformer Heater

Permit Conditions 3.1 and 3.2

These permit conditions describe the emissions unit, control equipment, and emission points regulated by this section of the permit. The information included reflects design, equipment, and operational information presented in the application.

Permit Condition 3.3

This permit condition establishes short-term and annual emission limits for the Primary Reformer Heater. The $PM_{10}/PM_{2.5}$, NO_X, and CO emission limits were also used as the basis for preconstruction modeling compliance demonstrations. Refer to the Emission Inventories and the Ambient Air Quality Impact Analyses sections for additional information. The ton per year limits are inherently complied with by complying with the pound per hour emission limits.

Compliance with these limits is ensured by complying with monitoring and performance testing requirements.

Permit Condition 3.4

This permit condition establishes BACT emission limits for the Primary Reformer Heater.

Refer to the *Best Available Control Technology* Section of this Statement of Basis for additional information concerning BACT determinations.

Compliance with these limits is ensured by complying with monitoring and performance testing requirements.

Permit Condition 3.5

Ammonia emissions are limited to 10 parts per million dry volume (ppmdv) 3-hour average at 2.5% oxygen. This concentration corresponds to the ammonia emission concentration used to estimate emissions and demonstrate compliance with the toxic air pollutant increment. See the emission inventory for details of the calculations.

Permit Condition 3.6

This permit condition establishes restrictions on the fuels to be used in the Primary Reformer Heater. These were voluntary restrictions proposed by the permittee in order to ensure the facility's SO_2 PTE is not significant. Allowable fuels are natural gas and process gases that are derived from natural gas (e.g. CO, H_2).

Permit Condition 3.7

This permit condition requires the installation, maintenance and operation of a SCR to control emissions from the Primary Reformer Heater consistent with the application and emission inventories.

Permit Condition 3.8

This permit condition establishes a limit on the heat input rate to the Primary Reformer Heater. The short-term and annual emission rate estimates (PTE) were calculated based upon this limit, and were used as the basis for preconstruction modeling compliance demonstrations (SIA, NAAQS, and TAP).

Compliance with this limit is ensured by complying with monitoring and recordkeeping requirements.

Permit Condition 3.9

This permit condition requires monitoring and recordkeeping of heat input rate to the Primary Reformer Heater in order to allow calculation of actual emissions and in order to demonstrate compliance with the limit on heat input rate. An approved monitoring protocol is required to assure that the heat input rate is sufficiently monitored; including monitoring natural gas combustion rates and recycled process gas combustion rate. The protocol shall also address how heat content will be determined.

Permit Condition 3.10

This permit condition requires continuous monitoring and recordkeeping of NO_X and CO_2 emission rates from the Primary Reformer Heater in order to ensure compliance with the NO_X and GHG BACT emission limits. Emissions of other GHG constituents are accounted for in through utilization of default emission factors in the Code of Federal Regulations.

Permit Condition 3.11 & 3.12

These permit conditions require calculation and recordkeeping of GHG and NO_x emissions from the Primary Reformer Heater in order to ensure compliance with the GHG BACT emission limit and the NOx emission limit that was established to protect ambient standards. Emissions of CO_2 are determined by continuous monitoring; emissions of other GHG constituents and conversion of emission rates to CO_2e basis are specified by reference to 40 CFR part 98, subpart C. Default emission factors and global warming potentials in 40 CFR 98, subpart C or DEQ approved alternative are to be used.

Permit Condition 3.13

This permit condition requires performance testing of the Primary Reformer Heater to demonstrate compliance with short-term $PM_{10}/PM_{2.5}$, CO, ammonia and VOC emission limits, in accordance with IDAPA 58.01.01.211.04. $PM_{10}/PM_{2.5}$, CO, and VOC emission Testing is required for pound per hour and pounds per MMBtu heat input (HHV) only. Ammonia emissions shall be determined in parts per million dry volume (ppmdv) 3-hour average at 2.5% oxygen. All testing must occur under worst case normal conditions as required by IDAPA 58.01.01.157. Purge gases from the ammonia plant are combusted in the heater, these purge gases should be considered when testing to assure testing occurs under worst case normal conditions. At the time of permit issuance it is believed that worst case normal emissions occur during purging events, especially for ammonia emissions. Alternative test conditions or methods may be approved by DEQ, in accordance with IDAPA 58.01.01.157. For demonstration of compliance with BACT emission limits, monitoring of heat input to the Primary Reformer Heater concurrent with performance testing is required. Ongoing testing is required depending on how close the initial and subsequent testing is to the emission limit. Rather than testing specifically for $PM_{2.5}$ emissions the permittee may presume all measured PM_{10} is also $PM_{2.5}$.

Permit Condition 3.14

This permit condition requires compliance with applicable provisions of the MACT standard for boilers and process heaters. Refer to the *Regulatory Analysis* section for additional information.

4. Ammonia Plant – Startup Heater

Permit Conditions 4.1

This permit condition describes the emissions unit regulated by this section of the permit. The information included reflects design, equipment, and operational information presented in the application.

Permit Condition 4.2

This permit condition establishes a restriction on the fuel to be used in the Startup Heater. This equipment design standard is established as BACT. It is not practical to require emissions testing for this limited use source therefore a work practice standard is in place for BACT instead of emission rate limits.

Refer to the *Best Available Control Technology* section of this Statement of Basis for additional information concerning BACT determinations.

Permit Condition 4.3

This permit condition establishes a limit on the natural gas usage in the Startup Heater. The short-term and annual emission rate estimates (PTE) were calculated based upon this limit, and were used as the basis for preconstruction modeling compliance demonstrations (SIA, NAAQS, and TAP).

Refer to the Emission Inventories and the Ambient Air Quality Impact Analyses sections for additional information.

Compliance with this limit is ensured by complying with monitoring and recordkeeping requirements.

Permit Condition 4.4

This permit condition requires monitoring and recordkeeping of natural gas usage in the Startup Heater in order to allow calculation of actual emissions and in order to demonstrate compliance with the limit on natural gas usage.

Permit Condition 4.5

This permit condition requires compliance with applicable provisions of the MACT standard for boilers and process heaters. Refer to the *Regulatory Analysis* section for additional information.

5. Nitric Acid Plant

Permit Conditions 5.1 and 5.2

These permit conditions describe the process unit, emissions units, control equipment, and emission points regulated by this section of the permit. The information included reflects design, equipment, and operational information presented in the application.

Permit Condition 5.3

This permit condition establishes short-term and annual emission limits for the Nitric Acid Plant. The NO_X and ammonia emission limits were also used as the basis for preconstruction modeling compliance demonstrations. Refer to the Emission Inventories and the Ambient Air Quality Impact Analyses sections for additional information.

Compliance with these limits is ensured by complying with monitoring and performance testing requirements. The ton per year limits are inherently complied with by complying with the pound per hour emission limits.

Permit Condition 5.4

This permit condition establishes BACT emission limits for the Nitric Acid Plant.

Refer to the *Best Available Control Technology* Section of this Statement of Basis for additional information concerning BACT determinations.

Compliance with these limits is ensured by complying with monitoring and performance testing requirements.

Permit Condition 5.5

Nitric acid production is limited to the rate used to estimate emissions and determine ambient impacts.

Permit Condition 5.6

Requires the permittee shall install, maintain and operate a SCR to control emissions from the Primary Reformer Heater.

Permit Condition 5.7

This permit condition requires monitoring and recordkeeping of nitric acid production rate in order to assure compliance with the throughput restriction.

Permit Condition 5.8

This permit condition requires continuous monitoring and recordkeeping of NO_X emission rate from the Nitric Acid Plant Stack in order to ensure compliance with the emission limits and is an incorporation by reference to the requirements of 40 CFR 60 Subpart Ga. In addition this condition requires monitoring the pound per hour NOx emission rate to assure compliance with the limit that was used to determine ambient impacts are acceptable.

Permit Condition 5.9

This permit condition requires performance testing of the Nitric Acid Plant to demonstrate compliance with the GHG BACT emission limit, in accordance with IDAPA 58.01.01.211.04. Source testing is only required for N_2O emissions, no other GHG are known to be emitted and testing is only required for N_2O. After N_2O testing the permittee is then required to calculate GHG emissions using the default global warming potential of N_2O (310). Alternative test conditions or methods may be approved by DEQ. Monitoring of ammonia production rate concurrent with performance testing is required. Ongoing testing is required depending on how close the initial and subsequent testing is to the emission limit.

Permit Condition 5.10

This permit condition requires compliance with applicable provisions of the NSPS rule for nitric acid plants. Refer to the Regulatory Analysis section for additional information.

6. Ammonium Nitrate Plant and UAN Plant

Permit Condition 6.1

This permit condition describes the process unit and emissions unit regulated by this section of the permit. The information included reflects design, equipment, and operational information presented in the application.

Permit Condition 6.2

This permit condition establishes short-term and annual $PM_{10}/PM_{2.5}$ emission limits, and short term limits for ammonia and nitric acid for the Ammonium Nitrate Neutralizer Vent. The $PM_{10}/PM_{2.5}$ emission limits were used as the basis for preconstruction modeling compliance demonstrations. The nitric acid emission rate limit is established equivalent to the screening emission level for that pollutant, and the ammonia emission level is set at the below regulatory concern level for ammonia (10% of the screening emission level). Ambient impact of ammonia and nitric acid at these emission rates will not cause ambient impacts in excess of the toxic air pollutant increments. Ammonia impacts from this source will be less than 10% of the acceptable ambient concentration (AAC) and when added to the impacts from all other sources impacts will be less than AAC. Refer to the Emission Inventories and the Ambient Air Quality Impact Analyses sections for additional information.

Compliance with these limits is ensured by complying with monitoring and performance testing requirements. The ton per year limits are inherently complied with by complying with the pound per hour emission limits.

Permit Condition 6.3

This permit condition establishes the BACT emission limit for the Ammonium Nitrate Neutralizer Vent.

Refer to the *Best Available Control Technology* Section of this Statement of Basis for additional information concerning BACT determinations.

Compliance with these limits is ensured by complying with monitoring and performance testing requirements.

Permit Condition 6.4

Ammonium nitrate production is limited to the rate used to estimate $PM_{10}/PM_{2.5}$ emissions and determine ambient impacts. A daily limit is set to assure compliance with the 24-hr $PM_{10}/PM_{2.5}$ ambient standard and to assure compliance with ammonia and nitric acid increments.

Permit Condition 6.5

The permittee shall install a wet scrubber using an aqueous solution containing nitric acid to control ammonia emissions from the ammonium nitrate neutralizer vent consistent with the application.

Permit Condition 6.6

The permit condition establishes that the permittee shall submit proposed scrubber operating parameters to assure ongoing compliance with short term emissions standards for DEQ approval. This submittal must occur within 60 days of the performance test. Magnida will have actual scrubber operating parameters that were recorded during the emissions tests.

Permit Condition 6.7

This permit condition requires monitoring and recordkeeping of ammonium nitrate production rate in order to assure compliance with throughput limits.

Permit Condition 6.8

Monitoring of pressure drop and scrubbing media flow rate and pH are required to assure the scrubbers are continuously operated as it was during the source tests that demonstrated compliance with emission rate limits.

Permit Condition 6.9

This permit condition requires performance testing of the Ammonium Nitrate Neutralizer Vent to demonstrate compliance with the $PM_{10}/PM_{2.5}$, ammonia and nitric acid pound per hour emission limits and compliance with the PM_{10} pound per ton of ammonia limit, in accordance with IDAPA 58.01.01.211.04. Use of an industry-specific test method developed by U.S. EPA is preferred because reference test methods may be impractical for use at ammonium nitrate neutralizer vents. Alternative test conditions or methods may be approved by DEQ. For PM_{10} testing the document titled *EPA Ammonium Nitrate Manufacturing Industry – Technical Document*[14] includes preferred modifications to method 5 in Appendix B. Monitoring of ammonium nitrate production rate concurrent with performance testing is required. A testing protocol is required for PM_{10}, ammonia and nitric acid because of the potential for the need to modify EPA test methods.

7. Urea Melt Plant

Permit Condition 7.1

This permit condition describes the process unit and emissions unit regulated by this section of the permit. The information included reflects design, equipment, and operational information presented in the application.

Permit Condition 7.2

This permit condition establishes the GHG BACT emission limit for the Urea Melt Plant. Ammonia emission rates are limited to those rates used to demonstrate preconstruction compliance with the ammonia increment. Particulate matter emissions are limited to below the detection limit agreed to by the applicant and DEQ for this permit. Magnida's application provides that no emissions of particulate occur from the urea melt plant and EPA AP-42 emissions factors indicate up to 0.021 pounds of particulate per ton of urea produced may be emitted (0.021 lb. PM/T urea * 170.8 T urea/hr = 3.59 lb. PM/hr). For this reason a "Below Detection Limit" PM emission standard is include in the permit and a source test is required to assure compliance. Magnida maintains that the modern design will have negligible PM emissions.

Refer to the *Best Available Control Technology* Section of this Statement of Basis for additional information concerning BACT determinations.

Compliance with these limits is ensured by the CERM requirement and source testing requirements.

Permit Condition 7.3

This permit condition requires that all processes that are designed to vent to the atmosphere shall be vented to the Urea Melt Plant Vent except during periods of startup, shutdown or malfunction. This assures that all sources of ammonia will be vented to a stack equipped with a CERMS to assure compliance with emission limits.

Permit Condition 7.4

Consistent with the Permittee's application, a flare shall be used to control emissions of ammonia and other gases purged from the ammonia and urea processes during startup/shut down events, and during periods of malfunction. The Ammonia/Urea Process Flare shall comply with the provisions specified in Section 2 of this permit. Startup/shut down events are limited to 12 hours per day, 7 days per year.

Permit Condition 7.5

This permit condition requires monitoring and recordkeeping of urea production rate in order to allow calculation of actual emissions. No urea production rate limits are imposed because annual emission rate (PTE) was calculated based upon unit capacity and a CERMS is required to monitor ammonia emissions.

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14 EPA Service Center for Environmental Publications, EPA-450/3-81-002, January 1981

Permit Condition 7.6

Requires installation and operation of a continuous emission rate monitor system (CERMS) on the Urea Melt Plant Vent to measure the ammonia concentration and emission rate in pounds per calendar day. Requiring a CERMS will assure compliance with emission rate limits.

Permit Condition 7.7

A PM_{10}/$PM_{2.5}$ emission test is required to be conducted to confirm emissions are below detection limits. The detection limit, for purposes of this permit, is established as a total catch (front half and back half) of 3 mg. Magnida has agreed to this threshold. The permittee is not required to specifically test for $PM_{2.5}$, it may be presumed that all measured PM_{10} is $PM_{2.5}$.

Permit Conditions 7.8 and 7.9

These permit conditions require compliance with applicable provisions of the NSPS rule for equipment leaks in synthetic organic chemical manufacturing plants and the MACT standard for miscellaneous organic chemical manufacturing plants. Refer to the Regulatory Analysis section for additional information.

Permit Condition 7.10

This permit condition includes BACT requirements pump seals and for valves, connectors, instrumentation systems, and pressure relief devices. These work practice standards are established as BACT.

8. Urea Granulation Process

Permit Conditions 8.1 and 8.2

These permit conditions describe the process unit, emissions unit, control equipment, and emission point regulated by this section of the permit. The information included reflects design, equipment, and operational information presented in the application.

Permit Condition 8.3

This permit condition establishes short-term and annual particulate matter (PM, PM_{10}, and $PM_{2.5}$) and VOC emission limits for the Urea Granulation Vent. The PM_{10} and $PM_{2.5}$ emission limits were also used as the basis for preconstruction modeling compliance demonstrations. Refer to the Emission Inventories and the Ambient Air Quality Impact Analyses sections for additional information. Ammonia and formaldehyde emission limits are included; they match the emission rates used to show preconstruction compliance with allowable ambient increments.

Compliance with these limits is ensured by complying with monitoring and performance testing requirements. The ton per year limits are inherently complied with by complying with the pound per hour emission limits.

Permit Condition 8.4

This permit condition establishes the BACT emission limits for the Urea Granulation Vent.

Refer to the *Best Available Control Technology* Section of this Statement of Basis for additional information concerning BACT determinations.

Compliance with these limits is ensured by complying with monitoring and performance testing requirements.

Permit Condition 8.5

This permit condition limits granular urea production to the daily rate used to estimate emissions and demonstrate compliance with standards.

Permit Condition 8.6

This permit condition requires that a wet scrubber be used to control emissions from the granulation process consistent with the application and emission inventory.

Permit Condition 8.7

Requires the permittee to submit proposed pressure drop and scrubbing media flow rate requirements to assure the scrubber operate efficiently for any pollutant. The permittee is required to submit the proposal after the sources tests have been conducted so that the scrubbers operating parameters during the source test can be considered in developing the operating limits. The permittee may elect to include CAM operating parameters within the permit to construct; though it is important to note that the scrubbers are controlling emissions of other pollutants (NH3 and formaldehyde) that must be considered along with particulate matter emissions (the CAM affect pollutant) in developing the operating limits.

Permit Condition 8.8

This permit condition requires monitoring and recordkeeping of urea production rate in order to allow calculation of actual emissions. No urea production rate limits are imposed because short-term and annual emission rate estimates (PTE) were calculated based upon unit capacity. The permittee specifically requested that this monitoring requirement be in the permit.

Permit Condition 8.9

This permit condition requires performance testing of the Urea Granulation Vent to demonstrate compliance with the short-term emission limits. Alternative test conditions or methods may be approved by DEQ, in accordance with IDAPA 58.01.01.157. Monitoring of urea production rate concurrent with performance testing is required. Additional testing for each pollutant is required depending on how close each is to the allowable emission rate.

9. Granular Urea Loading

Permit Conditions 9.1 and 9.2

These permit conditions describe the process unit, emissions unit, control equipment, and emission point regulated by this section of the permit. The information included reflects design, equipment, and operational information presented in the application.

Permit Condition 9.3

This permit condition establishes short-term and annual particulate matter emission limits for the Urea Loadout Vent. The particulate matter emission limits were also used as the basis for preconstruction modeling compliance demonstrations. Refer to the Emission Inventories and the Ambient Air Quality Impact Analyses sections for additional information.

The ammonia emission level is set at the below regulatory concern (BRC) level for ammonia (10% of the screening emission level). Ammonia impacts from this source will be less than 10% of the acceptable ambient concentration (AAC) and when added to the impacts from all other sources impacts will be less than AAC. Refer to the Emission Inventories and the Ambient Air Quality Impact Analyses sections for additional information. The emission rate limit is included in the permit because of comment received regarding the potential to emit ammonia from this source. It is noted that there are no known ammonia emission factors for this source and the applicant did not include any ammonia emissions estimates for this source. An ammonia emission rate limit, set at the BRC level for TAPs, has been included in the permit along with a source testing requirement to address the commenters concern, to assure compliance with the acceptable ambient concentration for ammonia and is a reasonable permit condition (IDAPA 58.01.01.211.01). Magnida has agreed with this emission limit.

Compliance with these limits is ensured by complying with performance testing requirements. The ton per year limits are inherently complied with by complying with the pound per hour emission limits.

Permit Condition 9.4

This permit condition establishes the BACT emission limit for the Urea Loadout Vent.

Refer to the *Best Available Control Technology* Section of this Statement of Basis for additional information concerning BACT determinations.

Compliance with this limit is ensured by complying with performance testing requirements.

Permit Condition 9.5

Consistent with the application conveyors outside of structures shall be covered to prevent particulate matter emissions.

Permit Condition 9.6

Consistent with the emission inventory provided railcar and truck loading shall occur within a structure. Visible emissions shall not be observed leaving any opening in the structure for more than 3 minutes in any 60 minute period as determined by EPA Method 22. A visual emissions evaluation using Method 22 would be triggered by Quarterly Inspections required by Permit Condition 14.4. If visible emissions are observed leaving an opening in the structure during those inspections then a Method 22 evaluation is required.

Permit Condition 9.7

Consistent with the emission inventory provided by the applicant emissions from the structure in which railcar or truck loading occurs shall be controlled shall be controlled by a filter system.

Permit Condition 9.8

This permit condition incorporates DEQ standard permit condition for filter systems. In short, this permit condition requires corrective action be taken if any visible emissions are seen emanating from the filters system stack.

Permit Condition 9.9

This permit condition requires performance testing of the Urea Loadout Vent to demonstrate compliance with the short-term emission limits, in accordance with IDAPA 58.01.01.211.04. Alternative test conditions or methods may be approved by DEQ, in accordance with IDAPA 58.01.01.157.

10. Cooling Towers

Permit Conditions 10.1 and 10.2

These permit conditions describe the emissions units, control equipment, and emission points regulated by this section of the permit. The information included reflects design, equipment, and operational information presented in the application.

Permit Condition 10.3

This permit condition establishes equipment design standards for the cooling towers.

Refer to the *Best Available Control Technology* Section of this Statement of Basis for additional information concerning BACT determinations.

Compliance with these design standards is ensured by complying with inspection and maintenance recordkeeping requirements.

Permit Condition 10.4

This permit condition establishes restrictions on the circulating water flow rate to each cooling tower. The short-term and annual emission rate estimates (PTE) were calculated based upon these limits, and were used as the basis for preconstruction modeling compliance demonstrations (SIA, NAAQS, and TAP). The total dissolved solids (TDS) content of the water is not limited because PM_{10} and $PM_{2.5}$ emission rates change by insignificant amounts, or even decrease, if the dissolved solids content tripled. Also an increase of water usage rates would be required to maintain lower TDS levels causing an unnecessary impact on water resources. BACT for the cooling towers are work practice standards to minimize drift levels from the cooling towers (0.0005 percent from the Process Cooling Tower and 0.001 percent from the WWTP Cooling tower).

Refer to the *Best Available Control Technology* Section of this Statement of Basis for additional information concerning BACT determinations.

Compliance with these limits is ensured by complying with monitoring and recordkeeping requirements.

Permit Condition 10.5

Require that the permittee shall maintain, and make available to DEQ representatives upon request the manufacturer's drift eliminators installation, maintenance and operating requirements.

Permit Condition 10.6

This permit condition requires monitoring and recordkeeping of flow rate of the water being cooled in each cooling tower in order to allow calculation of actual emissions and in order to demonstrate compliance with the limits on circulating water flow rate.

Permit Condition 10.7

This permit condition requires recordkeeping of inspections, maintenance, repairs, and replacement activities in order to demonstrate compliance with the equipment design standards established as BACT.

11. Package Boiler

Permit Conditions 11.1 and 11.2

These permit conditions describe the emissions unit and emission point regulated by this section of the permit. The information included reflects design, equipment, and operational information presented in the application.

Permit Condition 11.3

This permit condition establishes short-term and annual emission limits for the Package Boiler. The $PM_{10}/PM_{2.5}$, NO_X, and CO emission limits were also used as the basis for preconstruction modeling compliance demonstrations. Refer to the Emission Inventories and the Ambient Air Quality Impact Analyses sections for additional information.

Compliance with these limits is ensured by complying with monitoring and performance testing requirements. The ton per year limits are inherently complied with by complying with the pound per hour emission limits.

Permit Condition 11.4

This permit condition establishes BACT emission limits for the Package Boiler.

Refer to the *Best Available Control Technology* Section of this Statement of Basis for additional information concerning BACT determinations.

Compliance with these limits is ensured by complying with monitoring and performance testing requirements.

Permit Condition 11.5

This permit condition establishes a restriction on the fuel to be used in the Package Boiler. This was a voluntary restriction proposed by the permittee in order to ensure the facility's SO_2 PTE is not significant.

Permit Condition 11.6

This permit condition establishes a limit on the heat input rate to the Package Boiler. The short-term and annual emission rate estimates (PTE) were calculated based upon this limit, and were used as the basis for preconstruction modeling compliance demonstrations (SIA, NAAQS, and TAP).

Compliance with this limit is ensured by complying with monitoring and recordkeeping requirements.

Permit Condition 11.7

This permit condition requires monitoring and recordkeeping of heat input rate to the Package Boiler in order to allow calculation of actual emissions and in order to demonstrate compliance with the limit on heat input rate.

Permit Condition 11.8

This permit condition requires continuous monitoring and recordkeeping of NO_X and CO_2 emission rates from the Package Boiler in order to ensure compliance with all of the NO_X and GHG pound per MMBtu heat input (HHV) BACT emission limits. Emissions of other GHG constituents are accounted for in Permit Condition 11.9. The permittee shall also determine compliance with the pound per hour NOx emission rate limit in Table11.2 (pounds per any consecutive 60 minute period).

Permit Condition 11.9

This permit condition requires calculation and recordkeeping of GHG emissions from the Package Boiler in order to ensure compliance with the GHG BACT emission limit. Emissions of CO_2 are determined by continuous monitoring; emissions of other GHG constituents and conversion of emission rates to CO_2e basis are specified by reference to default values in 40 CFR part 98, subpart C.

Permit Condition 11.10

This permit condition requires performance testing of the Package Boiler to demonstrate compliance with short-term $PM_{10}/PM_{2.5}$, CO, and VOC emission limits, in accordance with IDAPA 58.01.01.211.04. Alternative test conditions or methods may be approved by DEQ, in accordance with IDAPA 58.01.01.157. For demonstration of compliance with BACT emission limits, monitoring of heat input to the Package Boiler concurrent with performance testing is required.

Permit Condition 11.11

This permit condition requires monitoring and recordkeeping of heat input to the Package Boiler concurrent with required performance testing in order to allow demonstration of compliance with $PM_{10}/PM_{2.5}$, CO, and VOC BACT emission limits.

Permit Conditions 11.12 and 11.13

These permit conditions require compliance with applicable provisions of the NSPS rule for boilers and the MACT standard for boilers and process heaters. Refer to the Regulatory Analysis section for additional information.

12. Internal Combustion Engines

Permit Conditions 12.1 and 12.2

These permit conditions describe the emissions units and emission points regulated by this section of the permit. The information included reflects design, equipment, and operational information presented in the application.

Permit Conditions 12.3 and 12.4

These permit conditions establish equipment design standards for the internal combustion engines. The NSPS emissions limits are applicable to the manufacturer of the engines; the operating standards apply to the owners of the engines. The permittee shall maintain and operate the Emergency Generator Engine and the Fire Water Pump Engine according to the manufacturers' written instructions or procedures developed by the permittee that are approved by the manufacturer.

Refer to the *Best Available Control Technology* Section of this Statement of Basis for additional information concerning BACT determinations.

Compliance with these design standards is ensured by complying with recordkeeping requirements in the NSPS rule for stationary, compression ignition, internal combustion engines.

Permit Condition 12.5

This permit condition establishes the GHG BACT emission limits for the internal combustion engines.

Refer to the *Best Available Control Technology* Section of this Statement of Basis for additional information concerning BACT determinations.

Compliance with these limits is ensured by complying with monitoring and recordkeeping requirements.

Permit Condition 12.6

This permit condition establishes restrictions on the hours of operation of each internal combustion engine. Fuel sulfur content is also limited. The short-term and annual emission rate estimates (PTE) were calculated based upon these limits, and were used as the basis for preconstruction modeling compliance demonstrations (SIA, NAAQS, and TAP).

Refer to the Emission Inventories and the Ambient Air Quality Impact Analyses sections for additional information.

Compliance with these limits is ensured by complying with monitoring and recordkeeping requirements.

Permit Condition 12.7

This permit condition establishes BACT work practice requirements.

Compliance with these requirements is ensured by complying with recordkeeping requirements.

Permit Condition 12.8

This permit condition incorporates restrictions on the fuel to be used in each internal combustion engine, as required by the NSPS rule for stationary, compression ignition, internal combustion engines.

Compliance with these limits is ensured by complying with recordkeeping requirements.

Permit Condition 12.9

This permit condition requires monitoring and recordkeeping of daily hours of operation of each internal combustion engine to ensure compliance with operational limits. The permittee shall also keep records of fuel sulfur content.

Permit Condition 12.10

This permit condition requires monitoring and recordkeeping of fuel usage in each internal combustion engine in order to allow calculation of actual emissions. This permit condition was specifically requested to be included in the permit by Magnida.

This permit condition also requires calculation and recordkeeping of GHG emissions from each internal combustion engine in order to ensure compliance with the GHG BACT emission limits.

Permit Conditions 12.11

These permit conditions require compliance with applicable provisions of the NSPS rule and MACT standard for stationary, compression ignition, internal combustion engines. Refer to the Regulatory Analysis section for additional information.

13. Storage Tanks

Permit Conditions 13.1 and 13.2

These permit conditions describe the emissions units, control equipment, and emission points regulated by this section of the permit. The information included reflects design, equipment, and operational information presented in the application.

Permit Condition 13.3

This permit condition establishes equipment design standards, work practice requirements, monitoring, and recordkeeping requirements for the Ammonia Storage Flare.

Refer to the *Best Available Control Technology* Section of this Statement of Basis for additional information concerning BACT determinations.

Permit Condition 13.4

This permit condition requires compliance with provisions of the MACT standard for organic liquid storage tanks which are applicable to the UF-85 Storage Tank. Refer to the Regulatory Analysis section for additional information.

14. Facility-Wide Requirements

Permit Conditions 14.1 and 14.3 through 14.5

These Permit Conditions incorporate fugitive dust emission limits, in accordance with IDAPA 58.01.01.650-651, and associated monitoring and recordkeeping requirements.

Permit Condition 14.2

This permit condition requires the permittee to pave of all plant roads that will be used for raw material and product transport. This is a BACT work practice standard.

Permit Conditions 14.6 and 14.7

These Permit Conditions incorporate odorous emission limits, in accordance with IDAPA 58.01.01.776.01, and associated recordkeeping requirements.

Permit Conditions 14.8 and 14.9

These Permit Conditions incorporate visible emission limits, in accordance with IDAPA 58.01.01.625, and associated monitoring and recordkeeping requirements.

Permit Condition 14.10

This permit condition requires Magnida to develop a written and DEQ monitoring protocol for all CERMS required by the permit. The protocol shall address:

- Emissions calculation methodology;
- Measurement frequency;
- Downtime/missing data; and
- Fuel/Heat input or production rate monitoring where applicable.

The CERMS required for the nitric acid plant will also have requirements from NSPS Subpart Ga applicable. The permittee is not required to regenerate in the protocol requirements of Federal requirements that are applicable; a simple reference to those applicable requirements is acceptable.

However, the CERMS do require determining emissions rates (i.e. emissions per heat input, and emissions per ton of product) that are not specified by the federal rules and it is the purpose of the monitoring protocol to address those elements that are not addressed by the Federal regulation. Other examples are emissions calculation methodology; measurement frequency; downtime/missing data; and fuel/heat input or production rate monitoring where applicable.

Permit Condition 14.11

This permit condition requires compliance with applicable provisions of the NSPS and NESHAP general provisions. Refer to the Regulatory Analysis section for additional information.

Permit Conditions 14.12

This permit condition requires compliance with applicable provisions of the NESHAP rule for benzene waste operations at chemical plants. Refer to the Regulatory Analysis section for additional information. Benzene emissions are not expected from the process, though by requirements of the regulation Magnida will have to confirm this.

Permit Conditions 14.13

This permit condition specifies that source tests shall be conducted under "worst case normal" conditions as required by IDAPA 58.01.01.157. Source test reports shall contain documentation that the tests were conducted under these conditions.

Permit Condition 14.14

This permit condition provides DEQ agency contact information.

Section 15 includes DEQ's standard General Provisions with one notable change. Permit Condition 15.5 specifies that approval to construct shall become invalid if construction is not commenced within 30-months after receipt of such approval, if construction is discontinued for a period of 30-months or more, or if construction is not completed within a reasonable time. This condition originates from 40 CFR 52.21(r)(2) and EPA guidance[15] on implementing those provisions. 40 CFR 52.21(r)(2) specifies that "Approval to construct shall become invalid if construction is not commenced within 18 months after receipt of such approval, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. The Administrator may extend the 18-month period upon a satisfactory showing that an extension is justified." The permittee has requested that the deadline for commencing construction be extended to 30 months rather than the default 18 months due to the size and complexity of the proposed project. DEQ has accepted the proposed extension to 30 months. This extension is consistent with EPA's guidance.

PUBLIC REVIEW

Public Comment Period & Public Hearing

A public comment period on the proposed permit was provided between March 5, 2014 and April 4, 2014 and a public hearing was provided on April 2, 2014 in accordance with IDAPA 58.01.01.209. Comments were submitted in response to DEQ's proposed action. A response to public comments document has been crafted by DEQ based on comments submitted during the public comment period and hearing. That document is part of the final permit package for this permitting action.

15 January 31, 2014 EPA Memorandum, Guidance on Extension of Prevention of Significant Deterioration (PSD) Permits under 40 CFR 52.21(r)(2), From: Stephen D. Page, Director, Office of Air Quality Planning and Standards

APPENDIX A – AMBIENT AIR QUALITY IMPACT ANALYSES

MEMORANDUM

DATE: March 4, 2014

TO: Dan Pitman, P.E., Permit Writer, Air Program

FROM: Darrin Mehr, Air Quality Analyst, Air Program
Kevin Schilling, Stationary Source Modeling Coordinator, Air Program

PROJECT: P-2013.0030 Proj 61192 PSD PTC Application for the Proposed Magnolia Nitrogen Idaho, LLC Facility to be Constructed and Operated by Magnida

SUBJECT: Demonstration of Compliance with IDAPA 58.01.01.203.02 (NAAQS), 203.03 (TAPs), and 205 (major source in an attainment area) as it relates to air quality impact analyses.

Contents

1.0 Summary

Magnolia Nitrogen Idaho, LLC (Magnida) submitted a Permit to Construct (PTC) application on April 29, 2013, subject to the permitting requirements of the Prevention of Significant Deterioration (PSD) New Source Review (NSR) program for a new major facility. The proposed greenfield facility would be located along the Snake River southwest of American Falls, Idaho.

This memorandum provides a summary of the ambient air impact analyses submitted with the PTC application, primarily presented in the *Air Dispersion Modeling and Class II Visibility Analysis for the Proposed Magnolia Nitrogen Idaho LLC Facility in Power County Idaho* (RTP Modeling Report). It also describes DEQ's review of those analyses, additional clarifications, and conclusions.

The proposed facility will produce ammonia, granulated urea, urea ammonium nitrate (UAN), and diesel exhaust fluid (DEF). Significant allowable emissions quantities, as defined in IDAPA 58.01.01.006.106 (Idaho Air Rules Section 006.106), are anticipated for carbon monoxide (CO), oxides of nitrogen (NOx), particulate matter with a nominal aerodynamic diameter of 10 microns or less (PM_{10}), particulate matter with a nominal aerodynamic diameter of 2.5 microns or less ($PM_{2.5}$), and ozone (O_3) as indicated by emissions of volatile organic compounds (VOCs). Emissions of sulfur dioxide (SO_2) and other listed pollutants are below significant emissions rates of Idaho Air Rules Section 006.106.

Project-specific air quality analyses involving atmospheric dispersion modeling of estimated emissions associated with the proposed project were submitted to DEQ to demonstrate that the proposed facility would not cause or significantly contribute to a violation of any ambient air quality standard (Idaho Air Rules Section 203.02 and 203.03). Analyses were also submitted to DEQ to demonstrate compliance with Idaho Air Rules Section 205, *Permit Requirements for New Major Facilities or Major Modifications in Attainment or Unclassifiable Areas*, including effects on visibility in Class I areas, ambient monitoring requirements, and effects of the proposed facility and growth on the surrounding area's air quality, soils, vegetation, and visibility.

RTP Environmental Associates, Inc. (RTP), on behalf of Magnida, performed the ambient air impact analyses for this project to demonstrate compliance with NAAQS, increment consumption, TAPs, visibility impacts, and growth impact analyses. The DEQ review summarized by this memorandum addressed only the rules, policies, methods, and data pertaining to the air impact analyses used to demonstrate that the estimated emissions associated with operation of the proposed facility will not cause or significantly contribute to a violation of any applicable air quality standard. This review did not evaluate compliance with other rules or analyses that do not pertain to the air impact analyses. Evaluation of emissions estimates was the responsibility of the permit writer and is addressed in the main body of the Statement of Basis, and were not evaluated in this modeling review memorandum.

The submitted air quality impact analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data (review of emissions estimates was addressed by the DEQ permit writer); 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that predicted pollutant concentrations from emissions associated with the project as modeled were below Significant Impact Levels (SILs) or other applicable regulatory thresholds; or b) that predicted pollutant concentrations from emissions associated with the project as modeled, when appropriately combined with co-contributing sources and background concentrations, were below applicable National Ambient Air Quality Standards (NAAQS) and PSD increments at ambient air locations where and when the project has a significant impact; 5) showed that Toxic Air Pollutant (TAP) emissions increases associated with the project will not result in increased ambient air impacts exceeding allowable TAP increments; 6) showed that potential impacts predicted by other required analyses are within established acceptable criteria.

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

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	**Explanation/Consideration**
General Emissions Rates Emissions rates used in the modeling analyses, as listed in this memorandum, represent maximum potential emissions as given by design capacity or as limited by the issued permit for the specific pollutant and averaging period.	Compliance has not been demonstrated for emissions rates greater than those used in the modeling analyses.
Backup Generator and Fire Water Pump Engines It was assumed that the generator would be operated equal to or less than 1.0 hour/week for testing and maintenance, and the fire suppression water pump would be operated equal to or less than 2.0 hour/week.	Compliance with NAAQS was not demonstrated for operational hours greater than those that were modeled.
Ammonia/Urea Process Flare (Model ID NH3_FLR) The application indicates this flare controls process emissions during purging of gases from the ammonia and urea plants. These emissions were included in the 1-hour NO_2 modeling. The operation of the flare to control emissions during startup and shutdown events of the emission sources supplying process gases to combust was not modeled. The applicant will operate the process flare not more than seven individual startup events or shutdown events in total per year.	DEQ determined that startup and shutdown emissions from this source could be excluded from 1-hour NO_2 modeling analyses on the basis that the source does not operate frequently enough or continuously enough to substantially contribute to the annual distribution of maximum daily 1-hour NO_2 concentrations. Startup is a separate event from shutdown if it occurs on a different day from startup. This distinction is necessary because the 1-hour NO_2 NAAQS design concentration is in the form of the 5-year average of the annual 8th high maximum daily 1-hour average impact.
Construction of Sources as Proposed in the Permit Application Emission rates used in the modeling were established using assumptions for control efficiencies for proposed air pollutant control equipment. Exhaust parameters used in the modeling demonstration are dependent upon the specific characteristics of the air pollution control equipment. Installation of pollution control equipment with different specifications may directly affect the air pollutant emission rates and the exhaust parameters for some sources. Emissions unit locations, structure dimensions, and structure locations may also affect ambient impacts.	A change in equipment and/or facility layout from what has been proposed in the permit application may invalidate the modeling demonstration for this project. NAAQS and TAPs compliance has only been demonstrated for the facility layout and emissions release parameters used in analyses described in this memorandum.
Ammonia Plant Startup Heater $PM_{2.5}$ and PM_{10} emissions for this unit were annualized using a 100 hour/year operation limit, with emissions distributed evenly over 8760 hours/year. This operational factor was also applied to the 24-hour average $PM_{2.5}$ and PM_{10} emission rates.	NAAQS compliance has not been demonstrated for operations exceeding 100 hours/year.

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

SUMMARY OF EVENTS

- February 14, 2013: DEQ provided ambient background data for nitrogen dioxide (NO_2) and ozone (O_3) to RTP Environment Associates, Inc. (RTP) via email.
- February 18, 2013: RTP submitted a request and justification, on behalf of Magnida, via email to DEQ for the use of the non-regulatory guideline Tier 3 Ozone Limiting Method (OLM) or Plume Volume Molar Ratio Method (PVMRM) compliance methods to be used for the 1-hour average NO_2 significant impact level (SIL) and National Ambient Air Quality Standards (NAAQS) demonstrations.
- February 20, 2013: DEQ notified the Federal Land Managers (FLMs) in writing of Magnida's planned submittal of a Permit to Construct (PTC) for a facility subject to the Prevention of Significant Deterioration (PSD) program.
- February 25, 2013: DEQ submitted a request to EPA Region 10, via email, for approval of Magnida's Tier 3 analysis methods for demonstrating compliance with the 1-hour NO_2 standard. RTP's February 18, 2013 request to Idaho DEQ and technical justification was included as an attachment.
- February 26, 2013: EPA Region 10 notified DEQ via email of the approval of the use of Tier 3 OLM or PVMRM compliance methods for the project's 1-hour NO_2 modeling analyses.
- February 27, 2013: RTP requested DEQ approval of the on-site pre-construction monitoring station location, via email.
- February 28, 2013: DEQ approved the on-site monitoring location via email. RTP notified DEQ via email that the 2008-2012 meteorological dataset was processed and completed. DEQ obtained the files from RTP's file transfer protocol (ftp) site.
- March 18, 2013: RTP submitted a modeling protocol via email on behalf of Magnida, to DEQ.
- March 22, 2013: DEQ approved Magnida's March 18, 2013 Quality Assurance Project Plan for the Magnida project's on-site pre-construction monitoring program for criteria air pollutants and meteorological data.
- April 3, 2013: DEQ sent a copy of the modeling protocol to EPA Region 10.
- April 4, 2013: DEQ sent a copy of the Magnida project's modeling protocol and 1-hour NO_2 Tier III compliance justification to the U.S. Forest Service, National Parks Service, and the U.S. Fish & Wildlife Service via email.
- April 8, 2013: RTP submitted a completed proposed Magnida PSD project FLM notification form to DEQ via email.
- April 8, 2013: DEQ forwarded the Magnida project's FLM notification form to EPA Region 10, U.S. Forest Service, National Parks Service, and the U.S. Fish & Wildlife Service via email.
- April 26, 2013: Magnida submitted a PSD permit application with electronic modeling files to DEQ.
- April 29, 2013: DEQ notified the U.S. Forest Service, National Park Service, and the U.S. Wildlife Service via email that the PSD PTC application had been received. The application and modeling files were made available to these agencies through DEQ's file transfer protocol (ftp) site.
- May 2, 2013: The National Park Service notified DEQ via email that the NPS does not have any requirement for Class I area impacts from the project based on Magnida's Q/D results.
- May 20, 2013: Magnida submitted a scaled plot plan for the permit application via email.
- May 21, 2013: RTP submitted ambient impact contour plots for the permit application via email.

- June 2, 2013: RTP email sent 6/2/2013 and received by DEQ on 6/3/2013. RTP submitted modeling files included a 1-hour NO_2 NAAQS half-load scenario for the Magnida facility; an analysis to document Magnida's contribution to the NO_2 1-hour average NAAQS design concentration receptor; and a 1-hour NO_2 significant impact analysis including emergency engines.
- June 3, 2013: RTP submitted in-stack NO_2 to NO_x ratio supporting documentation and an explanation of assumptions used in the 1-hour average NO_2 standards.
- June 5, 2013: RTP submitted facility CAD files and topographic map files to DEQ via email. Under a separate email RTP submitted the calculation spreadsheet for the $PM_{2.5}$ and PM_{10} ambient background concentrations that were based on the Ballard Road monitoring site data.
- June 5, 2013: RTP email date 6/5/13, received by DEQ on 6/7/13 A revised plot plan and revised $PM_{2.5}$, PM_{10}, and 1-hour NO_2 NAAQS demonstration modeling files including the emergency generator and fire water pump engine were submitted.
- June 13, 2013: RTP submitted Magnida's April 2013 on-site monitoring report to DEQ via email.
- June 19, 2013: RTP submitted a support document for the in-stack NO_2 to NO_x ratio for natural gas-fired boilers via email. Under a separate email, RTP submitted support documentation and assumptions used for Magnida's modeled exhaust parameters.
- June 20, 2013: RTP submitted additional supporting documentation on the natural gas-fired boiler in-stack NO_2 to NO_x ratio via email.
- June 20, 2013: Email from RTP sent 6/20/2013 and received by DEQ on 6/21/2013. RTP submitted revised significant contribution modeling files for NO_2, CO, $PM_{2.5}$, and PM_{10} that reflected requested allowable operating hours of the emergency engines. Revised annual average toxic air pollutant impacts were also submitted.
- June 24, 2013: DEQ declared the application incomplete. DEQ issued an incompleteness letter to Magnida via email.
- July 2, 2013: RTP submitted Magnida's May 2013 on-site monitoring report to DEQ via email.
- July 17, 2013: RTP submitted revised ammonia TAP modeling files via email.
- July 29, 2013: RTP submitted a Class II visibility analysis to DEQ via email. The analysis was conducted for the Massacre Rocks State Park, presented a Level II analysis, and was conducted at DEQ's request.
- August 14, 2013: RTP submitted a revised emission estimate spreadsheet via email.
- August 15, 2013: RTP submitted the June 2013 and 1st quarterly on-site monitoring report to DEQ via email.
- October 30, 2013: RTP submitted the 2nd quarterly on-site monitoring report to DEQ via email.
- November 1, 2013: Magnida submitted a revised PSD PTC application including electronic modeling files to DEQ.
- November 6, 2013: RTP submitted a revised emission calculation spreadsheet to DEQ via email.
- November 14, 2013: RTP submitted a spreadsheet of the Ballard Road $PM_{2.5}$ and PM_{10} ambient background values calculations.
- December 2, 2013: DEQ declared the Magnida PSD PTC application complete and issued a completeness letter via email.
- December 9, 2013: RTP submitted an updated application via email.
- December 13, 2013:DEQ requested that RTP and Magnida re-run the modeling analyses using a meteorological dataset using the Bulk Richardson method.
- January 9, 2014: DEQ received a revised modeling report and notification from RTP Environmental to download revised modeling files based on the Bulk Richardson method meteorological dataset.

- January 10, 2014: DEQ completed downloading electronic data files from the RTP file transfer protocol site.
- February 5, 2014: DEQ received a disc of the complete set of modeling files for the project to verify all data files intended to be transferred on January 10, 2014 are contained are available for the project's public comment package.
- February 6, 2014: DEQ received a revised 1-hour NO_2 NAAQS compliance demonstration files including the testing operations of emergency internal combustion engines.
- February 12, 2014: DEQ received Magnida's 3rd Quarter on-site ambient monitoring data report from RTP. The report included met data and pollutant concentrations for October, November, and December 2013.
- February 14, 2014: DEQ notified Magnida and RTP of the need to update the 24-hour average PM_{10} modeling demonstration based on a 24-hr PM_{10} background design value that exceeded the 117 $\mu g/m^3$ value based on data from the Ballard Road regional ambient monitor. The highest 2nd high value was 125 $\mu g/m^3$.
- February 15, 2014: DEQ received a revised 24-hour PM_{10} NAAQS compliance demonstration using the 125 $\mu g/m^3$ on-site monitoring value. A culpability analysis was also submitted based on AERMOD Version 13350.
- February 17, 2014: DEQ received the revised 24-hr PM_{10} NAAQS compliance and culpability analysis demonstrations based on AERMOD Version 12345 - the version approved for this project. Based on review of the submitted analyses, DEQ and RTP agreed that additional analyses would be necessary to resolve the culpability assessment.
- February 18, 2014: DEQ received revised modeling files and a modeling report for the annual $PM_{2.5}$ and 24-hour PM_{10} NAAQS and the 24-hour PM_{10} increment consumption culpability analyses. These demonstrations represent the final NAAQS and increment consumptions demonstrations for this project.
- February 28, 2014: DEQ received an email from RTP providing a description of the growth in the area surrounding Magnida after August 7, 1977.
- February 28, 2014: DEQ received a certification of documents and submittals from Magnida's responsible official.

2.0 Background Information

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

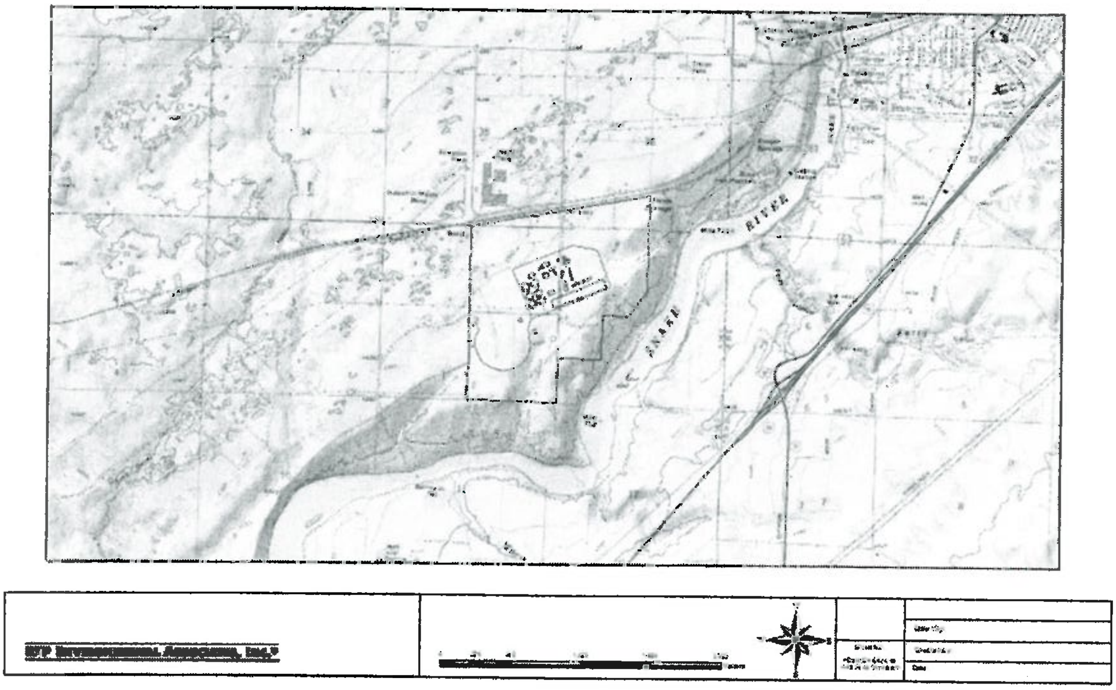
2.1 Proposed Location and Area Classification

The Magnolia facility proposed site is in Power County, Idaho. This area is designated as an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), ozone (O_3), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}), and particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers ($PM_{2.5}$). The area is not classified as non-attainment for any criteria pollutants.

Figure 1 shows the proposed site location. The site is along the Snake River southwest of American Falls, Idaho.

There are no Class I areas within 10 kilometers of the facility. The nearest Class I area is Craters of the Moon National Monument, which is approximately 76 kilometers northwest of the proposed facility.

Figure 1. Location of Proposed Magnida Facility



2.2 *Air Impact Analyses Required for All Permits to Construct*

Idaho Air Rules Sections 203.02 and 203.03 state:

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

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

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

2.3 *Significant Impact Level and Cumulative NAAQS Impact Analyses*

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

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

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

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

If the cumulative NAAQS impact analysis indicates a violation of the standard, the permit may not be issued if the proposed project has a significant contribution (exceeding the SIL) to the modeled violation. This evaluation is made specific to both time and space. If the SIL analysis indicates the facility/modification has an impact exceeding the SIL, the facility might not have a significant contribution to a violation if impacts are below the SIL at the specific receptor showing the violation during the time periods when a modeled violation occurred.

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

The $PM_{2.5}$ annual standard was changed from 15 $\mu g/m^3$ to 12 $\mu g/m^3$ on December 14, 2012. The revised standard will not become applicable for permitting purposes until it is incorporated *sine die* into Idaho Air Rules (Spring 2014). The submitted application conservatively used the 12 $\mu g/m^3$ NAAQS standard for the compliance demonstration.

Table 2. APPLICABLE REGULATORY LIMITS				
Pollutant	**Averaging Period**	**Significant Impact Levels[a] (μg/m³)[b]**	**Regulatory Limit[c] (μg/m³)**	**Modeled Design Value Used[d]**
PM_{10}[e]	24-hour	5.0	150[f]	Maximum 6th highest[g]
$PM_{2.5}$[h]	24-hour	1.2	35[i]	Mean of maximum 8th highest[j]
	Annual	0.3	12[k]	Mean of maximum 1st highest[l]
Carbon monoxide (CO)	1-hour	2,000	40,000[m]	Maximum 2nd highest[n]
	8-hour	500	10,000[m]	Maximum 2nd highest[n]
Sulfur Dioxide (SO_2)	1-hour	3 ppb[o] (7.8 μg/m³)	75 ppb[p] (196 μg/m³)	Mean of maximum 4th highest[q]
	3-hour	25	1,300[m]	Maximum 2nd highest[n]
	24-hour	5	365[m]	Maximum 2nd highest[n]
	Annual	1.0	80[r]	Maximum 1st highest[n]
Nitrogen Dioxide (NO_2)	1-hour	4 ppb (7.5 μg/m³)	100 ppb[s] (188 μg/m³)	Mean of maximum 8th highest[t]
	Annual	1.0	100[r]	Maximum 1st highest[n]
Lead (Pb)	3-month[u]	NA	0.15[r]	Maximum 1st highest[n]
	Quarterly	NA	1.5[r]	Maximum 1st highest[n]
Ozone (O_3)	8-hour	40 TPY VOC[v]	75 ppb[w]	Not typically modeled

a. Idaho Air Rules Section 006 (definition for significant contribution) or as incorporated by reference as per Idaho Air Rules Section 107.03.b.
b. Micrograms per cubic meter.
c. Incorporated into Idaho Air Rules by reference, as per Idaho Air Rules Section 107.
d. The maximum 1st highest modeled value is always used for the significant impact analysis unless indicated otherwise. Modeled design values are calculated for each ambient air receptor.
e. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
f. Not to be exceeded more than once per year on average over 3 years.
g. Concentration at any modeled receptor when using five years of meteorological data.
h. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
i. 3-year mean of the upper 98th percentile of the annual distribution of 24-hour concentrations.
j. 5-year mean of the 8th highest modeled 24-hour concentrations at the modeled receptor for each year of meteorological data modeled. For the SIL analysis, the 5-year mean of the 1st highest modeled 24-hour impacts at the modeled receptor for each year.
k. 3-year mean of annual concentration. The NAAQS was revised from 15 μg/m³ to12 μg/m³ on December 14, 2012. However, this standard will not be applicable for permitting purposes in Idaho until it is incorporated by reference *sine die* into Idaho Air Rules (Spring 2014).
l. 5-year mean of annual averages at the modeled receptor.
m. Not to be exceeded more than once per year.
n. Concentration at any modeled receptor.
o. Interim SIL established by EPA policy memorandum.
p. 3-year mean of the upper 99th percentile of the annual distribution of maximum daily 1-hour concentrations.
q. 5-year mean of the 4th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of 1st highest modeled 1-hour impacts for each year is used.
r. Not to be exceeded in any calendar year.
s. 3-year mean of the upper 98th percentile of the annual distribution of maximum daily 1-hour concentrations.
t. 5-year mean of the 8th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of maximum modeled 1-hour impacts for each year is used.
u. 3-month rolling average.
v. An annual emissions rate of 40 ton/year of VOCs is considered significant for O_3.
w. Annual 4th highest daily maximum 8-hour concentration averaged over three years.

2.4 *Toxic Air Pollutant Analyses*

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

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

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

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

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

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

2.5 Application Procedures for New Major Stationary Facilities

Idaho Air Rules Section 202.c establishes Prevention of Significant Deterioration (PSD) PTC application requirements, applicable to proposed major sources or major modifications within an area that has been designated as attainment or as unclassifiable for regulated air pollutants under the Clean Air Act. The requirements for a PSD PTC application, as specified by Idaho Air Rules Section 202.c, are listed below.

The following are applicable PSD required analyses and a reference of where the requirement is addressed in this memorandum:

Idaho Air Rules Section 202.01.c:

> *For any new major facility or major modification in an attainment or unclassifiable area for any regulated air pollutant.*

2.5.1 BACT

> *i. A description of the system of continuous emission control proposed for the new major facility or major modification, emission estimates, and other information as necessary to determine that the best available control technology would be applied.*

This requirement and DEQ's review of how compliance was demonstrated is provided in the main body of the DEQ Statement of Basis.

2.5.2 SIL, NAAQS, and Increment Analyses

ii. An analysis of the effect on air quality by the new major facility or major modification, including meteorological and topographical data necessary to estimate such effects.

The requirements for a NAAQS analysis are stated in Section 2.3. Section 3.3 of this memorandum describes the methods and data used in the analyses, and Section 4.1 and 4.2 provide results of the SIL and NAAQS impact analyses. Section 3.4 of this memorandum describes applicable dates for PSD increment consumption analyses. Section 4.3 provides results for Class II increment consumption and Section 4.5.2 provides results for Class I increment consumption.

2.5.3 Effect of Growth Analyses

iii. An analysis of the effect on air quality projected for the area as a result of general commercial, residential, industrial, and other growth associated with the new major facility or major modification.

Section 4.6.1 of this memorandum describes the impacts of resulting growth on air quality.

2.5.4 Description of Growth and Impacts of Growth Since 1977

iv. A description of the nature, extent, and air quality effects of any or all general commercial, residential, industrial, and other growth which has occurred since August 7, 1977, in the area the new major facility or major modification would affect.

Section 4.6.2 of this memorandum describes in the air quality impacts of growth since 1977.

2.5.5 Visibility, Soils, and Vegetation Analyses

v. An analysis of the impairment to visibility, soils, and vegetation that would occur as a result of the new major facility or major modification and general commercial, residential, industrial, and other growth associated with establishment of the new major facility or major modification. The owner or operator need not provide an analysis of the impact on vegetation or soils having no significant commercial or recreational value.

Section 4.6.3 of this memorandum describes the soil and vegetation analysis. The general visibility analyses are described in Section 4.6.4.

2.5.6 Class I Area Visibility Impairment Analysis

vi. An analysis of the impairment to visibility of any federal Class I area, Class I area designated by the Department, or integral vista of any mandatory federal Class I area that the new major facility or major modification would affect.

Section 4.5.1 of this memorandum describes the impacts of the Class I Area visibility impairment analysis.

2.5.7 Analysis of Existing Air Quality

vii. An analysis of the existing ambient air quality in the area that the new major facility or major modification would affect for each regulated air pollutant that a new major facility would emit in *significant amounts or for which a major modification would result in a significant net emissions increase.*

viii. Ambient analyses as specified in Subsections 202.01c.vii., 202.01c.ix., 202.01c.x., and 202.01c.xii., may not be required if the projected increases in ambient concentrations or existing ambient concentrations of a particular regulated air pollutant in any area that the new major facility or major modification would affect are less than the following amounts, or the regulated air pollutant is not listed herein: carbon monoxide - five hundred and seventy-five (575) micrograms per cubic meter, eight (8) hour average; nitrogen dioxide - fourteen (14) micrograms per cubic meter, annual average; PM-10 - ten (10) micrograms per cubic meter, twenty-four (24) hour average; sulfur dioxide – thirteen (13) micrograms per cubic meter, twenty-four (24) hour average; ozone - any net increase of one hundred (100) tons per year or more of volatile organic compounds, as a measure of ozone; lead - one-tenth (0.1) of a microgram per cubic meter, calendar quarterly average; mercury - twenty-five hundredths (0.25) of a microgram per cubic meter, twenty-four (24) hour average; beryllium - one-thousandth (0.001) of a microgram per cubic meter, twenty-four (24) hour average; fluorides - twenty-five hundredths (0.25) of a microgram per cubic meter, twenty-four (24) hour average; vinyl chloride - fifteen (15) micrograms per cubic meter, twenty-four (24) hour average; hydrogen sulfide - two-tenths (0.2) of a microgram per cubic meter, one (1) hour average.

ix. For any regulated air pollutant which has an ambient air quality standard, the analysis shall include continuous air monitoring data, gathered over the year preceding the submittal of the application, unless the Department determines that a complete and adequate analysis can be accomplished with monitoring data gathered over a period shorter than one (1) year, but not less than four (4) months, which is adequate for determining whether the emissions of that regulated air pollutant would cause or contribute to a violation of the ambient air quality standard or any prevention of significant deterioration (PSD) increment.

x. For any regulated air pollutant which does not have an ambient air quality standard, the analysis shall contain such air quality monitoring data that the Department determines is necessary to assess ambient air quality for that air pollutant in any area that the emissions of that air pollutant would affect.

Preconstruction monitoring for $PM_{2.5}$ may be waived if the maximum projected impact is less than 4 $\mu g/m^3$, as per 40 CFR 52.21(i)(5)(i), provided it is determined to be warranted. The $PM_{2.5}$ 24-hour SMC was vacated by the D.C. Circuit Court of Appeals on January 22, 2013, in *Sierra Club v. EPA*. The decision stated that for $PM_{2.5}$, "EPA has no *de minimis* authority to exempt the requirement (requirement of preconstruction monitoring)."

The preconstruction monitoring requirement can be met by performing on-site monitoring or by using monitoring data from an existing location that is considered as representative and conservative (overestimation of concentrations expected at the proposed facility location). Section 3.2 of this memorandum describes how the preconstruction monitoring requirement was met and provides a description of the background concentrations used in the cumulative NAAQS impact analyses.

xi. If requested by the Department, monitoring of visibility in any Class I area the proposed new major facility or major modification would affect.

Monitoring of visibility was not required by DEQ for any Class I area based on the "Q/D < 10" screening results.

xii. Operation of monitoring stations shall meet the requirements of Appendix B to 40CFR Part 58 or such other requirements as extensive as those set forth in Appendix B as may be approved by the Department.

RTP Environmental submitted a Quality Assurance Project Plan (QAPP), dated March 18, 2013, to DEQ on behalf of Magnida. The QAPP contained information concerning the monitoring equipment and audit methods that comply with the requirements of 40 CFR 58 Appendix B. Meteorological data monitoring was performed over the same period. The QAPP was approved by DEQ on March 22, 2013. Each monthly monitoring report contained quality assurance analyses documenting the quantity of valid data collected within that period and an evaluation of the data's quality using performance specification criteria.

3.0 Analytical Methods and Data

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

3.1 Emission Source Data

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

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

3.1.1 Criteria Pollutant Emissions Rates

Table 3 lists criteria pollutant emissions rates for the proposed Magnida facility that were used in the project-specific modeling analyses for short-term averaging periods. Table 4 lists emissions rates for annual averaging periods.

Identical emission rates for the Magnida facility were used for the SIL, NAAQS, and increment consumption modeling analyses.

Modeling Applicability

Facility-wide potential emissions of PM_{10}, $PM_{2.5}$, NOx, CO, and VOCs (as a precursor to O_3) exceed significance levels, thereby requiring a PSD NAAQS impact analysis in accordance to Idaho Air Rules Section 202.01.c.ii and 40 CFR 52.21(k). Emissions of SO_2 and lead (Pb) were below significant emissions rates of Idaho Air Rules Section 006.106, thereby not subject to Idaho Air Rules Section 202.01.c.ii.

Table 3. SHORT-TERM ANALYSES MODELED CRITERIA POLLUTANT EMISSIONS					
Source ID	Description	Emission Rates (lb/hr[a])			
		NOx[b]	PM_{10}[c]	$PM_{2.5}$[d]	CO[e]
Point Sources					
NH3_REF	Ammonia reformer	13.52	8.72	8.72	23.40
NH3_FLRP	Ammonia process flare pilot flame	0.10	0.011	0.011	0.56
NH3_FLR	Ammonia process flare	1.32	1.27	1.27	125.80
NH3_STOR	Ammonia storage	0.051	0.006	0.006	0.28
CO2_VENT	Ammonia carbon dioxide regenerator	0.0	0	0	2.08
NH3_HTR	Ammonia startup heater	0.031	0.20	0.20	2.25
NA_TGV	Nitric acid tail gas vent	20.83 (10.42)[f]	0.0	0.0	0.0
NA_TK	Nitric acid tank	0.007	0.0	0.0	0.0
AN_NEUT	Ammonium nitrate neutralizer vent	0.0	0.70	0.70	0.0
UREA_GV	Urea granulation vent	0.0	20.50	16.4	0.0
UREA_LD	Urea Loading Rack	0.0	0.43	0.43	0.0
UAN_TK	UAN Tanks	0.0	0	0.0	0.0
EMG_GEN	Emergency Generator Engine[g]	37.70[h]	0.04[i]	0.04[i]	16.69[j]
FWP	Fire Water Pump Engine[g]	3.31[h]	0.014[i]	0.014[i]	2.87[j]
BOIL	Package Boiler	2.75 (1.38)[f]	2.05	2.05	4.13
WWTP_CT	WWTP Cooling Tower	0.0	0.001	0.0	0.0
PLNT_CT1	Plant Cooling Tower Cell 1	0.0	0.065	0.0	0.0
PLNT_CT2	Plant Cooling Tower Cell 2	0.0	0.065	0.0	0.0
PLNT_CT3	Plant Cooling Tower Cell 3	0.0	0.065	0.0	0.0
PLNT_CT4	Plant Cooling Tower Cell 4	0.0	0.065	0.0	0.0
PLNT_CT5	Plant Cooling Tower Cell 5	0.0	0.065	0.0	0.0
PLNT_CT6	Plant Cooling Tower Cell 6	0.0	0.065	0.0	0.0
PLNT_CT7	Plant Cooling Tower Cell 7	0.0	0.065	0.0	0.0
Volume Sources					
RE_1 through RE_81	Plant Haul Road	0.0	0.013 each (1.03 total)	0.0031 each (0.25 total)	0.0

a. Pounds per hour.
b. Oxides of nitrogen, 1-hour averaging period.
c. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers, 24-hour averaging period.
d. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers, 24-hour averaging period.
e. Carbon monoxide, 1-hour averaging period.
f. Emissions at half-load. This was run as an additional scenario for the cumulative NAAQS analysis.
g. Short-term hourly emissions reflecting 100% load emissions for 1 hour/day for the emergency generator engine and 2 hours/day for the fire water pump engine.
h. Modeled by using randomly selected operation hours according to the stated operational frequency of once/week and duration indicated in footnote g. An external emissions file was used for emissions input to AERMOD.
i. The stated rate is representative of maximum daily emissions, as specified by the operational duration listed in footnote g, divided evenly throughout 24 hours. This rate was modeled continuously throughout the 5-year modeling period.
j. The stated rate is representative of maximum hourly emissions. This rate was modeled continuously throughout the 5-year modeling period.

Table 4. ANNUAL AVERAGE ANALYSES CRITERIA POLLUTANT EMISSIONS				
Source ID	Description	Emission Rates (lb/hr[a])		
		NO_x[b]	PM_{10}[c]	$PM_{2.5}$[d]
Point Sources				
NH3_REF	Ammonia reformer	13.52	8.72	8.72
NH3_FLRP	Ammonia process flare pilot flame	0.10	0.011	0.011
NH3_FLR	Ammonia process flare	1.32	1.27	1.27
NH3_STOR	Ammonia storage	0.051	0.006	0.006
CO2_VENT	Ammonia carbon dioxide regenerator	0.0	0.0	0.0
NH3_HTR	Ammonia startup heater	0.031	0.20	0.20
NA_TGV	Nitric acid tail gas vent	20.83	0.0	0.0
NA_TK	Nitric acid tank	0.007	0.0	0.0
AN_NEUT	Ammonium nitrate neutralizer vent	0.0	0.70	0.70
UREA_GV	Urea granulation vent	0.0	20.50	16.4
UREA_LD	Urea Loading Rack	0.0	0.43	0.43
UAN_TK	UAN Tanks	0.0	0.0	0.0
EMG_GEN	Emergency Generator Engine	0.224[e]	0.04[f]	0.04[f]
FWP	Fire Water Pump Engine	0.039[e]	0.014[f]	0.014[f]
BOIL	Package Boiler	2.75	2.05	2.05
WWTP_CT	WWTP Cooling Tower	0.0	0.001	0.0
PLNT_CT1	Plant Cooling Tower Cell 1	0.0	0.065	0.0
PLNT_CT2	Plant Cooling Tower Cell 2	0.0	0.065	0.0
PLNT_CT3	Plant Cooling Tower Cell 3	0.0	0.065	0.0
PLNT_CT4	Plant Cooling Tower Cell 4	0.0	0.065	0.0
PLNT_CT5	Plant Cooling Tower Cell 5	0.0	0.065	0.0
PLNT_CT6	Plant Cooling Tower Cell 6	0.0	0.065	0.0
PLNT_CT7	Plant Cooling Tower Cell 7	0.0	0.065	0.0
Volume Sources				
RE_1 through RE_81	Plant Haul Road	0.0	0.013 each (1.03 total)	0.0031 each (0.25 total)

a. Pounds per hour. Emissions rates represent total annual emissions divided by 8,760 hour/year to give an annual average hourly rate.
b. Oxides of nitrogen.
c. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
d. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
e. Annual operating hours of 52 hours/year for the emergency generator engine and 104 hours/year for fire water pump engine, averaged over 8,760 hours/year.
f. Annual emissions reflect 365 hours/year for the emergency generator engine and 730 hours/year for the fire water pump. This is a conservative method considering the requested level of operations limited by the 1-hour NO_2 NAAQS demonstration constrains operations to 52 hours/year for the emergency generator engine and 104 hours/year for the fire water pump engine.

SO_2 and Pb NAAQS compliance demonstrations were still required by Idaho Air Rules Section 203.02. DEQ has developed modeling thresholds for pollutants not subject to PSD requirements that provide emissions-based triggers below which source-specific impact analyses are not required. These modeling thresholds are specified in DEQ's *Idaho Air Modeling Guideline*[1] (*State of Idaho Guideline for Performing Air Quality Impact Analyses*, available at http://www.deq.idaho.gov/media/355037-modeling-guideline.pdf). Modeling applicability emissions thresholds were developed by DEQ based on modeling of a hypothetical source and are designed to reasonably ensure that impacts are below the applicable SIL. DEQ has established two threshold levels: Level 1 thresholds are unconditional thresholds, requiring no approval for use by DEQ; Level 2 thresholds are conditional upon DEQ approval, which depends on evaluation of the project and the site, including emissions quantities, stack parameters, number of sources emissions are distributed amongst, distance between the sources and the ambient air boundary, and the presence of sensitive receptors near the ambient air boundary.

DEQ determined Level 2 modeling thresholds were appropriate for SO_2 and Pb emissions because of the following:

- The large distance between emissions sources and the ambient air boundary.
- High stack heights that enhance dispersion of emitted pollutants, thereby minimizing ground-level concentrations.

Facility-wide potential Pb emissions were listed as 6 pounds/year in the emission inventory. DEQ's modeling applicability threshold is 14 pounds/month. Potential Pb emissions will not exceed this threshold and source-specific modeling was not required.

Potential hourly SO_2 emissions were approximately 2.1 pounds/hour, assuming concurrent operation of all SO_2-emitting sources at the maximum hourly emission rates listed in the emissions calculation tables. Annual facility-wide potential SO_2 emissions presented in the December 3, 2013 emissions inventory were 3.8 tons/year. Facility-wide hourly SO_2 emissions were below the DEQ's Level II modeling thresholds of 2.5 pounds/hour and 14 tons/year, and modeling was not required for SO_2.

Ozone (O_3) differs from other criteria pollutants in that it is not typically emitted directly into the atmosphere. O_3 is formed in the atmosphere through reactions of VOCs, NOx, and sunlight. Emissions of VOCs and NOx from the proposed Magnida facility were evaluated for their potential to cause a violation of the 8-hour O_3 NAAQS.

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

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

> *. . . footnote 1 to sections 51.166(I)(5)(I) of the EPA's regulations says the following: "No de minimis air quality level is provided for ozone. However, any net emission increase of 100 tons per year or more of volatile organic compounds or nitrogen oxides subject to PSD would be required to perform an ambient impact analysis, including the gathering of air quality data."*
>
> *The EPA believes it unlikely a source emitting below these levels would contribute to such a violation of the 8-hour ozone NAAQS, but consultation with an EPA Regional Office should still be conducted in accordance with section 5.2.1.c. of Appendix W when reviewing an application for sources with emissions of these ozone precursors below 100 TPY."*

Emissions estimates of VOCs are below the 100 tons/year threshold, but NOx emissions were estimated at 170 tons/year. DEQ determined it was not appropriate or necessary to require a quantitative source specific O_3 impact analysis, based on the following:

- Emissions of NOx are not substantially greater than the threshold at which the appropriateness and/or necessity of a source-specific O_3 analysis should be considered.
- The immediate area is rural, with few large O_3 precursor emissions sources of VOCs or NOx.
- The nearest urban area is Pocatello, with a population of about 55,000. Although there are some industrial sources of VOC and NOx in the area, VOC and NOx emissions are not substantial because of the lower density of vehicles compared to larger cities.
- The NW AIRQUEST background concentration tool estimates an O_3 8-hour maximum value of 59 ppb, well below the 75 ppb standard. A value of 62 ppb is predicted for Pocatello.
- Considering the existing VOC and NOx sources in the area, and the predicted O_3 concentrations for the area potentially impacted by the Magnida facility, DEQ is confident that VOC and NOx emissions from the facility will not cause or significantly contribute to a violation of the O_3 NAAQS.

Intermittent Emissions Sources

Emissions from the Ammonia/Urea Process Flare (source ID NH3_FLR in the model input files) during startup and shutdown, the testing of the Emergency Generator Engine (source ID EMG_GEN in the model input files), and the testing of the Fire Water Pump Engine (source ID FWP in the model input files) are intermittent sources that only operate on an infrequent basis. The two internal combustion (IC) engines are only used for emergency conditions and during periodic testing. As such, these sources are difficult to model in a way that accounts for impacts in a reasonably accurate but conservative manner.

For air quality standards that use the maximum observed concentration or second highest concentration as the compliance design value, regulatory assessment of pollutant impacts from intermittent sources can be appropriately modeled assuming continual operation. This assumption is appropriate because the source could be reasonably expected to operate during worst-case conditions, and the highest impact is the value used to evaluate compliance. For NAAQS having an averaging period longer than 1 hour (e.g., 8-hour, 24-hour, or annual NAAQS), short-term emissions can often be smeared or distributed over the longer averaging period, calculating an average emissions rate for the period of interest.

The main challenge of accurately modeling intermittent sources to evaluate the potential for violating the 1-hour NO_2 NAAQS arises because of the probabilistic nature of the standard. The probabilistic form of the NAAQS causes the operational frequency of an intermittent source to be a key consideration in the compliance evaluation. For example, if the only source at a facility is an intermittent source that operates once every quarter or four times per year, it is nearly impossible for the source to cause or contribute to a violation of the 1-hour NO_2 standard unless the background NO_2 concentration periodically exceeds the standard. For this example, the source does not operate frequently enough (four times each year) to impact the design concentration, which is the 3-year average of the 98^{th} percentile of the annual distribution of daily maximum 1-hour concentrations. The 1-hour NO_2 design value at any specific ambient air location is estimated through dispersion modeling by using the 5-year average of the eighth highest of the daily 1-hour maximum concentrations from each year. However, if the facility has additional substantial NO_2 sources, the contribution of the NO_2 emissions from even a very infrequent

NO_2 source could measurably affect compliance with the 1-hour NO_2 NAAQS at some downwind locations.

Demonstrating NAAQS compliance for permitting purposes typically involves modeling permit allowable emissions over all allowable operation times, which often is continual operation (8,760 hours per year). If a source is allowed to operate during any particular hour of the year, then modeling is performed by assessing the impacts for each hour of the year. Modeling an intermittent source by assuming continual operation would artificially skew the distribution, thereby over-representing the source's impact. However, specific hours during which an intermittent source will operate are usually unknown.

The US Environmental Protection Agency (EPA) provided guidance on modeling intermittent NO_2 sources in a March 2011 memorandum from Tyler Fox, leader of the air quality modeling group, to regional air directors.[2] The memo identifies the problem with modeling intermittent sources as a continuous source:

> We are concerned that assuming continuous operations for intermittent emissions would effectively impose an additional level of stringency beyond that intended by the level of the standard itself. As a result, we feel that it would be inappropriate to implement the 1-hour NO_2 standard in such a manner and recommend that compliance demonstrations for the 1-hour NO_2 NAAQS be based on emission scenarios that can logically be assumed to be *relatively continuous or which occur frequently enough to contribute significantly to the annual distribution of daily maximum 1-hour concentrations* [emphasis added]. EPA believes that existing modeling guidelines provide sufficient discretion for reviewing authorities to exclude certain types of intermittent emissions from compliance demonstrations for the 1-hour NO_2 standard under these circumstances.

The cornerstone of the technical argument on modeling intermittent sources is in determining what sources are continuous enough or frequent enough "to contribute significantly to the annual distribution of daily maximum 1-hour concentrations." The Tyler Fox memo does not discuss what constitutes a significant contribution to the annual distribution. DEQ's interpretation of EPA's statement is that a "significant contribution" in this context would be an impact that could potentially change the project's status with regard to NAAQS compliance. Therefore, if the 5-year average of the eighth-highest of daily maximum 1-hour concentrations at any ambient air receptor could increase by a margin that could exceed the NAAQS, then the source was continuous enough or frequent enough that it should be accounted for in the modeling analyses.

DEQ determined that startup and shutdown emissions from the Ammonia/Urea Process Flare could be excluded from the impact analyses on the basis that the source does not operate frequently enough to substantially contribute to the distribution of maximum daily 1-hour NO_2 concentrations. Startup and shutdown will occur not-more-than seven times each year. Also, because of the high stack height of the source, substantial impacts only occur at a considerable distance from the source. Wind direction and dispersion conditions would need to be effectively identical during multiple operations of the source for there to be multiple "hits" on a given set of receptors by the source.

DEQ was not confident that 1-hour NO_x emissions from testing of the Emergency Generator Engine and the Fire Water Pump Engine could be excluded from the impact analyses. However, DEQ agreed that modeling these sources continuously (8,760 hours/year) would result in an unacceptably high overestimation of 1-hour NO_2 impacts.

A more realistic approach to modeling the testing emissions from the emergency engines was recommended by DEQ for the cumulative impact analysis. DEQ generated an operational schedule consistent with the actual testing schedule proposed by Magnida and RTP. Specific hours during which testing occurs were randomly selected from the stated potential schedule of 1.0 hour/week for the Emergency Generator Engine and 2.0 hour/week for the Fire Water Pump, both tested only during daylight hours. A 5-year emissions input file for AERMOD was then constructed using the results from randomly generated operational hours, with an emissions value of 0.0 pounds/hour for non-testing hours.

Modeling the emergency engines in this manner accounts for the 1-hour NO_x emissions in a manner that represents one realistic scenario of operations. DEQ asserts that this approach is more appropriate than completely excluding these sources from the 1-hour NO_2 impact analysis. PM_{10} and $PM_{2.5}$ emissions from these sources were modeled for the 24-hour SIL, NAAQS, and increment analyses by assuming the sources will operate at their stated duration (1.0 and 2.0 hours/day) during each day of the 5-year modeling duration, with emissions evenly divided among 24 hours. Annual impacts of NO_2 and $PM_{2.5}$ were modeled by evenly distributing annual emissions from testing over 8,760 hours/year.

Secondary Particulate Formation

RTP described the expected contribution from particulate precursor emissions to secondary particulate formation in Section 6.3 of the RTP Modeling Report, which was submitted as part of the PSD PTC application. A qualitative approach was used to evaluate secondary $PM_{2.5}$ impacts in accordance with applicable EPA guidance.

RTP used a regional background concentration tool to help evaluate Magnida's NOx emissions contribution to secondary $PM_{2.5}$ formation. The tool was developed by the Northwest International Air Quality Environmental Science and Technology Consortium (NW AIRQUEST) and provided through Washington State University (located at http://lar.wsu.edu/nw-airquest/lookup.html). The tool uses regional scale modeling of pollutants in Washington, Oregon, and Idaho, with modeling results adjusted according to available monitoring data.

The following methodology was used to conservatively evaluate Magnida's contribution to secondary $PM_{2.5}$ formation:

- RTP asserted that not more than 25 percent of NOx emitted would contribute to $PM_{2.5}$ secondary formation, based on referenced EPA studies indicating that $PM_{2.5}$ formed from NOx precursors varied from 4 percent to 37 percent (*Evaluating the Contribution of $PM_{2.5}$ Precursor Gases and Re-Entrained Road Emissions to Mobile Source $PM_{2.5}$ Particulate Matter Emissions*, MACTEC, Federal Programs, RTP, NC.).

- Magnida's NOx emissions represent approximately 8 percent of the NOx precursor loading in the area. Magnida's NOx emissions are about 170 ton/year and the NOx loading for the area within 100 kilometers of the site was estimated at 2,120 ton/year, based on RTP's research of DEQ files.

- The NW AIRQUEST background concentration tool estimated $PM_{2.5}$ design value concentrations for the immediate area (12 kilometer square grid) at 12 $\mu g/m^3$ 24-hour average and 4 $\mu g/m^3$ annual average.

- Magnida's contribution to secondary $PM_{2.5}$ from its NOx emissions are then estimated by assuming that 25 percent of the existing 12 $\mu g/m^3$ 24-hour and 4 $\mu g/m^3$ annual $PM_{2.5}$ impact resulted from the existing 2,120 ton/year NOx loading in the area. If Magnida's NOx contribution is only 8 percent of the current loading, then Magnida's contribution to secondary $PM_{2.5}$ formation would be given by:

$$\left(12\frac{\mu g}{m^3}\right)\left(0.25\,\frac{\text{from NOx}}{\text{total PM}_{2.5}}\right)\left(\frac{\text{0.08 from Magnida's NOx}}{\text{total NOx loading}}\right) = 0.24\,\frac{\mu g}{m^3}\ \text{24-hour}$$

$$\left(4\frac{\mu g}{m^3}\right)\left(0.25\,\frac{\text{from NOx}}{\text{total PM}_{2.5}}\right)\left(\frac{\text{0.08 from Magnida's NOx}}{\text{total NOx loading}}\right) = 0.08\,\frac{\mu g}{m^3}\ \text{annual}$$

Ammonia has also been identified as a potential precursor for secondary $PM_{2.5}$, forming ammonium nitrate (NH_4NO_3) or ammonium sulfate ($(NH_4)_2SO_4$). Draft $PM_{2.5}$ permit modeling guidance (*Draft Guidance for $PM_{2.5}$ Permit Modeling*, Memorandum from Stephen Page, Director, Office of Air Quality Planning and Standards, March 4, 2013) states in Section III.2.1 Qualitative Assessments, "It may also be important to describe the typical background concentrations of certain chemical species that participate in the photochemical reactions that form secondary $PM_{2.5}$, such as NH_3, VOC, and ozone."

The submitted application did not address NH_3 emissions as a contribution to secondary $PM_{2.5}$ formation. DEQ modeling staff determined it would be appropriate to evaluate the NH_3 emissions from the proposed Magnida facility for secondary $PM_{2.5}$.

Maximum hourly NH_3 emissions from the proposed Magnida facility were calculated at 519 pounds/hour; however, 435 pounds/hour are intermittent emissions occurring for only 7 days/year and for only 12 hours/day. Potential continuous emissions from the Magnida facility are estimated at about 84 pounds/hour, which is 2,014 pounds/day and 367 ton/year.

DEQ permit modeling staff consulted with DEQ airshed chemistry/modeling staff on the potential for increased ammonia emissions to substantially contribute to secondary $PM_{2.5}$ formation. Agricultural areas in the Western US are "ammonia rich," and adding additional ammonia to the atmosphere will not result in increased $PM_{2.5}$ formation. Any available nitrate (NO_3) or sulfate (SO_4) that are formed upwind of the Magnida site would have already reacted to form NH_4NO_3 or $(NH_4)_2SO_4$ and would be accounted for in the monitored background concentration.

DEQ is confident that secondary $PM_{2.5}$ formation resulting from the Magnida facility's emissions will be negligible with regard to compliance with the $PM_{2.5}$ NAAQS. This is based on materials submitted in the application and DEQ's research and knowledge of atmospheric chemistry of the area.

3.1.2 Toxic Air Pollutant Emissions Rates

Non-carcinogenic toxic air pollutant (TAP) 24-hour averaged emission rates used in TAP impact analyses are listed in Table 5. Carcinogenic TAP annual-averaged emissions used in TAP impact analyses are listed in Table 6. Emissions of all other TAPs were estimated to be below emissions screening levels (ELs) listed in Idaho Air Rules Section 585 and 586, and air impact analyses were not required.

The hourly non-carcinogenic TAP emissions listed below in Table 5 were modeled for 24 hours/day over the five-year period of the meteorological dataset. The hourly carcinogenic TAP emissions listed below in Table 6 were modeled for 8,760 hours/year over the five-year period of the meteorological dataset.

Table 5. MODELED NON-CARCINOGENIC TOXIC AIR POLLUTANTS EMISSIONS RATES				
Source ID	Description	Ammonia (lb/hr)[a]	Nitrous Oxide (lb/hr)	Vanadium (as vanadium pentoxide) (lb/hr)
Point Sources				
NH3_REF	NH_3 Reformer	5.09	2.44	0.0026
NH3_FLR	NH_3 Process Flare	435	3.56	0.0037
NH3_STOR	NH_3 Storage Flare Pilot	0.0	0.0016	1.69E-06
CO2_VENT	Ammonia CO_2 Regenerator	0.92	0.0	0.0
NH3_HTR	NH_3 Startup Heater	0	0.22	2.25E-04
NA_TGV	Nitric Acid Tail Gas	1.9	16.8	0.0
UREA_MPV	Urea Melt Plant Vent	2.2	0.0	0.0
UREA_GV	Urea Granulation Vent	60.1	0.0	0.0
EMG_GEN	Emergency Generator Engine	0.0	0.027	0.0
FWP	Fire Water Pump Engine	0.0	0.027	0.0
BOIL	Package Boiler	0.0	0.59	6.20E-04
Volume Sources				
NH3_ELP	Ammonia Plant Fugitives	6.05	0.0	0.0
NH3_ELS	Ammonia Storage Fugitives	5.97	0.0	0.0
UREA_ELP	Urea Plant Fugitives	1.25	0.0	0.0
UREA_ELS	Urea Storage Fugitives	0.54	0.0	0.0

a. Pounds per hour

Table 6. MODELED CARCINOGENIC TOXIC AIR POLLUTANTS EMISSIONS RATES									
Source ID	Description	Arsenic (lb/hr[a])	Benzene (lb/hr)	Cd[b] (lb/hr)	Cr[c] (lb/hr)	HCHO[d] (lb/hr)	Nickel (lb/hr)	Napth-alene	POM[e] (lb/hr)
Point Sources									
NH3_REF	NH_3 Reformer	2.22E-04	2.33E-03	1.22E-03	1.55E-03	8.31E-02	2.33E-03	6.76E-04	1.26E-05
NH3_FLR	NH_3 Process Flare	3.99E-06	4.19E-05	2.19E-05	2.79E-05	1.50E-03	4.19E-05	1.22E-05	2.27E-07
NH3_STOR	NH_3 St. Flare Pilot	1.47E-07	1.54E-06	8.09E-07	1.03E-06	5.51E-05	1.54E-06	4.49E-07	8.38E-09
NH3_HTR	NH_3 Startup Heater	2.24E-07	2.35E-06	1.23E-06	1.57E-06	8.39E-05	2.35E-06	6.83E-07	1.28E-08
UREA_GV	Urea Gran. Vent	0	0	0	0	4.0E-02	0	0	0
UF_85_TK	UF85 Tank	0	0	0	0	3.29E-03	0	0	0
EMG_GEN	Emerg. Gen. Eng.	0	9.35E-05	0	0	9.51E-06	0	1.57E-05	0
FWP	Water Pump Eng.	0	3.88E-05	0	0	4.90E-05	0	3.52E-06	0
BOIL	Package Boiler	5.39E-05	5.66E-04	2.97E-04	3.77E-04	2.02E-02	5.66E-04	1.64E-04	3.07E-06

a. Pounds per hour.
b. Cadmium.
c. Chromium.
d. Formaldehyde.
e. Polycyclic Organic Matter (POM).

3.1.3 Multiple Operating Load Scenarios

The emission rates in Tables 3 and 4 are maximum emissions for all sources and reflect potential/allowable emissions. Emissions and dispersion-affecting stack parameters (primarily flow rates) can vary with varying production loads of some sources. Occasionally, maximum ambient impacts can occur with conditions representative of less than 100 percent load capacity. RTP evaluated this by performing variable load impact analyses. The variable load sources were determined to have their maximum ambient impacts at 100 percent operating load.

Magnida performed load analyses by modeling several sources with emissions and exhaust parameters reflecting varying operating loads that are expected to occur during normal operation of the facility. The

Table 7. POINT SOURCE STACK PARAMETERS AT FULL LOAD							
Release Point	Description	UTM[a] Coordinates		Stack Height (m)	Stack Gas Flow Temperature (K)[c]	Stack Gas Flow Velocity (m/sec)[d]	Modeled Stack Diameter (m)
		Easting-X (m)[b]	Northing-Y (m)				
NH3_REF	NH_3 Reformer	344021.41	4735803.08	45.72	403.15	12.89	3.81
NH3_FLRP	NH_3 Process Flare Pilot	344486.82	4735761.41	52.00	1273.15	19.99	0.43
NH3_FLR	NH_3 Process Flare	344486.82	4735761.41	52.00	1273.15	19.99	0.43
NH3_STOR	NH_3 Storage Flare Pilot	343793.1	4735720.64	18.29	1273.15	19.90	0.21
CO2_VENT	Ammonia CO_2 Regenerator	344080.37	4735801.13	33.53	318.15	15.79	0.61
NH3_HTR	NH_3 Startup Heater	344130.41	4735843.08	34.11	673.15	8.05	2.16
UF85_TK	UF85 Tank	344176.17	4735650.06	6.10	-0.18	0.000	0.061
NA_TGV	Nitric Acid Tail Gas	344189.6	4735680.48	76.2	399.82	36.33	1.37
NA_TK	Nitric Acid Tank	344171.51	4735677.74	12.19	-0.18	0.000	0.061
AN_NEUT	AN Neutralizer Vent	344193.5	4735635.4	76.2	365.37	7.19	0.37
UREA_MPV	Urea Melt Plant Vent	344089.4	4735622.83	55.02	316.48	0.035	1.46
UREA_GV	Urea Granulation Vent	344047.8	4735583.55	76.2	319.26	24.48	3.29
UREA_LD	Urea Loading Rack	343772.73	4735345.85	45.72	294.26	15.24	0.64
EMG_GEN	Emergency Generator Engine	344192.75	4735858.86	10.06	678.71	24.51	0.61
FWP	Fire Water Pump Engine	344162.63	4735888.47	4.57	778.71	24.90	0.30
BOIL	Package Boiler	344174.66	4735860.7	38.1	422.04	10.30	2.50
WWTP_CT	WWTP Cooling Tower	344252.8	4735668.64	8.05	317.04	26.79	2.29
PLNT_CT1	Plant Cooling Tower Cell 1	344210.41	4735812.17	12.98	303.15	1.52	8.53
PLNT_CT2	Plant Cooling Tower Cell 2	344215.84	4735798.33	12.98	303.15	1.524	8.53
PLNT_CT3	Plant Cooling Tower Cell 3	344221.5	4735784.36	12.98	303.15	1.524	8.53
PLNT_CT4	Plant Cooling Tower Cell 4	344227.15	4735771.17	12.98	303.15	1.524	8.53
PLNT_CT5	Plant Cooling Tower Cell 5	344232.33	4735757.03	12.98	303.15	1.524	8.53
PLNT_CT6	Plant Cooling Tower Cell 6	344232.33	4735757.03	12.98	303.15	1.524	8.53
PLNT_CT7	Plant Cooling Tower Cell 7	344243.3	4735730	12.98	303.15	1.524	8.53

a. Universal Transverse Mercator.
b. Meters.
c. Kelvin.
d. Meters per second.

The package boiler flow rate equals 108,380 ACFM per this method. This value is close to the 107,101 ACFM value actually used in the model, which was based on RTP's used in-house engineering judgement in establishing the package boiler stack exit velocity of 10.3 meters per second and a stack exit diameter of 2.5 meters. DEQ concluded that the stack parameters used in the model for the package boiler are adequately accurate based on the supporting information provided in the application.

Flares are typically modeled as point sources using an effective release height and an effective stack diameter that are based on formulae that account for the amount of heat released by the flared gases. This typically results in a release height that is greater than the physical height of the flare assembly and a flare stack diameter greater than the physical diameter of the candlestick flare assembly. The calculated release parameters for flares are then set according guidance provided in EPA's SCREEN3 User's Guide.[3] The exit velocity of 20 meters/second and exit temperature of 1,273 Kelvin (1,832° Fahrenheit) for candlestick flares are assumed constant values based on the method.

RTP's approach for Magnida's flares involved using the 20 meter/second exit velocity and 1273 Kelvin release temperature, but they maintained the physical stack height and diameter as specified by plant/vendor design. This is a conservative approach in that it uses a shorter stack height and a lower volumetric flow rate than provided by the SCREEN3 User's Guide methods, which will result in lower thermal buoyancy of the plume and reduced plume rise.

All point sources were modeled as vertical, uninterrupted releases except for the nitric acid tank vent and the UF85 tank vent. The tank vents were modeled with no flow rate. Values used in the analyses appeared reasonable and within expected ranges for the assumptions used in the submitted analyses. They were accepted and considered as accurate as design and vendor specification work could provide at this stage of the project's progression. Changes in equipment design and/or location in the facility layout can be important considerations in the representativeness of the modeling analyses to the constructed facility. Location and number of receptors where impacts exceed the SIL could be affected by changes to assumptions relied upon in pre-construction modeling. A re-evaluation of the modeling analysis is advised following construction of the project to verify that ambient impacts following construction comply with the constraints of the applicable ambient standards, such as contributions to increment consumption exceedences and NAAQS exceedences.

Partial load operation for the primary emission sources in the facility's operation were modeled using various loads in a single model setup to determine which scenario produced worst-case ambient impacts. Each source was modeled individually at full load and one or more additional partial loads. Stack exit velocity reduced to the percentage of load being modeled in addition to the scaled emission rate. Exit temperature and physical dimensions including stack release height and diameter were not altered.

RTP also modeled a scenario for 1-hour NO_2 NAAQS compliance that assumed multiple sources operating at half capacity concurrently to verify that the NAAQS would be met at partial load. These sources included the Nitric Acid Tail Gas Vent, Ammonium Nitrate Neutralizer Vent, Urea Granulation Vent, and the Package Boiler.

All Magnida point and volume sources were modeled with a base elevation of 1,336.2 meters above sea level.

Table 8 provides emissions release parameters used for volume sources. The calculation of release parameters is described by RTP in Appendix A of the RTP Modeling Report.

Table 8. VOLUME SOURCE RELEASE PARAMETERS						
Source	Description	UTM[a] Coordinates		Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)
		Easting - X (m)[a]	Northing - Y (m)			
RD_1 – RD_81 (81 individual identical volume sources)	Vehicle fugitives on plant haul road	On plant property	On plant property	3.90	6.37	3.63
NH3_ELP	Ammonia Plant Fugitives	343,998.29	4,735,748.78	5.33	11.70	4.97
NH3_ELS	Ammonia Storage Fugitives	343,858.23	4,735,663.57	6.10	21.28	5.67
UREA_ELP	Urea Plant Fugitives	344,047.64	4,735,593.3	15.24	21.28	14.17
UREA_ELS	Urea Storage Fugitives	343,905.05	4,735,544.32	6.10	21.28	5.67

a. Universal Transverse Mercator
b. Meters

3.1.5 Increment and NAAQS Co-Contributing Source Emissions Inventory

The cumulative NAAQS analyses and increment consumption analyses require the consideration of potentially co-contributing sources. This was needed for 24-hour and annual PM_{10} and $PM_{2.5}$ increment consumption and the 1-hour NO_2, 24-hour PM_{10}, 24-hr $PM_{2.5}$, and annual $PM_{2.5}$ cumulative NAAQS impact analyses. RTP obtained from DEQ a listing of all permitted sources within each of the counties surrounding the facility: Bannock, Bingham, Blaine, Bonneville, Butte, Caribou, Cassia, Franklin, Jerome, Lincoln, Minidoka, Oneida, and Power Counties. Each of these counties had a county border within 100 kilometers of the proposed Magnida site and RTP included them in the screening evaluation.

RTP used the State of North Carolina's screening method to evaluate nearby sources for inclusion in the increment and cumulative NAAQS analyses. DEQ does not maintain a readily accessible database of sources and emissions inventories to use in PSD NAAQS and increment consumption modeling analyses, so this method was proposed to systematically generate an appropriate inventory. The method has been widely used in other states' PSD permitting projects and certain EPA State Implementation Plan projects, and DEQ concurred that it would be appropriate for the Magnida PSD increment and NAAQS analyses. RTP described the method in more detail in the Section 4.4 of the RTP Modeling Report, submitted as part of the PSD PTC application.

Excluding a source from the increment-consuming or co-contributing source universe was based on whether potential annual emissions of PM_{10}, $PM_{2.5}$, or NOx were less than the value obtained by multiplying the distance from that emissions source to the edge of the impact area boundary for the Magnida facility by a factor of 20. The impact area boundary was established by the most distant location where the Magnida facility causes a modeled ambient impact above the SIL. This is the suggested approach for pollutants with an annual averaging period. For pollutants with a short-term averaging period, the entire distance between the proposed Magnida source and the nearby source being evaluated can be used. RTP chose to use the shorter long-term average distance factor, resulting in the inclusion of more offsite sources. Attachment A of this memorandum provides a memorandum describing the "North Carolina 20D" method. Any source located within the significant impact area was included as a nearby or "co-contributing" source.

Those sources that were determined to be located beyond 100 kilometers from the Magnida site were dropped from the list regardless of potential to emit and the evaluation of the $Q \leq 20 * D$ criteria. These sources were outside of the Magnida screening area defined by adding 50 kilometers to the maximum distance at which impacts exceeded the SIL. Other sources were screened by using their size classification as described in the RTP Modeling Report. Those not screened by the size classification were evaluated in more detail using the $Q \leq 20 * D$ criteria.

RTP indicated that only sources within 10 kilometers of the Magnida facility were included in 1-hour NO_2 and the 24-hour and annual $PM_{2.5}$ cumulative NAAQS analyses, in accordance with referenced EPA guidance documents. However, RTP included the JR Simplot Don Siding facility in the 1-hour NO_2, 24-hour $PM_{2.5}$, and annual $PM_{2.5}$ NAAQS compliance demonstrations. The JR Simplot Don Siding facility is located approximately 34 kilometers from the Magnida site.

American Falls Ready Mix was identified by RTP as a nearby source of PM_{10} and $PM_{2.5}$ emissions at a location within the significant impact area. The facility's modeled location was based on the DEQ Permit to Construct's facility location address. Subsequent review of Google earth imagery determined that the facility was actually constructed at site that is approximately 0.4 miles northwest of the modeled location. DEQ determined the modeled site is conservative, maximizing ambient impacts for the modeling analyses because the modeled site is closer to the ambient receptors of the PM_{10} NAAQS and increment analyses and the $PM_{2.5}$ NAAQS analyses. A change was not requested by DEQ.

Attachment B of this memorandum provides the increment consumption and cumulative NAAQS analyses emissions inventory for co-contributing sources.

3.2 Preconstruction Air Quality Monitoring and Background Concentrations

3.2.1 Requirement of Preconstruction Monitoring

Table 9 compares modeling results to the significant monitoring concentrations (SMCs) for those pollutants emitted in quantities exceeding the significant emissions rate. The SMCs for 24-hour PM_{10} and O_3 were exceeded, as determined by the SIL analyses performed for PM_{10} and facility-wide estimated NO_2 emissions for O_3 monitoring applicability. PSD modeling requirements were not applicable to SO_2 because emissions of SO_2 were below significant emission rates.

Table 9. PRECONSTRUCTION MONITORING REQUIREMENT APPLICABILITY

Pollutant	Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)[a]	SMC[b] ($\mu g/m^3$)	Can the Monitoring Requirement be Waived?[c]
CO	8-hour	56.9	575	Yes
NO_2	annual	0.93[d]	14	Yes
PM_{10}	24-hour	14.3	10	No
$PM_{2.5}$	24-hour	3.1	4[e]	Yes
O_3	NA	170 ton/year NO_2[f]	100 ton/year NO_2[f]	No

a. Micrograms per cubic meter.
b. Significant monitoring concentration.
c. "Yes" indicates that permitting agencies can waive the preconstruction monitoring requirement of Idaho Air Rules Section 202.c.viii if the agency determines such a waiver is warranted.
d. This value accounts for the 0.75 Tier II Ambient Ratio Method for annual NO_2.
e. The $PM_{2.5}$ SMC was vacated by the DC District Court on January 22, 2013.
f. No de minimis air quality level is provided for ozone. However, any net emissions increase of 100 tons per year or more of volatile organic compounds or nitrogen oxides subject to PSD would be required to perform an ambient impact analysis, including the gathering of ambient air quality data.

Magnida did not seek an exemption from preconstruction monitoring requirements for those criteria pollutants having impacts below the SMCs. On-site monitoring was performed for NO_2, CO, O_3, PM_{10}, and $PM_{2.5}$. However, only nine months of monitoring data were collected prior to issuance of a proposed permit (start of the public comment period). Magnida used existing monitoring data for CO, NO_2, PM_{10}, and $PM_{2.5}$ from off-site locations, estimated to be a conservative representation of the proposed site, to satisfy the monitoring requirement and to estimate background concentrations for the cumulative NAAQS impact analyses.

Magnida conducted on-site monitoring of PM_{10}, $PM_{2.5}$, NO_2, CO, and O_3 beginning in April 2013. Monitoring was conducted in accordance with a DEQ-approved monitoring plan for the data collection, quality assurance, and reporting procedures. The data obtained were presented to DEQ in monthly reports. A six month summary report was submitted with the final PSD PTC application. DEQ determined that the monitoring concluded on September 30, 2013, as represented in the final monitoring report, was sufficient to establish the existing air quality conditions in the area surrounding the proposed facility and to support the use of off-site monitoring data as representative for the purposes of Idaho Air Rules Section 202.01.c.vii. However, DEQ requested that Magnida provide DEQ with updated monitoring data during review of the application to enable DEQ to increase assurance that background values used in impact analyses were representative and conservative.

Ambient Monitoring was thoroughly described in Section 5.0 of *Air Dispersion Modeling and Class II Visibility Analysis for the Proposed Magnolia Nitrogen Idaho LLC Facility in Power County Idaho*, prepared by RTP and submitted by Magnida in October 2013 as part of the PSD PTC application. This report also summarizes the on-site monitoring data collected; however, the report only covers the first six months of data collected. Data collected from October 1, 2013, through December 31, 2013, were submitted to DEQ on February 10, 2014.

3.2.2 Review of Preconstruction Monitoring Data

Table 10 provides a summary of preconstruction monitoring data used to support the Magnida project.

NO_2 1-Hour Background Concentrations

Model impact results indicated the annual NO_2 SMC would not be exceeded and preconstruction monitoring for NO_2 could be waived if deemed appropriate. Impacts of 1-hour NO_2 exceeded the SIL, and a cumulative NAAQS impact analysis was required. A representative 1-hour NO_2 background concentration was needed for the NAAQS impact analysis.

DEQ provided RTP and Magnida with background concentration values for NO_2 based on the data available from an existing ambient monitoring site. Idaho DEQ does not operate a monitoring site for NO_2 that is near the proposed facility's location outside of American Falls. Background concentrations for 1-hour NO_2 were based on monitoring data collected from the Idaho Transportation Department (ITD) site in Boise, Idaho, for 2007 and 2010. These data were collected during the "ozone season" of May through September. During this time of year, NO_2 ambient concentrations are typically at maximum values because of photochemistry. Valid data for other years were not available or were of questionable quality. These data were considered by DEQ to be conservative (higher concentrations than expected for the facility site) for the American Falls area because the Boise area is more urban, typically has higher temperatures (a significant driver in photochemistry), and has a higher density of traffic and other NO_2 sources.

Table 10. PRECONSTRUCTION MONITORING DATA AND BACKGROUND CONCENTRATIONS				
Pollutant and Averaging Period	Maximum Observed On-Site Concentration (μg/m³)[a]	Maximum Observed Off-Site Representative Concentration (μg/m³)	Background Concentration used for Modeling (μg/m³)	NAAQS[b] (μg/m³)
NO_2 1-hour	62	86[c]	Hour by Hour[d]	188
CO 1-hour	1.2 ppm	1.4 ppm[e]	Not Required[f]	35 ppm
O_3 1-hour	77 ppb; 60 ppb[g]	99 ppb[h]	Not Required	75 ppb (8-hour)
PM_{10} 24-hour	140; 125 2nd high	191; 4th high = 117[i]	117; 125[j]	150
$PM_{2.5}$ 24-hour	22.1	22.7[k]	22.7	35
$PM_{2.5}$ annual	6.5	6.6[l]	6.6	12

a. Micrograms per cubic meter.
b. National Ambient Air Quality Standards.
c. 2007-2010 data from Idaho Transportation Department in Boise, Idaho.
d. A specific background value was used for each hour of the day. The value was the 98th percentile of monitored values in the off-site data for that hour of day.
e. 2010-2012 data from St. Lukes NCORE site in Meridian, Idaho.
f. A cumulative impact analysis was not required because modeled impacts were below the established SIL.
g. Design Value of 4th highest 8-hour average.
h. 2009-2011 data from White Pine Station in Boise, Idaho.
i. 2010-2012 data from Ballard Road, north of Pocatello. The design value of 117 μg/m³ is the 4th highest 24-hour average over the data set.
j. A PM_{10} culpability analysis was performed with a 125 μg/m³ background concentration to assure that emissions from the proposed Magnida facility would not significantly contribute to a violation of the 24-hour PM_{10} NAAQS.
k. 2010-2012 data from Ballard Road, north of Pocatello. The design value of 22.7 μg/m³ is the 98th percentile 24-hour average of the dataset.
l. 2010-2012 data from Ballard Road, north of Pocatello. The design value of 6.6 μg/m³ is the 3-year mean of annual averages.

A separate NO_2 background value was used for each hour of the day, using the 98th percentile value of monitoring data for each hour of the day. Hourly 1-hour NO_2 background concentrations are given in Table 11.

Magnida also collected nine months of on-site 1-hour NO_2 data. The maximum on-site monitored NO_2 concentration of 62 μg/m³ was substantially lower than the 86 μg/m³ maximum 1-hour NO_2 monitored value in the ITD dataset.

Table 11. BACKGROUND 1-HOUR NO_2 CONCENTRATIONS					
Hour Ending	Concentration (μg/m³)[a]	Hour Ending	Concentration (μg/m³)[a]	Hour Ending	Concentration (μg/m³)[a]
1	43.2	9	54.6	17	11.2
2	41.4	10	43.2	18	15.0
3	33.8	11	32.0	19	30.1
4	32.0	12	26.7	20	54.4
5	30.1	13	17.3	21	56.4
6	37.6	14	11.3	22	58.3
7	43.2	15	11.3	23	58.3
8	48.9	16	11.2	24	54.5

a. Micrograms per cubic meter. Values are the upper 98th percentile for that hour.

O_3 Background Concentrations

The preconstruction monitoring requirement for O_3 cannot be waved because NO_x emissions exceed the 100 ton per year NOx threshold to be used as an SMC. Background O_3 concentrations are also needed for 1-hour NO_2 modeling. Conversion of NO to NO_2 is addressed in the modeling by using the Ozone Limiting Method (OLM), which requires the use of representative O_3 concentrations.

On-site O_3 data were collected for nine months, from April 2013 through December 2013. These data adequately represent the proposed Magnida site because O_3 concentrations typical peak during the summer season of May through September, when high temperatures and intense solar radiation drive atmospheric O_3 production through photochemistry. RTP also provided three years of ambient air O_3 concentrations collected at Craters of the Moon National Monument, approximately 75 kilometers north of the Magnida site. These data confirm that maximum O_3 concentrations occur during May through August. Since O_3 concentrations during January through March are outside of the season when elevated O_3 concentrations are observed, DEQ is confident that nine months of on-site monitoring data are adequate to meet the preconstruction monitoring requirement.

DEQ provided RTP with an ozone background dataset for use in 1-hour NO_2 impact modeling analyses. Adequate on-site monitoring data were not yet available at the time of the initial permit application was submitted. Hourly O_3 monitoring data were collected at the White Pine monitoring site near the intersection of Apple Street and Boise Avenue in southeastern Boise. Data were collected at this site during the traditional peak ozone season, and the data used in the values provided for Magnida's project covered the following periods:

- May 12, 2009 through September 30, 2009;
- April 13, 2010 through September 30, 2010; and,
- April 1, 2011 through September 30, 2011.

Hourly O_3 data were reduced to a single "day" of 24 individual hourly values representing the upper 98th percentile of values for each hour. These O_3 values were used in the AERMOD program calculation of 1-hour average NO_2 ambient impacts for the Lamb Weston, J.R. Simplot Don Siding, and Magnida NO_2 sources using the Tier 3 Ozone Limiting Method (OLM). DEQ determined these data are reasonably conservative because the data were collected at a site with a higher population and greater vehicle traffic density than the American Falls area, and the data are biased for the seasons when relatively high O_3 levels are expected. Table 12 lists the DEQ-approved O_3 values for this project.

Table 12. BACKGROUND OZONE CONCENTRATIONS

Hour	Concentration (ppb)[a]	Hour	Concentration (ppb)[a]	Hour	Concentration (ppb)[a]
1	53.0	9	48.0	17	73.7
2	50.9	10	54.3	18	70.0
3	51.9	11	61.0	19	67.0
4	48.0	12	66.0	20	62.8
5	47.9	13	72.9	21	55.0
6	46.0	14	76.0	22	55.0
7	41.0	15	80.0	23	55.0
8	43.0	16	78.4	24	53.9

[a] parts per billion by volume. Values represent the upper 98th percentile for that hour.

Particulate Matter Background Concentrations

Particulate Matter (PM) background concentrations were needed for both PM_{10} and $PM_{2.5}$. Modeled impacts from the proposed Magnida facility were above the SMCs for PM_{10} and below the SMCs for $PM_{2.5}$. However, Magnida elected to not seek a waiver from the preconstruction monitoring requirements; and as noted in Section 2.5.7, the $PM_{2.5}$ SMC was vacated and $PM_{2.5}$ monitoring requirements cannot be waived.

Magnida's PM background concentrations were developed using existing monitoring data obtained from EPA's AirData Now website accessible at http://www.epa.gov/airdata/ad_data.html. The monitoring data were collected by the Shoshone-Bannock Tribes at the Ballard Road site, located approximately 28 miles northeast of the proposed Magnida project site. Figure 2 shows the location of the Ballard Road monitoring site. The Magnida site is located in the lower left corner and the Ballard Road site is located in the upper right corner of the figure. DEQ has concurred with RTP and Magnida that the Ballard Road site is adequately representative of the proposed Magnida site, based on the following:

- Both sites are within the Snake River airshed.
- Land use in the immediate area of the sites are similar, with a considerable agriculture influence.
- The Ballard Road site is likely to be somewhat conservative (higher monitored values) because of its closer proximity to an urban area and higher vehicle density.

The EPA's Technology Transfer Network (TTN) Air Quality System (AQS) site identification is 16-005-0020. The primary monitor is identified as the POC3 monitor, which is the Federal Equivalent Method (FEM) monitor. The FEM monitor is collocated with a Federal Reference Method (FRM) monitor, identified in the data as the POC2 monitor. The primary monitor operates continuously and the FRM monitor operates once every six days. The FRM data was used for filling periods where the FEM POC2 data were missing.

PM_{10} background Concentrations

On-site PM_{10} monitoring data generally confirmed the representativeness of the nearby Ballard Road site for PM_{10}. The PM_{10} 24-hour design value calculated from the three years of Ballard road data was 117 $\mu g/m^3$. This value is the 4th highest monitored value in the dataset, consistent with the form of the PM_{10} standard (expected to not exceed the standard more than once per year). The design value for on-site data was calculated at 125 $\mu g/m^3$, and is the 2nd highest monitored value because only one year or less of data are available. The design value was monitored on June 14, 2013.

Review of the on-site data indicated the results were highly driven by an elevated PM_{10} monitored value of 140 $\mu g/m^3$. This value was recorded on December 10, 2013. The next highest monitored value for the period of October through December was 47 $\mu g/m^3$. Review of conditions indicated the value was heavily influenced by concentrations monitored between 3:00 am and 10:00 am, and further review by RTP indicated the area was subject to sustained winds of 14 to 24 miles/hour from the south. Review of data obtained from Ballard Road for the same time indicated a PM_{10} concentration of only 25 $\mu g/m^3$. It is suspected that the elevated concentration was a result of wind erosion from exposed ground surfaces in the area. This is further supported by the lack of elevated $PM_{2.5}$ concentrations during the same period, as suspended particulate from wind erosion of ground surfaces tends to have a much higher PM_{10} fraction than $PM_{2.5}$ fraction.

To provide additional conservatism to the PM_{10} NAAQS modeling analysis, the analysis was reassessed using an on-site background concentration of 125 μg/m³ rather than 117 μg/m³.

Figure 2. Map Showing the Magnida Site and the Ballard Road PM Monitoring Site

$PM_{2.5}$ background Concentrations

On-site $PM_{2.5}$ monitoring data also generally confirmed the representativeness of the nearby Ballard Road site for $PM_{2.5}$. The $PM_{2.5}$ 24-hour design value calculated from the three years of Ballard road data was 22.7 μg/m³. This value is the 3-year average of the 98th percentile of 24-hour monitored concentrations. The highest on-site monitored value was 22.1 μg/m³, less than the off-site 98th percentile value.

Annual $PM_{2.5}$ values for Ballard Road and on-site were nearly identical, with the on-site value at 6.5 μg/m³ and the Ballard Road value at 6.6 μg/m³. The onsite annual average value is likely to be conservatively high because monitoring from January through March were not included, and $PM_{2.5}$ values during this season are typically very low for rural locations.

3.3 NAAQS Impact Modeling Methodology

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

3.3.1 General Overview of NAAQS Analyses

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

Table 13 provides a brief description of parameters used in the modeling analyses.

Table 13. MODELING PARAMETERS

Parameter	Description/Values	Documentation/Addition Description
General Facility Location	Southwest of American Falls	The area is an attainment or unclassified area for all criteria pollutants.
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 12345.
Meteorological Data	Aberdeen surface data Boise upper air data	The meteorological model input files for this project were developed by RTP. See Section 3.3.4 of this memorandum for additional details of the meteorological data.
Terrain	Considered	3-dimensional receptor coordinates were obtained from USGS National Elevation Dataset (NED) files and were used to establish elevation of ground level receptors. AERMAP was used to determine each receptor elevation and hill height scale.
Building Downwash	Considered	Plume downwash was considered for the structures associated with the facility. BPIP-PRIME was used to evaluate building dimensions for consideration of downwash effects in AERMOD.
Receptor Grid	**Significant Impact Analyses**	
	Grid 1	50-meter spacing along the ambient air boundary
	Grid 2	50-meter spacing in a 1,950 meter (easting) by 2,150 meter (northing) grid centered on the facility
	Grid 3	100-meter spacing in a 11.8 kilometers (easting) by 12.0 kilometers (northing) grid centered on Grid 2
	Grid 4	250-meter spacing in a 21.8 kilometer (easting) by 21.9 kilometer (northing) grid centered on Grid 3
	Grid 5	500-meter spacing in a 32.0 kilometer (easting) by 32.0 kilometer (northing) grid centered on Grid 4
	Grid 6	1,000-meter spacing in 103 kilometer (easting) by 103 kilometer (northing) grid centered on Grid 5
	NAAQS and Increment Analyses	
	Receptors based on impacts for each criteria pollutant and averaging period above the applicable SIL	
	TAPs Analyses	
	Grid 1	50-meter spacing along the ambient air boundary
	Grid 2	50-meter spacing in a 1,950 meter (easting) by 2,150 meter (northing) grid centered on the facility
	Grid 3	100-meter spacing in a 11.8 kilometers (easting) by 12.0 kilometers (northing) grid centered on Grid 2
	Class I Area Analysis	
	Grid 1	271 receptors spaced roughly 675 meters horizontally (easting) by 925 meters vertically (northing) covering the boundary and interior of Craters of the Moon National Monument and Reserve

3.3.2 Modeling protocol and Methodology

A modeling protocol was submitted to DEQ prior to the application, on March 18, 2013. The protocol was submitted by RTP on behalf of Magnida. DEQ was not able to provide written protocol approval to Magnida before the application was submitted to DEQ on April 26, 2013. Project-specific modeling and other required impact analyses were generally conducted using data and methods described in the protocol and in the *Idaho Air Quality Modeling Guideline*.

3.3.3 Model Selection

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

AERMOD version 12345 was used for the modeling analyses to evaluate impacts of the facility. This version was the current version at the time the application was received by DEQ. RTP used a feature in the Oris Solutions BEEST software graphic user interface that allows the receptor grid to be split into smaller sections for concurrent processing to reduce run times with the capability to be recombined to present final model results. This method uses the regulatory guideline model and does not affect the predicted modeling impacts.

3.3.4 Meteorological Data

The Idaho National Laboratory's (INL) Air Resources Laboratory – Field Research Division (FRD) operates a network of meteorological stations located on and near the INL. The North Carolina office of RTP Environmental Associates, Inc. (RTP) obtained and processed data collected at the INL Aberdeen met tower (99999, ABRBOS/ABE, GMT-7) for the years 2008 through 2012. DEQ determined that surface met data collected near Aberdeen were representative for the project location near American Falls.

Aberdeen data were supplemented with National Weather Service (NWS) surface Hourly Data (ISHD, 24156, GMT-7) collected at the nearby Pocatello Regional Airport (KPIH) for the years 2008 through 2012. NWS data were not supplemented by ASOS winds, so NWS winds were randomized. Heat flux under stable conditions was estimated using the Bulk Richardson Number option in AERMET.

Upper air soundings collected at the Boise NWS Station (24131, BOI, GMT-7) were obtained in FSL format for the same period. No actions were taken to fill missing upper air soundings. The locations and elevations of surface and upper air stations were determined using Google Earth, Bing Maps, INL Site Environmental documentation, and AERMAP results.

Monthly surface roughness values at the primary surface station near Aberdeen were determined for each of 12 sectors within a 1-kilometer radius of the met station using land use data drawn from a 1992 NLCD file, not at an airport, in a region that is not arid, with average moisture conditions, and with no continuous snow cover during the winter months of December, January, and February. Monthly values for the albedo and Bowen ratio were based on 1992 NLCD data for a 10-kilometer domain centered on the Aberdeen surface met station. No adjustments were made to the surface friction, u*.

The met data used for final AERMOD analyses for this project were processed by RTP using AERSURFACE v. 13016 and AERMET v. 12345 using Oris Solutions' BEEST graphical user interface. A detailed review of the data processing is included as Attachment D.

3.3.5 Effects of Terrain on Modeled Impacts

Terrain data were extracted from United States Geological Survey (USGS) National Elevation Dataset (NED) files in the NAD83 datum. Two 1 arc second NED files were used to establish the significant impact receptor grid and covered an area of approximately 153 kilometers (X) by 148 kilometers (Y). A 1 arc second NED file was used for the Craters of the Moon Class I area and covered an area approximately 30 kilometers (X) by 30 kilometers (Y). The ambient air boundary receptor elevations and hill height scale values were obtained using two 1/3 arc second NED terrain files covering an area approximately 50 kilometers (X) by 42 kilometers (Y).

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

Elevations of emission sources and buildings for the Magnida facility were established using the expected graded site elevation. Co-contributing source structure and point source base elevations were obtained from Idaho DEQ modeling files and other resources.

3.3.6 Facility Layout

The Magnolia facility is a greenfield facility and no structures associated with the proposed facility currently exist at the site. DEQ verified proper identification of the facility boundary and buildings on the site by comparing a graphical representation of the modeling input file to the scaled plot plan submitted with the application. The modeling input file for source location and structures matched well with the June 5, 2013 plot plan. UTM coordinates of the emission sources listed on the plot plan were identical to the modeling demonstration's source coordinates.

All structures at the Magnolia facility were modeled using a single tier height. Building downwash effects were evaluated using the building heights listed in the "Building Key" contained in the application's DEQ form PP.

A possible storage tank was depicted in the June 5, 2013, plot plan that was not present in subsequent modeled layouts. It was located at the northeastern corner (upper right hand corner) of the structures near the Utility Building and the WATER, COND, and DEMIN storage tanks. Each of these structures was modeled with an overall height of 40 feet. DEQ assumed the additional tank was dropped from the plant layout. Building-induced downwash was accounted for using the nearby structure layout and height of 40 feet.

The seven primary cooling towers were modeled using a single structure. DEQ determined this was appropriate because of the close proximity of each tower to the next and the relatively low emissions rates and corresponding ambient impacts associated with these sources.

Figure 3 shows the modeled facility layout, with the ambient air boundary. Figure 4 provides a closer view of the layout with buildings and emissions sources identified and Figure 5 shows a three-dimensional view of the facility as modeled.

Figure 3. Magnolia Facility Layout and Ambient Air

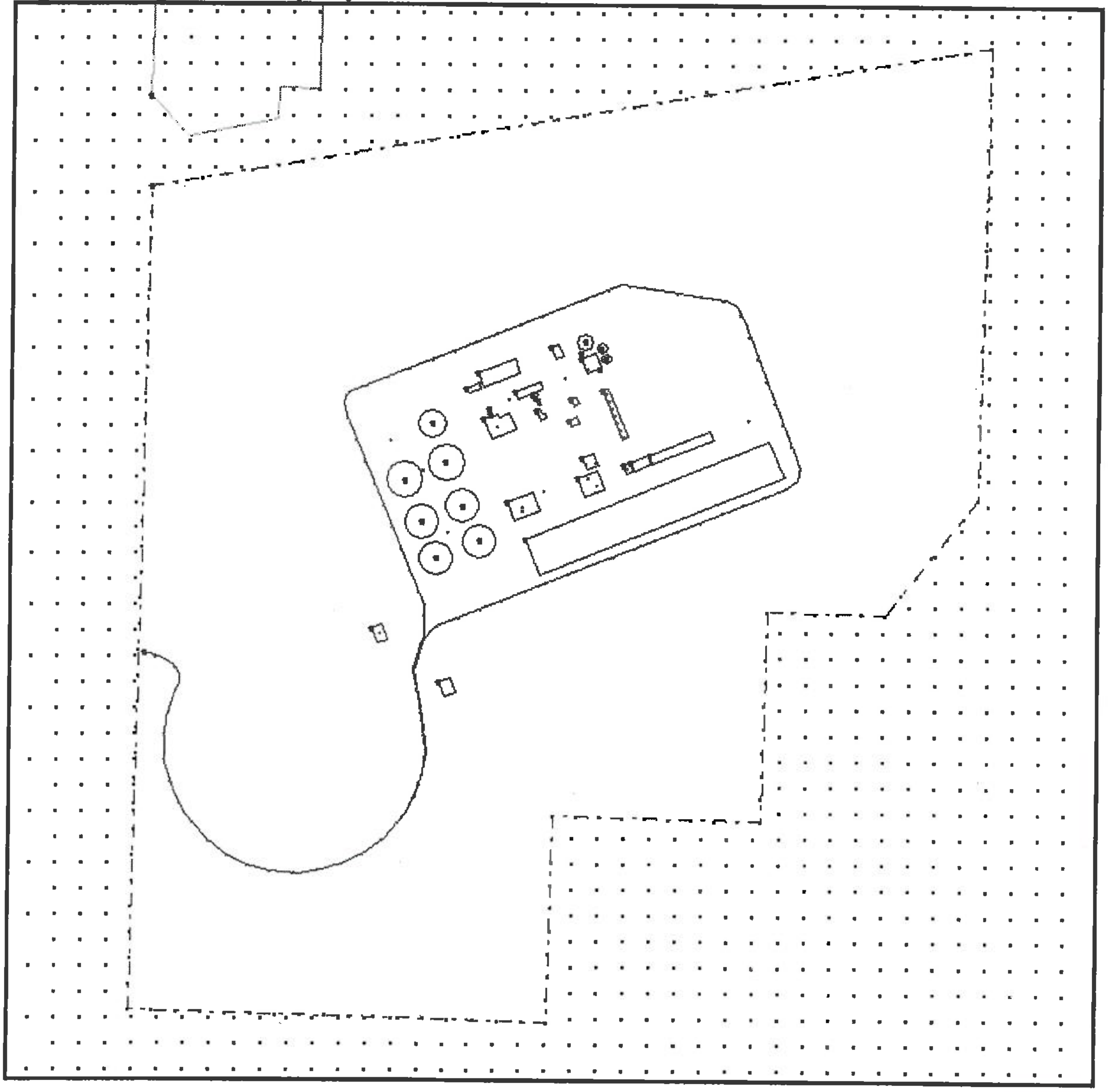
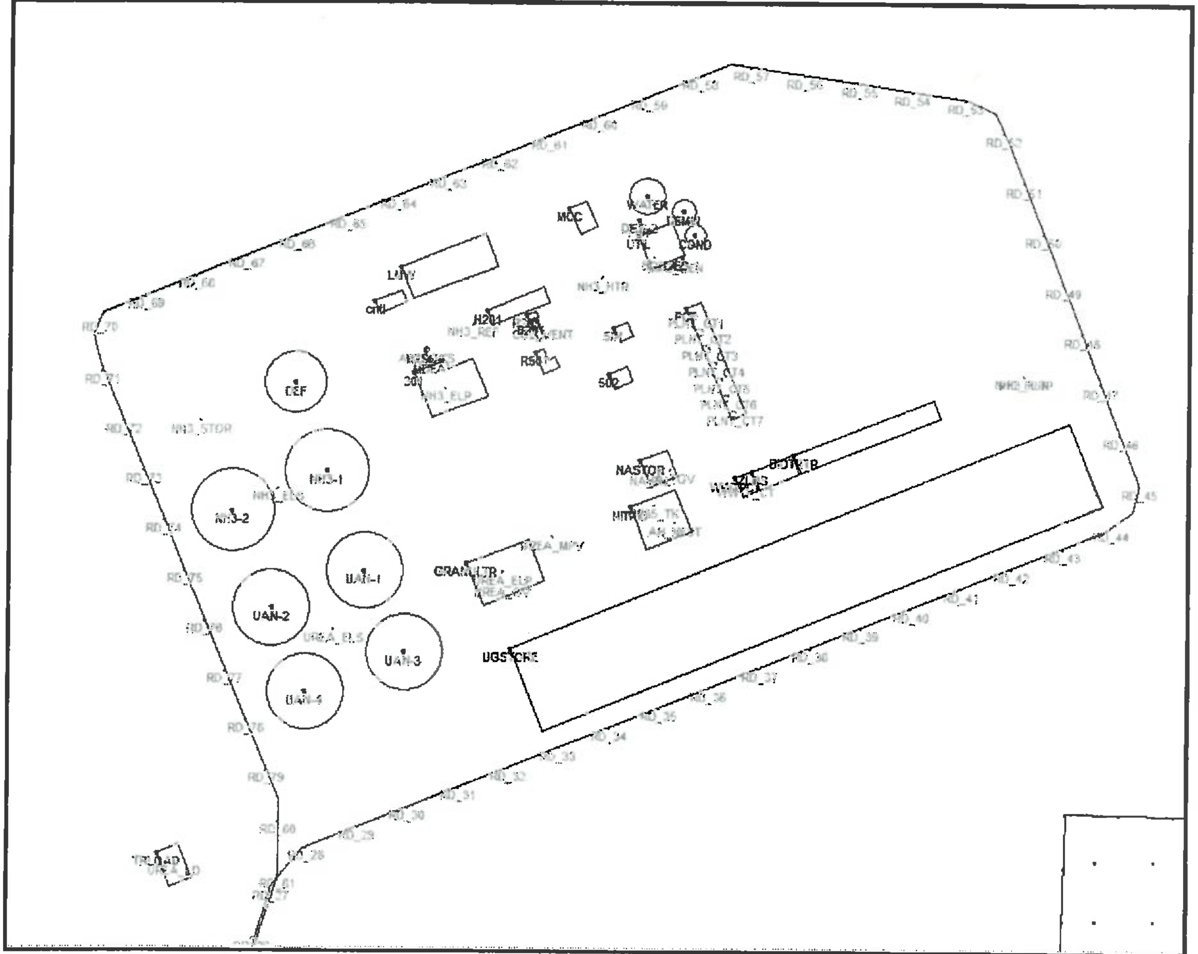
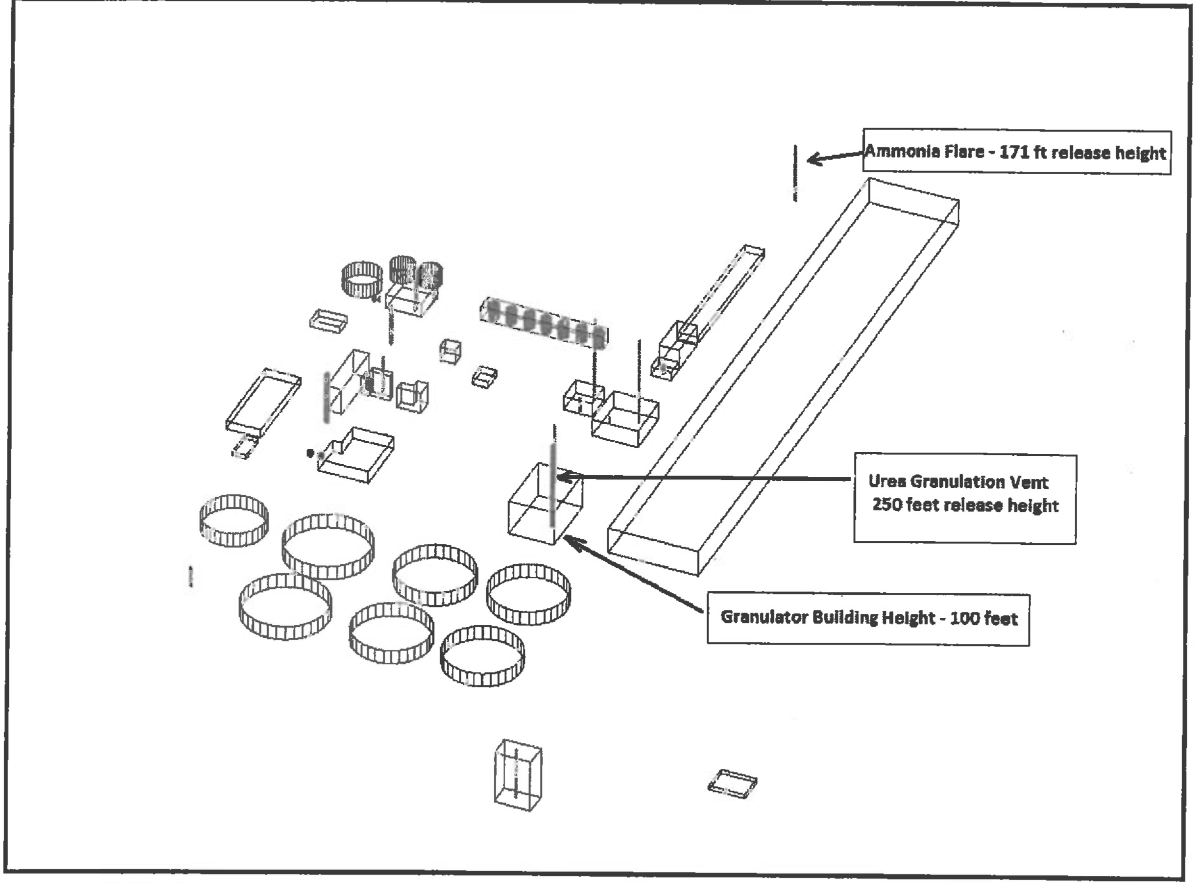


Figure 4. MAGNIDA FACILITY EMISSION POINTS AND STRUCTURES



Graphics generated using Oris Solutions BEEST Graphic User Interface

Figure 5. Wire Frame Orthogonal View of Magnolia Facility Stacks and Structures



3.3.7 Effects of Building Downwash on Modeled Impacts

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

Section 3.3.6 noted that a storage tank was depicted in the June 5, 2013, plot plan, but later dropped from subsequent revisions of modeling analyses. Building-induced downwash was accounted for using the nearby structure layout and height of 40 feet. A tank of equal or shorter height should have little effect on dispersion for the fire water pump and emergency generator engine exhaust plumes.

Structure locations and dimensions in combination with emission source release parameters are important considerations in determining ambient impacts for the facility. The modeled plant layout and emission source locations and exhaust characteristics were assumed to represent the future as-built arrangement. DEQ determined that structures at the proposed site were considered in the analyses to a reasonably accurate level to account for potential plume downwash. Substantial changes in final design of building locations and dimensions could alter results of air quality impact analyses and invalidate conclusions of this memorandum.

3.3.8 Ambient Air Boundary

Ambient air was determined to exist for all areas immediately exterior to the facility's property boundary. Magnida stated in the application that the entire facility will be fenced. An existing public county road will be removed and rerouted around the facility's property boundary for this project. The general public will have no access to any area within the fenced property. The property boundary is established as the ambient air boundary, according to the methods specified in the *State of Idaho Air Quality Modeling Guideline*.

3.3.9 Receptor Network

Table 13 describes the receptor network used in the submitted modeling analyses. DEQ contends that the receptor network was adequate to reasonably assure compliance with applicable air quality standards at all ambient air locations.

3.3.10 Good Engineering Practice Stack Height

Magnida modeled two point sources with release heights in excess of 65 meters. An allowable good engineering practice (GEP) stack height may be established using the following equation in accordance with Idaho Air Rules Section 512.03.b:

$H = S + 1.5L$, where:

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

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

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

The Urea Granulator building is the dominant structure at the proposed Magnida facility. This building is titled "GRANULTR" in the BPIP file setup, and has a listed overall height of 30.48 meters and maximum projected width of approximately 67 meters. The allowable GEP stack height is 76.2 meters, or 250 feet, based on the equation above. The Urea Granulation Vent (model ID "UREA_GV") and the Nitric Acid Tail Gas Vent (model ID "NA_TGV") were both modeled with a 76.2 meter stack height. All other point source modeled stack heights were less than 65 meters and are not subject to a GEP limitation set by the GEP equation. All Magnida point sources met GEP stack height restrictions.

3.3.11 NOx Chemistry

RTP used the Tier 3 approach for handling NOx chemistry in the 1-hour NO_2 impact analyses, in accordance with recent EPA guidance. This approach is described in Section 4.5 of the RTP Modeling Report, which was submitted as part of the PSD PTC application. The Tier 3 approach recommends the use of either the Ozone Limiting Method (OLM) or the Plume Volume Molar Ratio Method (PVMRM) to account for the conversion of NO to NO_2 in the atmosphere. RTP elected to use OLM for 1-hour NO_2 impact analyses.

3.3.12 In-Stack NO_2 to NO_x Ratio

In-stack NO_2 to NOx ratios are used in the NOx chemistry algorithms of OLM and PVMRM. This value is the fraction of NOx that is NO_2 at the point of release to the atmosphere. EPA guidance recommends use of a default ratio of 0.5 when representative source-specific data are not available. RTP applied a non-default in-stack NO_2 to NO_x ratio for two sources in the 1-hour NO_2 NAAQS analyses. A ratio of 0.10 was used for the Magnida facility's 275 MMBtu/hr natural gas-fired package boiler and three natural gas-fired boilers at the nearby Con Agra/Lamb Weston facility. RTP's analysis also used a ratio of 0.02 for Lamb Weston's natural gas-fired space heaters, which were modeled as six individual elevated volume sources.

Magnida's natural gas-fired boiler, rated up to 275 MMBtu/hr heat input, was modeled with an in-stack NO_2 to NO_x ratio of 0.10. This value was based on the default value for natural gas-fired boilers in the October, 27, 2011, guidance from the California Air Pollution Control Officers Association (CAPCOA), *Modeling Compliance of the Federal 1-Hour NO_2 NAAQS*[4]. Supporting documentation for this in-stack NO_2 to NOx ratio value is based on data for natural gas-fired boilers that have a far lower rated heat input capacity than the boiler Magnida has proposed. DEQ found no data suggesting that a larger boiler would have increased NO_2 to NOx ratios, and DEQ concurred that a 0.1 ratio was appropriate for the proposed Magnida boiler and Con Agra / Lamb Weston's existing boilers.

RTP's justification for use of a non-default in-stack NO_2 to NOx ratio value for the natural gas-fired space heaters at neighboring Con Agra / Lamb Weston industrial source was based on the same CAPCOA document. RTP applied the listed ratio of 0.0158 for a 6.6 MMBtu/hr forced draft natural gas-fired boiler as the justification for the 0.02 ratio used for Con Agra / Lamb Weston's natural gas-fired space heaters.

3.4 Increment Consumption Analyses Applicability

Increment consumption is governed by the major source baseline date, the trigger date, and the minor source baseline date. The major source baseline date is established by federal PSD rules, and is the date after which actual emission changes resulting from construction at major sources will consume increment. The trigger date is set by rule and is the date after which the minor source baseline date can be triggered. The minor source baseline date is the date (after the trigger date) of the first major NSR permit application in a PSD area, after which ALL actual emissions changes from ALL sources (major, minor, mobile, due to construction or not) consume increment.

The Magnida facility will be located in Power County, within Air Quality Control Region 61. Emissions from Magnida will also have a significant impact in Air Quality Control Region 63.

Table 14 summarizes the applicable increment consumption dates for the Magnida facility.

Table 14. APPLICABLE INCREMENT CONSUMPTION DATES

Pollutant	Major Source Baseline Date	Minor Source Baseline Date AQCR 61	Minor Source Baseline Date AQCR 63
PM/PM_{10}	January 6, 1975	February 18, 1981	December 11, 1978
$PM_{2.5}$	October 20, 2011	Set by this permitting action	Set by this permitting action
SO_2	January 6, 1975	February 18, 1981	Not triggered
NO_2	February 8, 1988	January 23, 1992	July 19, 2000

4.0 NAAQS Impact Modeling Results

4.1 Results for Significant Impact Level Analyses

This section describes dispersion modeling results for $PM_{2.5}$, PM_{10}, CO, and NO_2. Table 15 summarizes the results from the Magnida SIL analyses. A SIL analysis is performed to determine whether the proposed facility will impact the surrounding ambient air to a level that requires a cumulative NAAQS analysis. In most instances, a cumulative NAAQS analysis will not be required for a project if impacts from the project are below the SIL value.

Table 15. RESULTS OF SIGNIFICANT IMPACT ANALYSES

Pollutant	Averaging Period	Maximum Modeled Concentration[a] ($\mu g/m^3$)[b]	Significant Contribution Level ($\mu g/m^3$)	Cumulative NAAQS Analysis Required	Impact Percentage of Significant Contribution Level	Range Of Significant Impact (km)[c]
PM_{10}[d]	24-hour	19.1	5	Yes	382%	15.1
$PM_{2.5}$[e]	24-hour	4.90	1.2	Yes	408%	20.7
	Annual	0.67	0.3	Yes	223%	3.0
NO_2[f]	1-hour	84.5[h]	7.5	Yes	1127%	52.0
	Annual	0.93[i]	1	No	93%	Below SIL
CO[g]	1-hour	1,394	2,000	No	70%	Below SIL
	8-hour	297.9	500	No	60%	Below SIL

a. Values are modeling results presented by Magnida in the submitted application.
b. Micrograms per cubic meter.
c. kilometers.
d. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
e. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
f. Nitrogen dioxide.
g. Carbon monoxide.
h. AERMOD output High 1st High value of 105.7 $\mu g/m^3$, 1-hr average, multiplied by the 1-hr NO_2 Tier II Ambient Ratio Method factor of 0.80.
i. AERMOD maximum impact value of 1.24 $\mu g/m^3$, annual average, multiplied by the annual NO_2 Tier II Ambient Ratio Method factor of 0.75.

The NO_2 SIL analyses were performed by applying the Tier II Ambient Ratio Method (ARM) of 0.80 to maximum NO_x impacts for the 1-hour NO_2 SIL modeling. This provides a conservative account for the atmospheric equilibrium between NO_2 and NOx. The maximum modeled impacts at each modeled receptor were the 5-year means of maximum 1-hour impacts from each year modeled. Emissions from testing and maintenance operations of emergency internal combustion engines used to power the fire water pump and emergency electricity generator were included in the 1-hour NO_2 SIL analyses by using an emission rate file as input to AERMOD. The emissions rate file provided hour-by-hour emissions, with emissions turned on or off depending on a randomly generated operational schedule reflective of 52 hours/year and 1.0 hour/day for the emergency electricity generator engine and 104 hours/year and 2.0 consecutive hours/day for the firewater pump engine. For the hours when an engine is assumed to operate, the emission rate file input NO_x emissions rates at rated engine capacity for both engines. An emission rate of 0.0 pounds/hour NOx was used for hours when an engine was not operating. Only daytime hours were considered in the population of potential operating hours.

The annual NO_2 SIL analysis applied the EPA recommended Tier II ARM of 0.75 to maximum modeled annual NO_x impacts to establish NO_2 concentrations for comparison to the SIL.

Magnida's potential/allowable emissions were predicted to cause ambient impacts that exceeded the SILs for 24-hour PM_{10}, 24-hour and annual $PM_{2.5}$, and 1-hour NO_2. Annual average NO_2, 1-hour CO, and 8-hour CO impacts were below applicable SILs and DEQ determined cumulative NAAQS impact analyses were not necessary to adequately demonstrate compliance with Idaho Air Rules Section 202.01.c.ii and 203.02. Class II area increment consumption analyses were not required for annual average NO_2.

4.2 Results for Cumulative Impact Analyses

A cumulative NAAQS impact analysis was required for those pollutants and averaging periods where maximum impacts from the proposed facility were above the SIL. Only those specific receptors where the SIL analysis indicates modeled impacts of emissions from the proposed project exceed the SIL must be included in the cumulative NAAQS analysis. A cumulative NAAQS analysis was required for 24-hour and annual $PM_{2.5}$, 24-hour PM_{10}, and 1-hour NO_2. The cumulative NAAQS impact analyses consisted of modeling potential/allowable emissions from the proposed Magnida facility along with potential/allowable emissions of any co-contributing sources that are not adequately represented by the background concentration used. The background concentration value was then added to the modeled design value, and the results were compared to the NAAQS. Table 16 provides results from the cumulative NAAQS analyses.

Table 16. RESULTS FOR CUMULATIVE IMPACT ANALYSES

Pollutant	Averaging Period	Modeled Design Value Concentration (µg/m³)[a]	Background Concentration (µg/m³)	Total Ambient Impact (µg/m³)	NAAQS[b] (µg/m³)	Percent of NAAQS
$PM_{2.5}$[c]	24-hour	39.3[f]	22.7	62.0	35	177%
	Annual	9.7[g]	6.6	16.3	12	136%
PM_{10}[d]	24-hour	30.5[h]	125[k]	155.5	150	104%
NO_2[e]	1-hour	177.2[i]	Included in model[j]	177.2	188	94%

a. Micrograms per cubic meter.
b. National ambient air quality standards.
c. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
d. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
e. Nitrogen dioxide.
f. Modeled design value is the maximum 5-year mean of 8th highest 24-hour values from each year of a 5-year meteorological dataset.
g. Modeled design value is the maximum 5-year mean of annual average values from each year of a 5-year meteorological dataset.
h. Modeled design value is the maximum of 6th highest 24-hour values from a 5-year meteorological dataset.
i. Modeled design value is the maximum 5-year mean of 8th highest daily 1-hour maximum impacts for each year of a 5-year meteorological dataset.
j. Background NO_2 concentrations are included with the modeled output value. The individual hour background NO_2 values listed in Table 11 of this memorandum for a 24-hour period were used for the NAAQS analysis.
k. This background value is the 2nd high of 9 months of finalized on-site ambient monitoring data. The monitored value was recorded on June 14, 2013.

The potential emissions of all other facilities qualifying as co-contributing sources were included in the cumulative NAAQS analyses. RTP used the North Carolina screening threshold method listed in Attachment A of this memorandum to identify the project's co-contributing sources.

The design concentration value for a pollutant and averaging period may be partially or entirely caused by the proposed facility. The contribution of nearby sources on overall ambient impacts can be substantial and can dominate impacts in both magnitude and location of impacts. If an analysis indicates the NAAQS may be exceeded, the contribution from the proposed facility's potential emissions must be identified with a culpability analysis. A culpability analysis evaluates whether the proposed facility has a significant ambient contribution to the specific modeled NAAQS violation in time and space. The permit cannot be issued if the facility contributes to a NAAQS violation.

1-Hour NO_2 NAAQS

A 1-hour NO_2 cumulative NAAQS analysis was performed for two operating levels associated with Magnida: a 50 percent load and full load scenario. The modeled design concentration was identical for both load scenarios and the total ambient impact for Magnida, identified co-contributing sources, and the DEQ-approved ambient background concentrations was below the NAAQS.

Impacts in the immediate area of the Magnida facility are primarily attributed to the nearby Con Agra/Lamb Weston facility. The potential emissions rates and the exhaust parameters used to model the Con Agra / Lamb Weston facility greatly affect the level of predicted ambient impacts because of the low release height of many emissions sources at the Con Agra/Lamb Weston facility.

To show Magnida's level of ambient impacts in the vicinity where the maximum 1-hour NO_2 NAAQS design impact for Magnida's and all other co-contributing sources was predicted to occur, Magnida performed an analysis where Magnida's impact was paired in space and time at the design receptor, located at coordinates 343,250 meters Easting and 4,736,200 meters Northing. Magnida's contribution to the total impact was predicted to be 0.00016 $\mu g/m^3$. For comparative purposes, disregarding pairing the impacts of individual source groups, the 5-year mean of 8^{th} highest daily maximum 1-hour impacts for the Magnida facility alone at this same receptor was 5.02 $\mu g/m^3$. This is well below the cumulative impact of 177.2 $\mu g/m^3$ that accounts for combined impacts of Magnida, Con Agra / Lamb Wesston, and background.

4.2.1 Particulate Matter NAAQS Violation Culpability Analyses

RTP submitted culpability analyses for 24-hour and annual average $PM_{2.5}$ NAAQS on January 9, 2014. A final 24-hour average PM_{10} culpability analysis was received on February 18, 2014. The $PM_{2.5}$ culpability analyses demonstrated to DEQ's satisfaction that the proposed Magnida facility will not contribute to a modeled violation of the NAAQS.

24-hour PM_{10} NAAQS

The Ballard Road PM_{10} monitoring dataset for 2010-2012 was used to establish the ambient background value for the 24-hour average PM_{10} NAAQS analyses. On-site monitoring was conducted by Magnida to characterize the ambient background conditions that exist at the proposed site and to supplement the Ballard Road background data by verifying the conservatism of the background concentrations used in Magnida's NAAQS analyses. On June 14, 2013, a 24-hour average PM_{10} value of 125 $\mu g/m^3$ was monitored, and then on December 10, 2013, a 24-hour average PM_{10} concentration of 140 $\mu g/m^3$ was monitored. The 125 $\mu g/m^3$ value is the second high value for the 9 months of on-site data that has been finalized as of the date of this memorandum. One expected exceedence per year of the 24-hour PM_{10} NAAQS is allowed in accordance with the form of the NAAQS, so the 125 $\mu g/m^3$ value is the design value for the on-site PM_{10} dataset. The Ballard Road dataset's 24-hour design concentration was 117 $\mu g/m^3$, based on the 4^{th} highest value of the 3-year dataset.

The on-site data supplements the Ballard Road dataset and is intended to show that the values used in the modeling demonstration are appropriate and conservative. Based on the higher design value for the on-site 24-hour PM_{10} dataset, DEQ requested that Magnida revise the 24-hour PM_{10} NAAQS demonstration to reflect an ambient background value of 125 $\mu g/m^3$. This resulted in the total 24-hour PM_{10} design value impact increasing to 155.5 μg/m^3, requiring that Magnida submit a culpability analysis to show that ambient impacts from Magnida's proposed facility will not exceed the 5 μg/m^3 SIL at any receptor where and when impacts from all modeled sources were predicted to exceed the NAAQS.

RTP submitted a revised analysis that included this culpability analysis, demonstrating that Magnida's proposed emissions will not cause or contribute to a violation of the 24-hour PM_{10} NAAQS. The analysis was performed for those receptors where total impacts exceeded NAAQS (three receptors total). RTP used a MAXIFILE output option in AERMOD to identify those instances when the ambient impact of the entire group of contributing sources and the proposed Magnida facility (source group ALL) had an impact above a threshold value of 25.0 μg/m^3 (indicating a NAAQS violation would occur after adding the background concentration value). The receptor location and the date within the meteorological dataset when this impact above the threshold value occurred are provided in the MAXIFILE output. The same approach was repeated for a second MAXIFILE output file using a source group for Magnida's emissions sources to isolate the proposed facility's impacts on the same receptors but for a threshold value equal to the 24-hour PM_{10} SIL of 5.0 μg/m^3. This provides a date stamp for any day where Magnida exceeded the SIL, and potentially could contribute to a violation of the 24-hour PM_{10} NAAQS. A significant contribution to a NAAQS violation would be predicted to occur if the date stamps for source groups ALL and Magnida matched. The date stamps did not match and DEQ concurred with the conclusion that Magnida will not contribute to any modeled 24-hour PM_{10} NAAQS exceedences.

24-hour $PM_{2.5}$ NAAQS

Figure 6 shows the 30 receptors where combined impacts of Magnida and co-contributing sources were predicted to exceed the 24-hour $PM_{2.5}$ NAAQS of 35 μg/m^3. The Con-Agra/Lamb Weston facility is located at the top of the figure to the north and Magnida is at the bottom to the south.

RTP performed a culpability analysis using the MAXDCONT model output option in AERMOD to verify that the Magnida facility did not contribute to a violation the NAAQS. The 8th highest value is the design value for the 24-hour $PM_{2.5}$ NAAQS and was selected as the highest rank in the MAXDCONT output file. Ranks 8 through 118 provided an ambient impact at 1 or more of the 30 receptors where the impacts from Magnida and all other co-contributing sources exceeded the project-allowable threshold value of 12.3 μg/m^3. The allowable threshold is established by subtracting the ambient background value of 22.7 μg/m^3 from the NAAQS of 35 μg/m^3. Results for the 24-hour $PM_{2.5}$ culpability analysis is shown in Table 17. Based on the output file, Magnida's maximum impact at any of the 30 receptors and at any of the rankings from 8th through 117th, would be below the 24-hr $PM_{2.5}$ SIL of 1.2 μg/m^3.

DEQ also evaluated whether Magnida's contribution to a modeled 24-hour $PM_{2.5}$ NAAQS violation would remain below the SIL when Magnida's potential secondary $PM_{2.5}$ contribution was considered. RTP conservatively estimated Magnida's contribution to 24-hour secondary $PM_{2.5}$ formation at not-greater-than 0.24 μg/m^3. Combining Magnida's direct $PM_{2.5}$ impact of 0.70 μg/m^3 with the 0.24 μg/m^3 secondary impact results in a total 24-hour $PM_{2.5}$ impact of 0.94 μg/m^3, which is less than the $PM_{2.5}$ SIL. Magnida's $PM_{2.5}$ emissions, when combined with potential secondary $PM_{2.5}$ formed from Magnida's precursor emissions, will not significantly contribute to a $PM_{2.5}$ NAAQS violation.

Figure 6. RECEPTORS ABOVE THE 24-HOUR $PM_{2.5}$ NAAQS

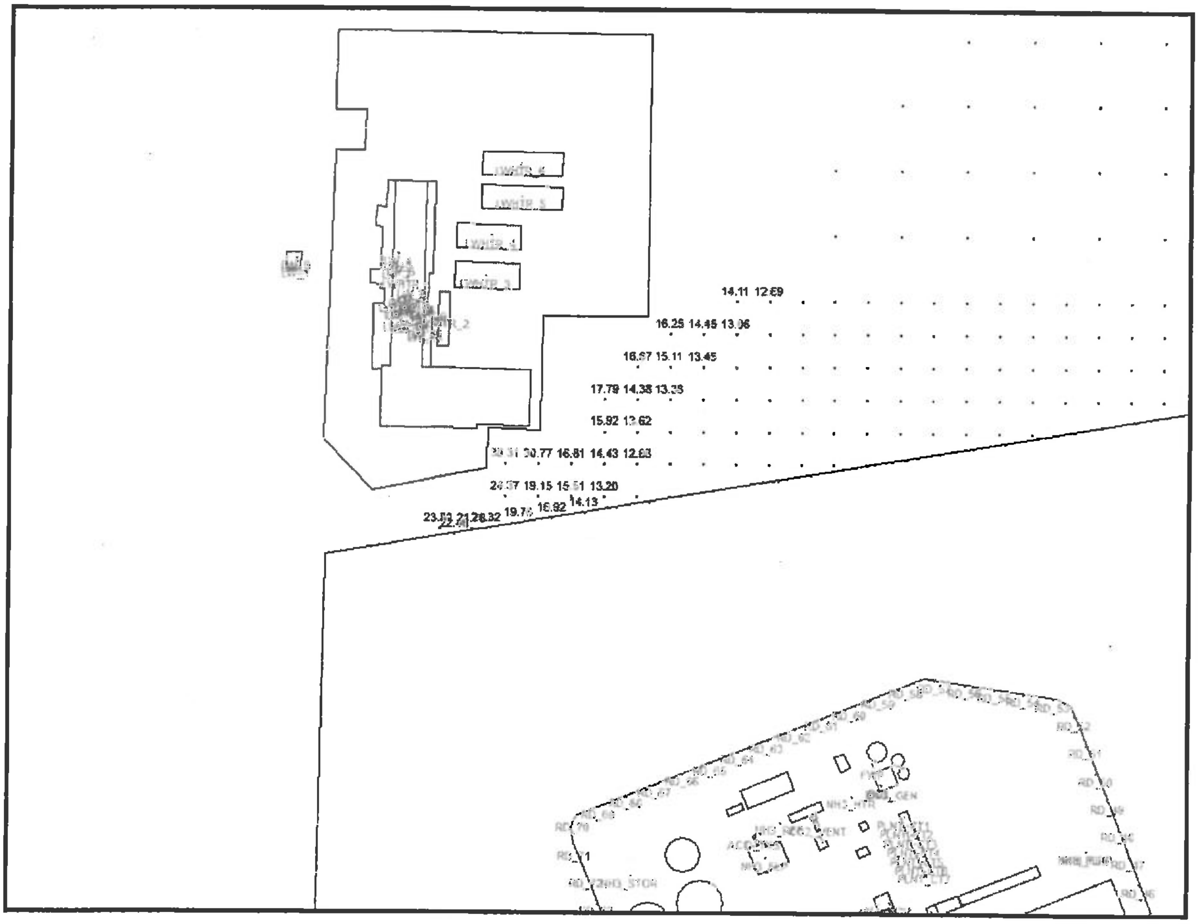


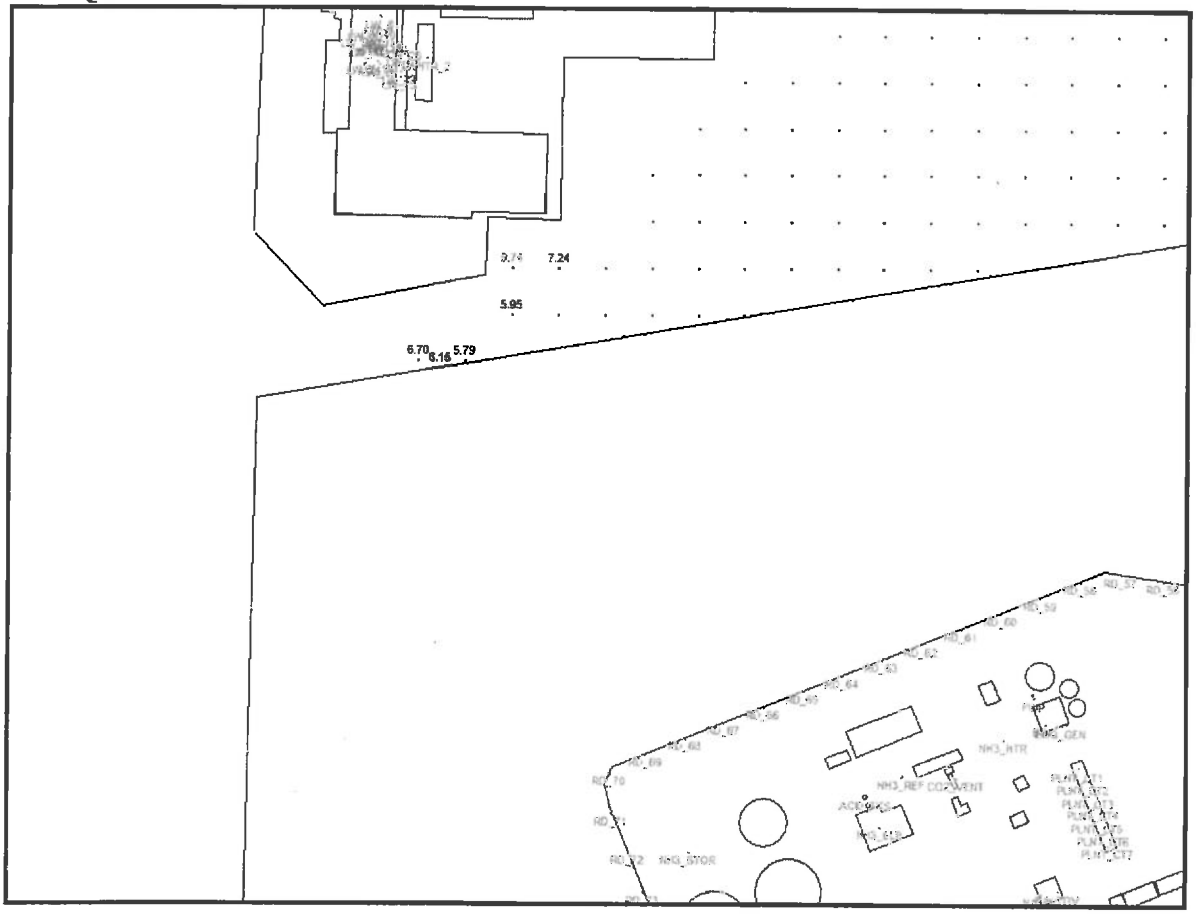
Table 17. RESULTS FOR 24-HR $PM_{2.5}$ CULPABILTY ANALYSES					
Maximum Impact for Magnida ($\mu g/m^3$)[a]	Ranking	Receptor Location		SIL[c]	Significant Contribution to NAAQS Violation
		UTM[b] Easting - X (m)	UTM Northing - Y (m)		
0.696	17th	343,700	4,736,350	1.2	No

[a] Micrograms per cubic meter.
[b] Universal Transverse Mercator, given in meters.
[c] Significant impact level.

Annual $PM_{2.5}$ NAAQS

RTP demonstrated the proposed Mangida facility will not contribute to a violation of the annual average $PM_{2.5}$ NAAQS by showing that the Magnida facility's impacts did not exceed the SIL of 0.3 $\mu g/m^3$ at any of the receptors where a modeled exceedence of the NAAQS was predicted in the cumulative impact analysis that included emissions from Magnida and other co-contributing sources. The cumulative NAAQS analysis indicated the annual NAAQS could be exceeded at the six receptors depicted in Figure 7.

Figure 7. RECEPTORS WITH PREDICTED IMPACTS ABOVE ANNUAL $PM_{2.5}$ NAAQS

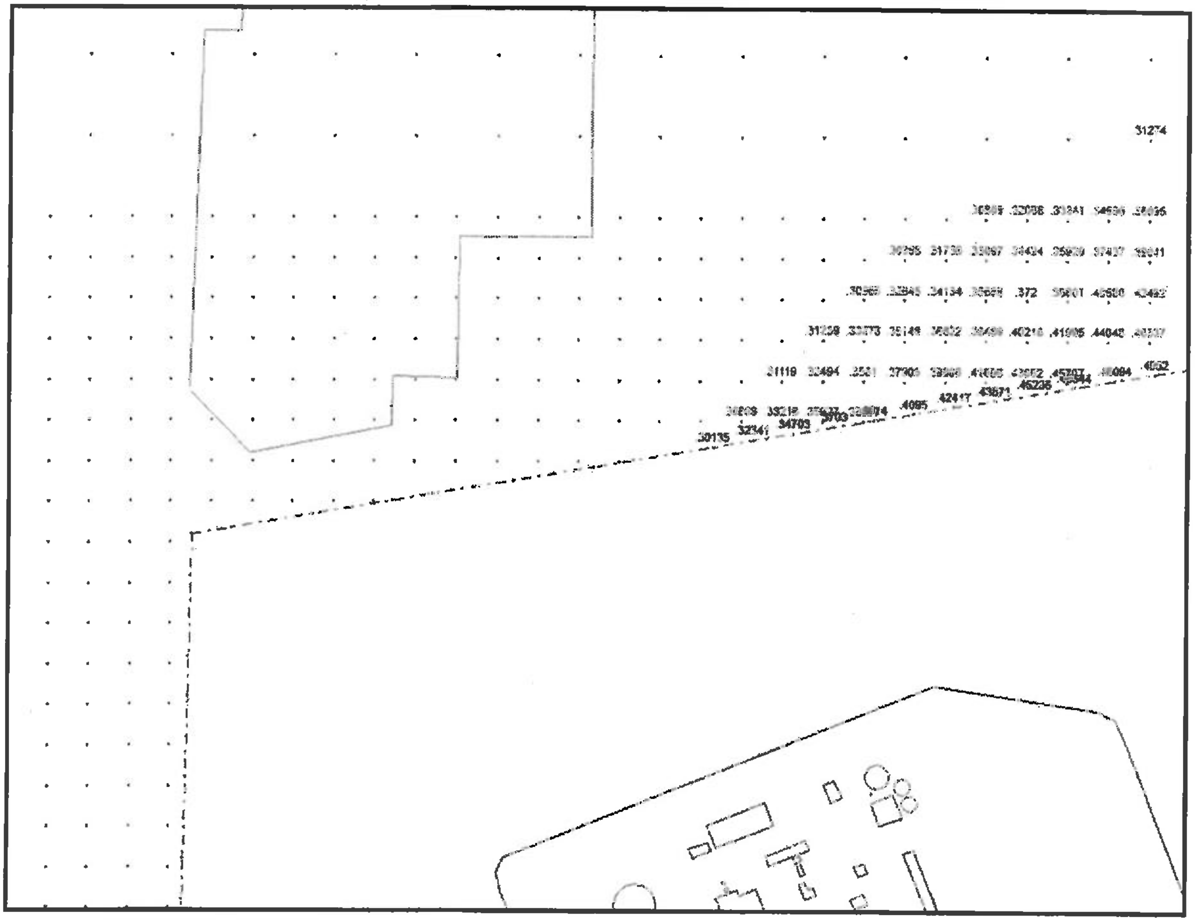


Determining whether Magnida could have a significant contribution to the modeled violations was evaluated by plotting the results of SIL analysis where impacts exceeding the SIL were predicted, as shown in Figure 8. The figure clearly shows that Magnida's impact at receptors where a $PM_{2.5}$ annual NAAQS violation was modeled, as shown in Figure 7, was below the SIL. Therefore, Magnida could not significantly contribute to a violation of the annual $PM_{2.5}$ NAAQS.

4.2.2 DEQ Sensitivity Analyses – NAAQS Analyses

DEQ performed an analysis of Magnida's impacts using the grid from the cumulative NAAQS analyses that are unique for each individual pollutant. This was done to gain a perspective on the magnitude of the impacts from the facility. No co-contributing sources were included in the analyses. The modeled design concentrations are for comparison purposes only because cumulative NAAQS analyses require that co-contributing sources be included. The comparison results are listed in Table 18.

Figure 8. MAXIMUM ANNUAL AVERAGE $PM_{2.5}$ IMPACTS FROM MAGNIDA AT RECEPTORS OF CONCERN



4.3 Results for Class II Area Increment Consumption Analyses

Increments are the allowable level of air quality degradation attributed to a proposed PSD project and any co-contributing sources determined to be subject to the increment consumption requirements. Analyses were performed to determine increment consumption for 24-hour and annual PM_{10} and 24-hour and annual $PM_{2.5}$.

An increment for 1-hour NO_2 has not been promulgated by EPA. The Magnida facility's potential annual NOx emissions did not cause impacts exceeding the NO_2 Class II significant impact level of 1.0 $\mu g/m^3$. Therefore, increment consumption analyses for 1-hour and annual NO_2 averaging periods do not apply.

Initial increment consumption analyses results are listed in Table 19 and represent the ambient impacts from increment consuming emissions of identified increment consuming sources.

The 24-hour PM_{10} PSD Class II area increment was predicted to be exceeded. The exceedences occurred only during year 2009 of the meteorological data at two receptors located along Magnida's northern property boundary. DEQ considers this increment consumption analysis to be conservative because potential emissions from co-contributing sources were used rather than actual emissions as allowed for increment consumption.

Table 18. SENSITIVITY ANALYSIS OF ONLY MAGNIDA'S IMPACTS ON NAAQS RECEPTORS – COMPARATIVE PURPOSES ONLY								
Pollutant	**Averaging Period**	**Modeled Design Value Conc. (µg/m³)[a]**	**Background Conc. (µg/m³)**	**Total Ambient Impact (µg/m³)**	**NAAQS[b]**	**UTM X[c] (m)**	**UTM Y[c] (m)**	**Description of Design Impact Location**
$PM_{2.5}$[d]	24-hour	2.1[g]	22.7	24.8	35	344,524.5	4,735,390.1	On Magnida's southeastern property boundary
	Annual[l]	0.67[h]	6.6	7.4	12	344,524.5	4,735,390.1	On Magnida's southeastern property boundary
PM_{10}[e]	24-hour	12.0[i]	125	137	150	343,700	4,734,600	3 meters south of Magnida's southwestern property boundary
NO_2[f]	1-hour	96.4[j,k]	Background is included in the design value in the AERMOD setup	96.4[k]	188	347,600	4,730,100	Elevated terrain 6.4 kilometers southeast of center of Magnida facility

a. Micrograms per cubic meter.
b. National ambient air quality standards.
c. Universal Transverse Mercator coordinates in meters. X = Easting and Y = Northing.
d. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
e. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
f. Nitrogen dioxide.
g. Modeled design value is the 5-year mean of maximum of 8th highest 24-hour values from a 5-year meteorological dataset.
h. Modeled design value is the 5-year mean of maximum annual average values.
i. Modeled design value is the 6th highest modeled value from a 5-year meteorological dataset.
j. Modeled design value is the 5-year mean of the maximum of 8th highest daily 1-hour maximum impacts from a 5-year meteorological dataset.
k. Background NO_2 concentrations are included with the modeled value. The individual hour NO_2 values for a 24-hour period listed above in Table 11 were used for the background values in the NAAQS analysis.
l. DEQ's sensitivity run used the 24-hour $PM_{2.5}$ receptor grid of 2,785 receptors, which represents all receptors above the 24-hour and annual $PM_{2.5}$ SILs. This is the same approach used in Magnida's official NAAQS and increment modeling demonstrations.

RTP performed a culpability analysis to verify that Magnida does not cause or contribute to the modeled increment violation. A maximum 2nd high impact design value of 47.71 µg/m³ was attributed to all PM_{10} increment-consuming sources and exceeds the 30 µg/m³ increment. RTP submitted a final culpability analysis for the predicted violations of the 24-hour PM_{10} Class II increment on February 18, 2014. Modeling output MAXIFILEs were used to determine whether Magnida caused or contributed to any of the increment exceedences in the same manner as the 24-hour PM_{10} NAAQS culpability analysis. A threshold value of 30 µg/m³, which is equal to the allowable increment, was used identify the dates and receptors of the exceedences attributed to all Magnida and co-contributing sources. A second MAXIFILE was generated to identify any ambient impacts above the 24-hour PM_{10} SIL of 5.0 µg/m³ that were caused only by Magnida. Mangida did not cause any impacts above the SIL on any day during 2009 at receptors where an increment violation was modeled.

It is not a requirement to document the amount of increment consumed by Magnida for these exceedences. It is only required to verify that the proposed Magnida facility does not significantly contribute to the predicted exceedence. DEQ concurs that Magnida does not cause or contribute to a violation of the 24-hour PM_{10} increment.

Table 19. RESULTS FOR INCREMENT CONSUMPTION ANALYSES

Pollutant	Averaging Period	Modeled Design Value Concentration (μg/m³)[a]	Impact Rank	Receptor UTM[b] Coordinates X (meters)	Receptor UTM[b] Coordinates Y (meters)	Year	Allowable Increment (μg/m³)	Percent Of Increment
$PM_{2.5}$[c]	24-hour	4.63	2nd High	349,700	4,734,800	2008	9	51%
		7.10		**341,250**	**4,727,000**	**2009**		**79%**
		5.53		347,800	4,731,400	2010		61%
		4.63		347,600	4,729,700	2011		51%
		6.09		347,700	4,731,000	2012		68%
	Annual	0.67	1st High	344,524.5	4,735390	2008	4	17%
		0.78		**344,524.5**	**4,735,390**	**2009**		**20%**
		0.67		344,524.5	4,735,390	2010		17%
		0.74		344,942.6	4,736,145	2011		19%
		0.67		344,942.6	4,736,145	2012		17%
PM_{10}[d]	24-hour	25.83	2nd High	343,523.4	4,736,243	2008	30	86%
		47.71		**343,523.4**	**4,736,243**	**2009**		**159%**
		29.04		343,523.4	4,736,243	2010		97%
		26.04		343,523.4	4,736,243	2011		87%
		27.76		343,621.8	4,736,260	2012		93%
	Annual	6.11	1st High	343,523.4	4,736,243	2008	17	36%
		7.47		**343,523.4**	**4,736,243**	**2009**		**44%**
		6.65		343,523.4	4,736,243	2010		39%
		6.21		343,523.4	4,736,243	2011		37%
		6.21		343,523.4	4,736,243	2012		37%

a. Micrograms per cubic meter.
b. Universal Transverse Mercator.
c. Particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers.
d. Particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

DEQ conducted an analysis using the PM_{10} receptor grid and only Magnida's sources to identify the facility's PM_{10} increment consumption, excluding any co-contributing source impacts, as required for public notice pursuant to IDAPA 58.01.01.209.02.a.i. This is not a permit application requirement for Magnida. Results of this analysis are shown in Table 20. The maximum 2nd high 24-hour PM_{10} impact occurred along Magnida's southwestern ambient air boundary and the maximum annual PM_{10} impact occurred along the southeastern boundary.

4.4 Results for TAPs Impact Analyses

Dispersion modeling was required to demonstrate compliance with TAP increments specified by Idaho Air Rules Section 585 and 586 for those TAPs with facility-wide emissions exceeding emissions screening levels (ELs). TAPs were modeled using a reduced receptor grid size and emission rates representing 100 percent load conditions. Maximum ambient impacts were captured within the 12 kilometer square grid that was centered on the proposed facility.

The results of the TAPs analyses are listed in Table 21. The predicted ambient TAPs impacts were considerably below any TAPs increments.

Table 20. INCREMENT CONSUMPTION FOR THE MAGNIDA FACILITY ALONE							
Pollutant	Averaging Period	Class II Increment (µg/m³)	Modeled Design Value Concentration (µg/m³)[a]	Impact Rank	Receptor UTM[b] Coordinates		Year
					X-Easting (m)	Y-Northing (m)	
$PM_{2.5}$[c]	24-hour	9	7.10	2nd High	341,250	4,727,000	2009
	Annual	9	0.78	1st High	344,524.5	4,735,390	2009
PM_{10}[d]	24-hour	30	6.94	2nd High	343,700	4,734,600	2008
			16.67		**343,700**	**4,734,600**	**2009**
			6.93		343,300.7	4,735,014	2010
			6.27		343,305	4,735,213	2011
			7.37		343,305	4,735,213	2012
	Annual	17	1.72	1st High	344,524.5	4,735,390	2008
			2.04		**344,524.5**	**4,735,390**	**2009**
			1.71		344,524.5	4,735,390	2010
			1.54		344,524.5	4,735,390	2011
			1.71		344,524.5	4,735,390	2012

a. Micrograms per cubic meter.
b. Universal Transverse Mercator coordinates, given in meters.
c. Particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers.
d. Particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Table 21. RESULTS OF TAPs ANALYSES				
Toxic Air Pollutant	Averaging Period	Maximum Modeled Concentration (µg/m³)[a]	AAC/AACC[b] (µg/m³)	Percent of AAC/AACC
Noncarcinogenic TAPs				
Ammonia	24-hour	655	900	73%
Nitrous Oxide	24-hour	5.34	4,500	0.1%
Vanadium	24-hour	5.6E-03	2.5	0.2%
Carcinogenic TAPs				
Arsenic	Annual	<4.9E-06[c]	2.3E-04	<2%[c]
Benzene	Annual	8E-05	0.12	0.1%
Cadmium	Annual	2E-05	5.6E-04	4%
Chromium (hexavalent)	Annual	3E-05	8.3E-05	36%
Formaldehyde	Annual	4.6E-03	0.077	6%
Naphthalene	Annual	2E-05	1.4E-02	0.1%
Nickel	Annual	4E-05	4.2E-03	1%
Polycyclic Organic Matter (POM)	Annual	<4.9E-06[c]	3.0E-04	<2%

a. Micrograms per cubic meter
b. Acceptable ambient concentration for non-carcinogens/acceptable ambient concentration for carcinogens
c. The design ambient impact is listed as 0.00000 in the modeling output file, indicating the impact is 4.9E-06 µg/m³ or less based on the number of significant figures presented in the modeling output file.

4.5 Results for Class I Area Analyses

4.5.1 Class I Area AQRVs

Federal Land Managers (FLMs) have the responsibility of protecting air quality within designated Class I areas. FLMs accomplish this, with regard to proposed air quality permits, through evaluation of effects on visibility and pollutant deposition within the Class I areas using screening methods and refined dispersion modeling. If a refined dispersion modeling analysis is required by DEQ or FLMs, predicted impacts are compared against threshold air quality related values (AQRVs) established by regulation and guidance materials.

The guidance for use of the screening techniques is presented in the Federal Land Managers' Air Quality Related Values Work Group (FLAG) 2010 document[1], primarily in Section 3.2. The document may be accessed at the following web address: http://www.nature.nps.gov/air/Pubs/pdf/flag/FLAG_2010.pdf. The FLAG 2010 document contains what is referred to as the "Q/D" analysis. In the Q/D analysis, the level of potential annual emissions of NO_x, SO_2, sulfuric acid, and PM_{10}, in units of tons per year, are added to obtain the "Q" value. The "D" value is the distance between the Class I area and the proposed emission source. The guidance states the following:

> *Therefore, the Agencies will consider a source locating greater than 50 km from a Class I area to have negligible impacts with respect to Class I AQRVs if its total SO_2, NOx, PM_{10}, and H_2SO_4 annual emissions (in tons per year, based on 24-hour maximum allowable emissions), divided by the distance (in km) from the Class I area (Q/D) is 10 or less. The Agencies would not request any further Class I AQRV impact analyses from such sources.*

RTP conducted a Q/D screening analysis using the allowable emissions on an annual basis divided by distance between the facility and the Class I area according to established Q/D analysis. An applicability request form was completed by Magnida and provided to DEQ on April 8, 2013. DEQ emailed the form on April 8, 2013 to the National Park Service, Fish and Wildlife Service, and the US Forest Service, and each agency identified the appropriate staff evaluating this project's Class I area modeling requirements. EPA Region 10 was also emailed a copy of the Q/D analysis form on April 8, 2013.

The nearest Class I area was determined to be the Craters of the Moon National Monument and Preserve (Craters of the Moon). It is approximately 75.8 kilometers from the Magnida site to the nearest border of Craters. Yellowstone National Park, Grand Teton National Park, and Hells Canyon National Recreation Area are each located a greater distance from the project than Craters. Grand Teton National Park is the next closest Class I area to the project site, at a distance of nearly 185 kilometers.

RTP submitted formal documentation to DEQ on April 8, 2013 with the facility's Q/D analysis, based on the initial plant design. The Q/D value was 3.84 based on emissions of 290.0 ton/year and a distance of 75.8 kilometers to the Craters of the Moon. This initial value was transmitted to each of the FLMs and EPA via email on April 8, 2013, prior to the receipt of the initial PSD PTC application on April 29, 2013.

Magnida submitted a revised PSD PTC application on January 9, 2014. DEQ's interpretation of Magnida's final Q/D value, based on the revised PTC application, includes the following potential annual emissions:

- 4 tons/year SO_2
- 170 tons/year NOx
- 149 tons/year PM_{10}
- 0 tons/year sulfuric acid.

The estimated Q/D value for the current design is approximately 4.3, which remains well below the FLAG screening threshold value of 10. Magnida's estimated Q/D value was 4.1 based on 310 ton/year of pollutants.

4.5.2 Class I Area Significant Impact Level Analyses

Magnida modeled facility-wide requested allowable emissions for a SIL analysis to verify that Magnida's impact did not cause a significant impact within a Class I area. Discrete receptors were placed along the boundary and within Craters of the Moon. Maximum modeled impacts did not exceed any applicable SIL, as shown in Table 22. Additional Class I areas were not included in the modeling. Teton National Park is the next closest Class I area and is approximately 185 kilometers from the Magnolia site. DEQ determined that impacts exceeding Class I SILs to other Class I areas could not be reasonably expected, given the emissions quantities from the proposed Magnida facility and the distance to the boundaryies of these Class I areas.

A Class I area 1-hour NO_2 SIL has not been promulgated by EPA at this time.

Table 22. RESULTS CLASS I AREA SIGNIFICANT IMPACT LEVEL ANALYSES

Pollutant	Averaging Period	Maximum Modeled Concentration (μg/m³)[a]	PSD Class I Area SIL[b] (μg/m³)	Percent of Class I SIL[b]
PM_{10}[c]	24-hour	0.028	0.30	9%
	Annual	0.0018	0.20	1%
$PM_{2.5}$[d]	24-hour	0.024	0.07	34%
	Annual	0.0015	0.06	3%
NO_2[e]	Annual	0.0020[f]	0.10	2%

a. Micrograms per cubic meter
b Significant impact level
c. Particulate matter with an aerodynamic diameter of 10 micrometers or less
d. Particulate matter with an aerodynamic diameter of 2.5 micrometers or less
e. Nitrogen dioxide
f. No Tier II ARM applied. 100 percent NOx assumed to be NO_2.

4.5.3 Class I Area Increment Consumption Analyses

Magnida's requested potential emissions were predicted to cause maximum ambient impacts at and within the boundary of the Craters of the Moon Class I area that were well below all Class I area SILs for 24-hour and annual PM_{10}, 24-hour and annual $PM_{2.5}$, and annual NO_2. An increment consumption analysis was not required for any of these pollutants and averaging periods.

4.6 Results for Other PSD Analyses

4.6.1 Impacts of Project-Related Growth

RTP conducted an analysis of the increase in area source emissions that could be attributed to the proposed Magnida facility. RTP concluded that there will be minimal population growth and no quantifiable growth in other industries in the immediate area. A relatively small increase in commercial and residential pollutant emissions was anticipated to occur in the future, but due to the small increases in relation to existing emissions levels, the analysis concluded there would be no adverse ambient air pollution impacts within the area surrounding the Magnida facility.

4.6.2 Impacts of Growth Since 1977

RTP submitted an application supplement to address this requirement. Those materials explained that Power County, where the proposed Magnida facility would be located, has experienced very little growth since 1977. The population has only increased by 16 percent, growing from 6,500 to 7,778. Also, there has been negligible industrial growth in the immediate area. As a result, air quality impacts from growth in the area are likely to be negligible.

4.6.3 Impacts to Soils and Vegetation

RTP provided an analysis of the impacts of the proposed project to soil and vegetation. There were portions of five counties surrounding the site including all of Power, Bannock, and Bingham Counties, and portions of Cassia, Blaine, and Butte Counties. The Fort Hall area was also included in Magnida's analyses. The area evaluated by Magnida covered approximately 5,906 square miles (3,779,825 acres) Secondary NAAQS are promulgated with the intent of providing protection against damage to crops and vegetation in addition to damage of animals and buildings, and reduced visibility. RTP's soils and vegetation analysis concluded that the Magnida facility's requested potential emissions and proposed facility layout will not cause ambient impacts or deposition rates that exceed the secondary NAAQS or the EPA screening levels or other governmental agencies where the EPA has not established screening levels.

4.6.4 Impacts to Local Visibility

Class II area visibility analyses were required by Idaho Air Rules Section 202.01.c.v. The visibility analyses were limited to the proposed Magnida facility. Effects of residential, commercial, and industrial growth (in addition to the proposed project) were not accounted for in the analyses. Class I area visibility analyses for national parks, national monuments, etc., use the VISCREEN (visual impact screening) model to assess a plume's effect on visibility. The tools available are designed for evaluating whether the source's plume is visible rather than to identity any contribution to regional haze. This model can also be used for Class II area analyses. The Class II analyses are generally conducted for sites where scenic vistas are identified or visibility is otherwise identified as an important criteria. There are no mandatory criteria that are used to specify which sites, if any, must be included in a Class II visibility analyses. Also, there are no bright line criteria established in the Idaho Air Rules that can be used to establish compliance versus noncompliance for the proposed source and a given Class II area of concern. These visibility analyses evaluate whether the facility has the potential to cause a visible plume only, and are not used to evaluate regional haze impacts.

Magnida evaluated plume visibility at two Class II area sites, the Pocatello Regional Airport and the Massacre Rocks State Park. An EPA workbook is available that presents guidance for conducting visibility analyses for exhaust plumes[6]. VISCREEN may be used to assess the source plume's visibility impacts using a worst-case level 1 approach, and if the level 1 analysis fails to meet the acceptance criteria, a level 2 analysis may be used. VISCREEN is intended to provide conservative results. If the level 2 VISCREEN analysis fails to meet the criteria, then a different model, PLUVUE II, would be used for a level 3 visibility analysis. PLUVUE II identifies the magnitude, frequency, location, and timing of predicted visibility impacts, and is less conservative than VISCREEN.

VISCREEN model inputs include emission rates of primary particulate matter, oxides of nitrogen, primary nitrogen dioxide, elemental carbon (soot), and primary sulfate. Short-term allowable emission rates are used as model inputs.

Figure 9 of the VISCREEN workbook guidance document[6] contains a nationwide map of the regional background visual range. The visual range is used as an input to the VISCREEN program. RTP selected the 60 km visual range for the evaluations that was specified for the region where Magnida will locate.

Output from the VISCREEN program is separated into categories of visibility of plume parcels within the area of concern and visibility of plume parcels outside the area of concern. The Magnida facility was analyzed impacts within the area of concern. The category for plumes outside of the area of concern primarily applies to "integral vistas." Integral vistas are areas of special concern that are designated by a

Federal Land Manager for a Class I area. Integral vistas are not designated for any Class II areas and there are no nearby Class I areas where plume visibility could apply to the Magnida facility.

VISCREEN results are generated for the two worst-case viewing angles -10 degrees and 140 degrees. The 10 degree angle case represents the situation where the sun is in front of the observer and the plume will appear the brightest against the sky or the background terrain. The 140 degree case represents the situation where the sun is behind the viewer and the plume appears the darkest against the sky or background terrain.

Visibility Impairment Analysis for Pocatello Regional Airport

Magnida conducted a visibility analysis for the Pocatello Regional Airport, located nearly 30 kilometers from the Magnida site. VISCREEN model outputs were predicted to exceed the Level I screening criteria within the Class II area, and results are listed in Table 22. DEQ ran the VISCREEN model using Magnida's input values to confirm the model output below.

Table 22. POCATELLO AIRPORT LEVEL I VISCREEN VISIBILITY ANALYSIS RESULTS

Background	Delta E		Green Contrast		Values less than thresholds?
	Screening Criteria	Facility Plume	Screening Criteria	Facility Plume	Delta E / Green Contrast
Sky (forward scattering)	2.00	1.312	0.05	0.017	Yes / Yes
Sky (backward scattering)	2.00	0.469	0.05	-0.013	Yes / Yes
Terrain (forward scattering)	**2.00**	**2.096**	0.05	0.021	No / Yes
Terrain (backward scattering)	2.00	0.271	0.05	0.008	Yes / Yes

The Level I visibility analysis for the Pocatello Airport exceeded the screening criteria. Therefore, a Level II analysis was required to refine the analysis. RTP performed the analysis using the State of Iowa Department of Natural Resources' (IDNR) Visibility Screening Tool[7]. The IDNR tool was used to identify the worst case conditions for the orientation, distance, and width of the Magnolia facility plume relative to the Pocatello Airport and Massacre Rocks State Park. The screening tool was described, in part, as "developed using the guidance, equations, and constants available in the VISCREEN user guide." The IDNR tool uses a meteorological data set that is compatible with the Industrial Source Complex (ISC) model, and generates the worst-case meteorological stability class and wind speed that occurs for at least 1 percent of the time for the source/area of concern arrangement. DEQ provided RTP with an ISC-compatible Pocatello met dataset covering 1987 through 1991. The wind speed and stability class identified by the IDNR tool are inputs to a Level II VISCREEN run. Figures 13 and 14 of the RTP Modeling Report present the output of the IDNR tool and the Level II VISCREEN results are listed in the Appendix B of the RTP Modeling Report. Table 23 provides results for the Level II VISCREEN analysis.

Magnida's analysis predicts that visibility within the airport boundaries is not compromised.

Table 23. POCATELLO AIRPORT LEVEL II VISCREEN VISIBILITY ANALYSIS RESULTS

Background	Delta E		Green Contrast		Values less than thresholds?
	Screening Criteria	Facility Plume	Screening Criteria	Facility Plume	Delta E / Green Contrast
Sky (forward scattering)	2.00	0.144	0.05	0.002	Yes / Yes
Sky (backward scattering)	2.00	0.051	0.05	-0.001	Yes / Yes
Terrain (forward scattering)	2.00	0.236	0.05	0.002	Yes / Yes
Terrain (backward scattering)	2.00	0.030	0.05	0.001	Yes / Yes

Visibility Impairment Analysis for Massacre Rocks State Park

Magnida also performed a visibility impairment assessment for Massacre Rocks State Park, located approximately 9 kilometers southwest of the proposed facility. The VISCREEN results for the plume within the park area are listed in Table 24.

Table 24. MASSACRE ROCKS STATE PARK LEVEL I VISCREEN VISIBILITY ANALYSIS RESULTS

Background	Delta E		Green Contrast		Values less than thresholds?
	Screening Criteria	Facility Plume	Screening Criteria	Facility Plume	Delta E / Green Contrast
Sky (forward scattering)	**2.08**	**2.602**	0.05	0.027	**No** / Yes
Sky (backward scattering)	2.00	1.097	0.05	-0.023	Yes / Yes
Terrain (forward scattering)	**2.00**	**7.983**	0.05	0.048	**No** / Yes
Terrain (backward scattering)	2.00	0.842	0.05	0.014	Yes / Yes

The Level I visibility analysis exceeded the screening criteria, thereby requiring a Level II analysis. As with the Pocatello Airport Level II analysis, RTP performed the Massacre Rocks analysis in a similar manner using the IDNR's Visibility Screening Tool. RTP's analysis predicts that visibility within the state park is not compromised. Results are summarized in Table 25.

Table 25. MASSACRE ROCKS STATE PARK LEVEL II VISCREEN VISIBILITY ANALYSIS RESULTS

Background	Delta E		Green Contrast		Values less than thresholds?
	Screening Criteria	Facility Plume	Screening Criteria	Facility Plume	Delta E / Green Contrast
Sky (forward scattering)	5.50	0.132	0.09	0.002	Yes / Yes
Sky (backward scattering)	2.00	0.060	0.09	-0.001	Yes / Yes
Terrain (forward scattering)	3.68	0.568	0.10	0.003	Yes / Yes
Terrain (backward scattering)	2.00	0.055	0.10	0.001	Yes / Yes

5.0 Conclusions

The ambient air impact analyses and other air quality analyses submitted with the PSD PTC demonstrated to DEQ's satisfaction that emissions from the proposed Magnida facility will not cause or significantly contribute to a violation of any ambient air quality standard or otherwise unacceptably impact air quality.

References:

1. *State of Idaho Guideline for Performing Air Quality Impact Analyses.* Idaho Department of Environmental Quality. Revision 2, July 2011. State of Idaho DEQ Air Doc. ID AQ-011.

2. *Additional Clarification Regarding Application of Appendix W Modeling Guidance for 1-hour NO_2 National Ambient Air Quality Standard*, Tyler Fox, Air Quality Modeling Group, C439-01, Environmental Protection Agency, March 1, 2011.

3. *SCREEN3 Model User's Guide*. U.S. Environmental Protection Agency. Office of Air Quality Planning and Standards. Emission, Monitoring, and Analysis Division. Research Triangle Park, NC. EPA 454/B-95-004. September 1995.

4. *Modeling Compliance of the Federal 1-Hour NO_2 NAAQS.* California Air Pollution Control Officers Association. October 27, 2011.

5. U.S. Forest Service, National Park Service, and U.S. Fish and Wildlife Service. 2010. Federal Land Managers' Air Quality Related Values Work Group (FLAG) Phase I Report-Revised (2010). Natural Resources Report NPS/NRPC/NRR-2010/232. National Park Service, Denver, Colorado.

6. *Workbook for Plume Visual Impact Screening and Analysis.* Environmental Protection Agency, Office of Air Quality Planning and Standards. 1988-Revised October 1992. EPA-450/4-88-015.

7. Level-2 VISCREEN Tool, Microsoft Excel 2003 Platform, Iowa Department of Natural Resources.

Attachment A

North Carolina "20D" Contributing Source Evaluation Method

"Screening Threshold" Method for PSD Modeling
North Carolina Air Quality Section

This method is best suited for situations where a PSD source has several sources outside its impact area, but within its screening area. The object is to find an effective means to minimize the number of such sources in a model, yet to include all sources which are likely to have a significant impact inside the impact area.

As a first-level screening technique, it is suggested to include those sources within the screening area when

$$Q \geq 20D$$ ⇒ (leave in)

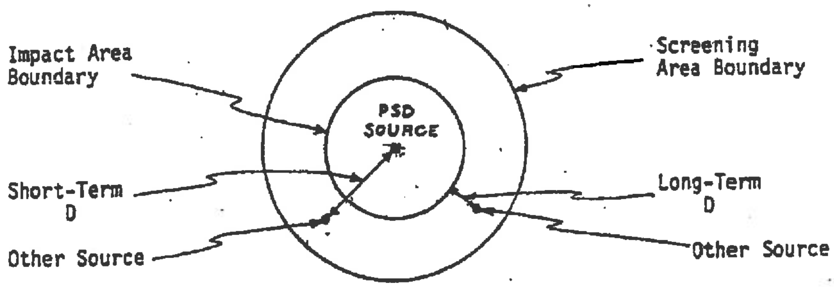
where Q is the maximum emission rate, in tons/year, of the source in the screening area; and D is a distance, in kilometers, from either:

a. the source in the screening area to the nearest edge of the impact area, for long-term analyses.

or

b. the source in the screening area to the PSD source defining the impact area, for short-term analyses.

The figure below illustrates the difference between the long-term D and the short-term D.



This method does not preclude the use of alternate screening techniques or of more sophisticated screening techniques given the approval of the review agency. Also, this method does not prevent the review agency from specifying additional sources of interest in the modeling analysis.

The justification for this "Screening Threshold Method" rests upon the following assumptions:

a. effective stack height = 10 meters
b. stability class D (neutral)
c. 2.5 meter/second wind speed
d. mixing height = 300 meters
e. Q = 20D = critical emission rate for a given pollutant
f. one-hour concentrations derived from figure 3-5D in Turner's WADE or from PTDIS.
g. 3-hour and 24-hour concentrations estimated using "Vol. 10R". Annual impacts are 1/7 of 24 hour impacts.

The results, for various distances, are shown in the table below:

D (km)	Q (T/yr)	1-hr Conc. (ug/m³)	3-hr Conc. (ug/m³)	24-hr Conc. (ug/m³)	Annual Conc. (ug/m³)
0.5	10	47	42	19	2.7
1.0	20	32	29	13	1.9
1.5	30	27	24	10	1.4
2.0	40	23	21	9	1.3
3	60	18	16	7	1.0
4	80	17	15	7	1.0
5	100	14	13	6	1
6	120	13	12	5	1
10	200	10	9	4	1
20	400	7	6	3	1
30	600	6	6	3	1
40	800	6	6	3	1
50	1000	7	6	3	1

The "Screening Threshold" method is conservative. Most sources either have effective stack heights greater than 10 meters, or they have several short stacks spread out over an industrial complex. Thus, actual modeled concentrations will most likely be lower than the "Screening Threshold" would indicate in the table above. One implication of the table is that all major sources within 5 km of the subject PSD source or within 5 km of the PSD source's impact area should be scrutinized before being exempted from the final emissions inventory.

The "Screening Threshold" method is in qualitative agreement with the suggestions on page I-C-18 of the Prevention of Significant Deterioration Workshop Manual (1980). On that page, it is suggested that a 100 T/Y source 10 km outside the impact area may be excluded from the analysis. The above table would exclude a 100 T/Y source more than 5 km beyond the impact area for long-term analyses or more than 5 km away from the PSD source for short-term analyses; if the source is inside the impact area, it must be included regardless of the "Screening

Threshold". The PSD Workshop Manual also states on page I-C-18 that a 10,000 T/Y source 40 km outside the impact area would probably have to be included in the increment analysis. By the "Screening Threshold" method, the critical distance D = Q/20 = 10,000/20 = 500 km. Thus a 10,000 T/Y source within 500 km would always be included for short-term and long-term analyses if within the screening area.

This "Screening Threshold" method is quick, inexpensive to execute, conservative, and consistent with the intent of the PSD Workshop Manual.

ATTACHMENT B

CO-CONTRIBUTING SOURCE

MODELED EMISSION INVENTORY

AND

EXHAUST PARAMETERS

Nearby Source Analyses Modeled Emission Rates for Cumulative NAAQS Analyses[e,f]				
Source ID	**Source Description**	**NO_x[a] (lb/hr)[b]**	**PM_{10}[c] (lb/hr)**	**$PM_{2.5}$[d,f] (lb/hr)**
Con Agra Foods (dba Lamb Weston) Potato Products				
LW_1	Lamb Weston Boiler No. 1	4.345	0.734	0.734
LW_2	Lamb Weston Boiler No. 2	4.625	0.352	0.352
LW_3	Lamb Weston Boiler No. 3	4.581	0.348	0.348
LW_4	Lamb Weston Line 1 Dryer 1	0	0.477	0.477
LW_5	Lamb Weston Line 1 Dryer 2	0	0.477	0.477
LW_6	Lamb Weston Line 1 Dryer 3	0	0.477	0.477
LW_7	Lamb Weston Line 1 Dryer 4	0	0.477	0.477
LW_8	Lamb Weston Line 2 Dryer 1	0.383	0.283	0.283
LW_9	Lamb Weston Line 2 Dryer 2	0.383	0.283	0.283
LW_10	Lamb Weston Line 2 Dryer 3	0.383	0.283	0.283
LW_11	Lamb Weston Line 2 Dryer 4	0.383	0.283	0.283
LW_12	Lamb Weston Line 2 Dryer 5	0.383	0.283	0.283
LW_13	Lamb Weston Flake Dryer 1	0	0.057	0.057
LW_14	Lamb Weston Flake Dryer 2	0	0.057	0.057
LW_15	Lamb Weston Line 3 Retrograde	0	0.445	0.445
LW_16	Lamb Weston Line 5 Retrograde 1	0.157	0.16	0.16
LW_17	Lamb Weston Line 5 Retrograde 2	0.157	0.16	0.16
LW_18	Lamb Weston Line 5 Retrograde 3	0.157	0.16	0.16
LW_19	Lamb Weston Line 3 Roaster	0.725	0.055	0.055
LW_20	Lamb Weston Line 2 Ducon Scrubber	0	2.76	2.76
LW_21	Lamb Weston Line 1 Reyco Scrubber	0	4.14	4.14
LW_22	Lamb Weston Line 5 Fryer/Scrubber 1	0.471	0.736	0.736
LW_23	Lamb Weston Line 5 Fryer/Scrubber 2	0.471	0.736	0.736
LW_24	Lamb Weston Kice Filter	0	0.063	0.063
LW_25	Lamb Weston Pneumafil Filter	0	0.252	0.252
LW_26	Lamb Weston Mikro Filter	0	0.126	0.126
LWHTR_1	Lamb Weston Space Heater	1.3	0.10	0.10
LWHTR_2	Lamb Weston Space Heater	1.3	0.10	0.10
LWHTR_3	Lamb Weston Space Heater	1.3	0.10	0.10
LWHTR_4	Lamb Weston Space Heater	1.3	0.10	0.10
LWHTR_5	Lamb Weston Space Heater	1.3	0.10	0.10
LWHTR_6	Lamb Weston Space Heater	1.3	0.10	0.10

a. Nitrogen oxides

b. Pounds per hour

c. Particulate matter with an aerodynamic diameter of 10 micrometers or less

d. Particulate matter with an aerodynamic diameter of 2.5 micrometers or less

e. Hourly emissions were modeled for 8,760 hours per year without any restrictions where modeled to for pollutants with an annual averaging period.

f. NO_x and PM_{10} emissions listed in this table were also modeled for the increment assumption analyses. Magnida is the only source modeled to demonstrate compliance with the $PM_{2.5}$ increment

Nearby Source Analyses Modeled Emission Rates for Cumulative NAAQS Analyses[e,f] (continued)				
Source ID	Source Description	NO_x[a] (lb/hr)[b]	PM_{10}[c] (lb/hr)	$PM_{2.5}$[d,f] (lb/hr)
J.R. Simplot Corporation Don Siding Complex Phosphate Fertilizer Manufacturing Facility				
JR_AP001	JR Simplot R/G Scrubber	0	3.2	3.2
JR_AP002	JR Simplot Dryer	1.44	7.6	7.6
JR_AP003	JR Simplot misc BH	0	1.1	1.1
JR_BP001	JR Simplot TG scrubber	1.69	10.1	10.1
JR_BP002	JR Simplot Cooler BH	0	1.6	1.6
JR_CP001	JR Simplot Main Stack	3.4	7.7	7.7
JR_IP001	JR Simplot Davey McKey (DMK)	0	5.7	5.7
JR_IP002	JR Simplot Tank Farm Scrubber (TFS)	0	0.82	0.82
JR_JP006	JR Simplot Super Phos Reactor (oxidizer)	0.1	0	0
JR_PP001	JR Simplot Cooling Tower N	0	32	32
JR_PP002	JR Simplot Cooling Tower E	0	48	48
JR_PP003	JR Simplot cooling Tower W	0	48	48
JR_GP004	JR Simplot Unit 3 Main Stack	16	12.4	12.4
JR_FP008	JR Simplot Unit 4 Main Stack	4.38	15.9	15.9
JR_FP001	JR Simplot Unit 4 Acid Vent Tank (93%)	0	0	0
JR_GP002	JR Simplot Unit 3 Acid Vent Tank (93%)	0	0	0
JR_CP002	JR Simplot Lime Silo BH	0	0.09	0.09
JR_CP003	JR Simplot Lime Silo BH	0	0.09	0.09
JR_DP001	JR Simplot NH4SO4 Dryer	0.25	1.7	1.7
JR_DP002	JR Simplot NH4SO4 Cooler	0	1	1
JR_HP005	JR Simplot Phos acid - tank #19B	0	0.11	0.11
JR_HP006	JR Simplot Phos Acid - tank #23	0	0.02	0.02
JR_HP010	JR Simplot Phos Acid - tank #53	0	0.03	0.03
JR_HP011	JR Simplot Phos Acid - Tank #55	0	0.03	0.03
JR_JP007	JR Simplot Super Phos Evaporators	0	0.18	0.18
JR_MP004	JR Simplot NH4NO3 React Vent	0	1.3	1.3
JR_OP002	JR Simplot NPB&W Boiler	7	1.33	1.33
JR_OP003	JR Simplot B/W Boiler	2.88	0.32	0.32
JR_AF037	JR Simplot MAP 100 plant - truck loading	0	0.22	0.22
JR_SPB014	JR Simplot MAP 100 Plant - misc bldg fug	0	0.07	0.07
JR_BF046	JR Simplot DAP #200 - truck loading	0	0.22	0.22
JR_SPB015	JR Simplot DAP #200 - Misc fug sources (bldg)	0	0.33	0.33
JR_CF059	JR Simplot TSP #300 - truck/rail loading north	0	0.01	0.01
JR_SPB084	JR Simplot TSP #300 - misc fug sources (bldg)	0	0.03	0.03
JR_CF047	JR Simplot TSP #300 - truck/rail loading south	0	0.01	0.01
JR_SPB009	JR Simplot TSP #300 - misc fug sources (bldg)	0	0.07	0.07
JR_SPB016	JR Simplot NH4SO4 misc fug sources (bldg)	0	0.06	0.06
JR_DF022	JR Simplot NH4SO4 truck loading	0	0.01	0.01
General Mills American Falls (Grain Elevator)				
GM	General Mills American Falls	0	4.90	0.83
American Falls Redi-Mix (Concrete Batch Plant)				
AF_RM	American Falls RediMix	0	3.11	0.71

a. Nitrogen oxides

b. Pounds per hour

c. Particulate matter with an aerodynamic diameter of 10 micrometers or less

d. Particulate matter with an aerodynamic diameter of 2.5 micrometers or less

e. Hourly emissions were modeled for 8,760 hours per year without any restrictions where modeled to for pollutants with an annual averaging period.

f. NO_x and PM_{10} emissions listed in this table were also modeled for the increment assumption analyses. Magnida is the only source modeled to demonstrate compliance with the $PM_{2.5}$ increment

Nearby Source Analyses – Point Source Release Parameters								
Source ID	**Source Description**	**Easting (m)[a]**	**Northing (m)**	**Base Elevation (m)**	**Stack Release Height (m)**	**Temperature (K)**	**Exit Velocity (m/s)**	**Stack Diameter (m)**
Con Agra Foods (dba Lamb Weston) Potato Products								
LW_1	Lamb Weston Boiler No. 1	343280.61	4736650.37	1342.03	15.54	535.93	11.84	1.27
LW_2	Lamb Weston Boiler No. 2	343280.61	4736658.37	1342.03	15.54	570.37	9.47	1.01
LW_3	Lamb Weston Boiler No. 3	343280.61	4736663.37	1342.03	15.54	567.04	9.32	1.01
LW_4	Lamb Weston Line 1 Dryer 1	343435.61	4736670.37	1341.12	15.54	335.93	9.22	1.01
LW_5	Lamb Weston Line 1 Dryer 2	343435.61	4736664.37	1341.12	15.54	312.59	7.99	1.01
LW_6	Lamb Weston Line 1 Dryer 3	343440.61	4736654.37	1341.12	15.54	329.82	10.03	1.01
LW_7	Lamb Weston Line 1 Dryer 4	343434.61	4736649.37	1341.12	15.54	346.48	20.30	1.01
LW_8	Lamb Weston Line 2 Dryer 1	343457.61	4736619.37	1341.12	14.02	352.59	6.99	0.97
LW_9	Lamb Weston Line 2 Dryer 2	343456.61	4736613.37	1341.12	14.02	352.59	10.17	0.97
LW_10	Lamb Weston Line 2 Dryer 3	343456.61	4736607.37	1341.12	14.02	352.59	10.17	0.97
LW_11	Lamb Weston Line 2 Dryer 4	343456.61	4736600.37	1341.12	14.02	352.59	10.17	0.97
LW_12	Lamb Weston Line 2 Dryer 5	343456.61	4736593.37	1341.12	14.02	352.59	10.17	0.97
LW_13	Lamb Weston Flake Dryer 1	343442.61	4736588.37	1341.12	14.33	312.59	5.30	1.22
LW_14	Lamb Weston Flake Dryer 2	343445.61	4736588.37	1341.12	14.33	312.59	5.30	1.22
LW_15	Lamb Weston Line 3 Retrograde	343456.61	4736567.37	1341.12	15.24	352.59	7.54	1.08
LW_16	Lamb Weston Line 5 Retrograde 1	343464.61	4736590.37	1341.12	15.24	352.59	9.49	0.87
LW_17	Lamb Weston Line 5 Retrograde 2	343464.61	4736593.37	1341.12	15.24	352.59	9.49	0.87
LW_18	Lamb Weston Line 5 Retrograde 3	343464.61	4736596.37	1341.12	15.24	352.59	9.49	0.87
LW_19	Lamb Weston Line 3 Roaster	343453.61	4736571.37	1341.12	14.02	355.37	1.58	0.87
LW_20	Lamb Weston Line 2 Ducon Scrubber	343441.61	4736605.37	1341.12	16.15	351.48	8.89	1.22
LW_21	Lamb Weston Line 1 Reyco Scrubber	343433.61	4736598.37	1341.12	15.24	352.59	18.03	0.81
LW_22	Lamb Weston Line 5 Fryer/Scrubber 1	343478.61	4736559.37	1341.12	10.67	351.48	18.11	0.30
LW_23	Lamb Weston Line 5 Fryer/Scrubber 2	343478.61	4736554.37	1341.12	10.67	351.48	18.11	0.30
LW_24	Lamb Weston Kice Filter	343440.61	4736569.37	1341.12	13.21	294.26	14.62	0.27
LW_25	Lamb Weston Pneumafil Filter	343482.8	4736578.69	1341.12	12.98	294.26	18.28	0.43
LW_26	Lamb Weston Mikro Filter	343484.13	4736585.77	1341.12	7.01	294.26	51.74	0.15

[a] Meters

Nearby Source Analyses – Point Source Release Parameters (continued)								
Source ID	**Source Description**	**UTM Coordinate Easting[a] (m)[b]**	**UTM Coordinate Northing (m)**	**Base Elevation (m)**	**Stack Release Height (m)**	**Temperature (K)[c]**	**Exit Velocity (m/s)[d]**	**Stack Diameter (m)**
J.R. Simplot Corporation Don Siding Complex Phosphate Fertilizer Manufacturing Facility								
JR_AP001	JR Simplot R/G Scrubber	375413	4751633	1356.06	29.90	348.98	17.46	0.89
JR_AP002	JR Simplot Dryer	375413	4751639	1356.06	29.90	333.98	14.56	1.19
JR_AP003	JR Simplot misc BH	375416	4751638	1356.06	29.90	327.59	13.04	0.76
JR_BP001	JR Simplot TG scrubber	375401	4751567	1356.06	45.70	331.48	12.35	1.83
JR_BP002	JR Simplot Cooler BH	375396	4751603	1356.06	18.30	328.98	19.92	0.91
JR_CP001	JR Simplot Main Stack	375677	4751603	1356.06	53.30	321.98	11.33	1.83
JR_IP001	JR Simplot Davey McKey (DMK)	375617	4751615	1356.06	54.60	309.98	15.27	1.83
JR_IP002	JR Simplot Tank Farm Scrubber (TFS)	375600	4751663	1356.06	35.10	301.98	10.10	1.07
JR_JP006	JR Simplot Super Phos Reactor (oxidizer)	375344	4751713	1356.06	14.40	295.98	6.66	0.45
JR_PP001	JR Simplot Cooling Tower N	375779	4751530	1356.06	11.60	296.98	7.90	8.70
JR_PP002	JR Simplot Cooling Tower E	375817	4751488	1356.06	10.70	296.98	7.90	10.70
JR_PP003	JR Simplot cooling Tower W	375781	4751497	1356.06	11.60	296.98	7.90	10.70
JR_GP004	JR Simplot Unit 3 Main Stack	375285	4751740	1356.06	61.60	294.93	27.40	1.37
JR_FP008	JR Simplot Unit 4 Main Stack	375272	4751539	1356.06	64.00	346.21	9.30	2.90
JR_FP001	JR Simplot Unit 4 Acid Vent Tank (93%)	375284	4751550	1356.06	15.50	321.09	0.80	0.20
JR_GP002	JR Simplot Unit 3 Acid Vent Tank (93%)	375333	4751739	1356.06	8.40	321.09	0.33	0.20
JR_CP002	JR Simplot Lime Silo BH	375677	4751620	1356.06	9.10	293.98	7.80	0.30
JR_CP003	JR Simplot Lime Silo BH	375685	4751615	1356.06	9.10	293.98	7.80	0.30
JR_DP001	JR Simplot NH4SO4 Dryer	375422	4751575	1356.06	23.20	307.98	15.10	0.50
JR_DP002	JR Simplot NH4SO4 Cooler	375417	4751577	1356.06	21.30	310.98	11.70	0.50
JR_HP005	JR Simplot Phos acid - tank #19B	375615	4751671	1356.06	6.10	332.98	1.40	0.30
JR_HP006	JR Simplot Phos Acid - tank #23	375608	4751659	1356.06	6.10	326.98	0.20	0.30
JR_HP010	JR Simplot Phos Acid - tank #53	375519	4751656	1356.06	9.10	332.98	0.20	0.30
JR_HP011	JR Simplot Phos Acid - Tank #55	375489	4751682	1356.06	8.20	332.98	0.30	0.30
JR_JP007	JR Simplot Super Phos Evaporators	375348	4751710	1356.06	10.70	324.98	6.10	0.20
JR_MP004	JR Simplot NH4NO3 React Vent	375436	4751453	1356.06	7.30	364.98	14.20	0.30
JR_OP002	JR Simplot NPB&W Boiler	375546	4751643	1356.06	10.70	504.98	20.20	1.20
JR_OP003	JR Simplot B/W Boiler	375554	4751660	1356.06	13.70	504.98	15.00	1.20

[a] Universe Transverse Mercator Coordinates in meters, NAD83 datum, Zone 12. Easting- X- coordinate, Northing Y – coordinate.

[b] Meters

[c] Kelvin

[d] Meters per second

Nearby Source Analyses – Volume Source Release Parameters							
Source ID	Source Description	UTM Easting (X-coordinate) (m)[a]	UTM Northing (Y-coordinate) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)
Con Agra Foods (dba Lamb Weston) Potato Products							
LWHTR_1	Lamb Weston Space Heater	343451	4736634.26	1341.12	9.75	85.07	4.54
LWHTR_2	Lamb Weston Space Heater	343507.41	4736574.4	1341.12	9.14	18.44	4.27
LWHTR_3	Lamb Weston Space Heater	343568.42	4736636.56	1341.12	9.14	23.04	4.27
LWHTR_4	Lamb Weston Space Heater	343576.48	4736698.72	1341.12	9.14	23.04	4.27
LWHTR_5	Lamb Weston Space Heater	343621.37	4736758.57	1341.12	9.75	28.35	4.54
LWHTR_6	Lamb Weston Space Heater	343620.22	4736809.22	1341.12	9.75	28.35	4.54
J.R. Simplot Corporation Don Siding Phosphate Fertilizer Manufacturing Facility							
JR_AF037	JR Simplot MAP 100 plant - truck loading	375249	4751734	1356.06	4.57	3.51	10.70
JR_SPB014	JR Simplot MAP 100 Plant - misc bldg fug	375320	4751670	1356.06	7.99	23.01	7.41
JR_BF046	JR Simplot DAP #200 - truck loading	375228	4751674	1356.06	4.57	5.79	7.41
JR_SPB015	JR Simplot DAP #200 - Misc fug sources (bldg)	375300	4751620	1356.06	7.99	23.01	7.41
JR_CF059	JR Simplot TSP #300 - truck/rail loading north	375799	4751617	1356.06	4.57	17.01	7.41
JR_SPB084	JR Simplot TSP #300 - misc fug sources (bldg)	375810	4751635	1356.06	4.69	17.01	4.69
JR_CF047	JR Simplot TSP #300 - truck/rail loading south	375805	4751610	1356.06	4.57	17.01	7.41
JR_SPB009	JR Simplot TSP #300 - misc fug sources (bldg)	375780	4751600	1356.06	8.50	47.00	7.89
JR_SPB016	JR Simplot NH4SO4 misc fug sources (bldg)	375375	4751525	1356.06	12.01	10.49	11.19
JR_DF022	JR Simplot NH4SO4 truck loading	375350	4751566	1356.06	4.57	11.61	5.61
General Mills American Falls (Grain Elevator)							
GM	General Mills American Falls	348345	4739121	1341.42	0	3.048	3.048
American Falls Redi-Mix (Concrete Batch Plant)							
AF_RM	American Falls RediMix	342825.91	4737814.83	1340.82	0	3.048	3.048

[a] Meters

ATTACHMENT C

DOCUMENTATION SUPPORTING THE

NON-REGULATORY DEFAULT METHODS

FOR MAGNIDA'S MODELING OF THE

NITROGEN DIOXIDE 1-HOUR AVERAGE STANDARDS

Darrin Mehr

From:	Wong, Herman <Wong.Herman@epa.gov>
Sent:	Tuesday, February 26, 2013 7:33 AM
To:	Darrin Mehr
Cc:	Kevin Schilling; Daniel Pitman
Subject:	TRIM: RE: Idaho DEQ Authorization Request for Tier 3 Options for 1-hr NO2 Analyses: Magnida - Magnolia Nitrogen Idaho, LLC

Darrin:

I have no objections to the use of either PVMRM or OLM but the proponent should justify the use of one over the other. Furthermore, the hourly air quality and meteorological data measurements should met PSD QA and data quality requirements. The source test results or CEMs collection should be documented and representative based on equipment, controls, fuel and operating load.

Finally, please insure that the proponent follows current EPA guidance for modeling NO2.

Thanks,

Herman Wong
Regional Atmospheric Scientistist/Modeler
U.S. Environmental Protection, Region 10
OEA-095
1200 Sixth Ave, Suite 900
Seatte, WA 98101
206.553.4858
wong.herman@epa.gov

From: Darrin.Mehr@deq.idaho.gov [mailto:Darrin.Mehr@deq.idaho.gov]
Sent: Monday, February 25, 2013 1:30 PM
To: Wong, Herman
Cc: Kevin.Schilling@deq.idaho.gov; Daniel.Pitman@deq.idaho.gov; thornyak@magnida.com; keen@rtpenv-nc.com
Subject: Idaho DEQ Authorization Request for Tier 3 Options for 1-hr NO2 Analyses: Magnida - Magnolia Nitrogen Idaho, LLC

Hello Herman,

Idaho DEQ has been engaged in discussions on the permitting and modeling requirements for a project that is expected to be subject to the Prevention of Significant Deterioration (PSD) program. The company that will own and operate the facility is Magnida, and their project's title is Magnolia Nitrogen Idaho, LLC.

I have attached DEQ's authorization request and the documentation that RTP Environmental provided on behalf of Magnida.

A tight timeline has been established for the project so if you have any questions concerning the request, or if additional information is needed, please contact me or Kevin Schilling to help expedite the authorization process.

Thank you for your assistance in this matter.

Best regards,

Darrin

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 North Hilton, Boise, ID 83706 · (208) 373-0502

C. L. "Butch" Otter, Governor
Curt Fransen, Director

February 25, 2013

VIA EMAIL

Herman Wong
Regional Atmospheric Scientist
Office of Environmental Assessment
US EPA Region 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101

RE: EPA Approval of Tier 3 Options for 1-hr NO_2 SIL and NAAQS Ambient Air Dispersion Analyses for Magnolia Nitrogen Idaho, LLC—a Proposed PSD Facility to be Located in Power County, Idaho

Dear Mr. Wong:

The Department of Environmental Quality (DEQ) has been engaged in discussions with Magnida concerning the modeling requirements for Magnolia Nitrogen Idaho, LLC, a proposed Greenfield fertilizer manufacturing facility utilizing natural gas as a raw material. The project is expected to create emissions of nitrogen oxides (NOx) at a level that a will require a *source impact analysis*, as specified by 40 CFR 52.21(k).

On February 18, 2013, DEQ received a formal request from RTP Environmental Associates, Inc., on behalf of Magnida, to apply either of the non-regulatory Tier 3 options to 1-hour average nitrogen dioxide source impact analyses. Magnida has not specified whether the Plume Volume Molar Ratio Method (PVMRM) or the Ozone Limiting Method (OLM) will be used in the modeling demonstration at this time, but anticipates submitting a PSD permit application in March 2013. Magnida's justification for an alternative modeling method is attached. Written authorization by EPA will be needed to allow the use of either Tier 3 method of analysis as specified by 40 CFR 52.21(l)(2) and IDAPA 58.01.01.202.02(a). DEQ requests that EPA approve the use of PVMRM and OLM for Magnida's ambient air analyses, and provide notification to DEQ as soon as possible. EPA's authorization is subject to public comment as provided by IDAPA 58.01.01.202.02(a).

If you have any questions about this letter please contact me at (208) 373-0502 or Kevin.Schilling@deq.idaho.gov.

Sincerely,

Kevin Schilling

Kevin Schilling
Stationary Source Modeling Coordinator
Air Quality Division

Attachment: RTP Justification Letter

RTP ENVIRONMENTAL ASSOCIATES, INC.®

February 18, 2013

Mr. Kevin Schilling
Stationary Source Air Modeling Manager
Idaho Department of Environmental Quality
1410 North Hilton
Boise, Idaho 83706

Subject: Justification for Use of the Plume Volume Molar Ratio Method or Ozone Limiting Method in Calculation of Ambient Impacts for the Proposed Magnida Facility in Power County

Dear Mr. Schilling,

Magnolia Nitrogen Idaho LLC ("Magnida" or "Project") is proposing to construct a Greenfield nitrogen fertilizer production facility near American Falls in Power County, Idaho. The plant is a redesign of the Southeast Idaho Energy ("SIE") facility that was permitted by the Idaho Department of Environmental Quality ("IDEQ") in 2009. The redesigned plant will now use natural gas as its primary raw material rather than gasifying coal. The construction will result in significant increases in emissions of NO_X. During our meeting on February 13, 2013, we discussed the appropriate modeling tools for source impact analyses for the project. On behalf of Magnida, RTP Environmental ("RTP") requests approval of the methods described below for the NO_2 modeling analysis.

The NO_X emissions will be subject to the source impact analysis requirements of 40 CFR 52.21(k). As required by IDAPA 58.01.01.202.02, estimates of ambient NO_2 concentrations needed to assess compliance with these requirements will be based on the applicable air quality models, data bases, and other requirements specified in Appendix W of 40 CFR Part 51. When EPA finalized the ambient standard for NO_2, the agency did not include a revision to Appendix W for the required analysis. Consequently, a non-regulatory application of the model will need to be employed to accomplish the review. RTP therefore plans to employ AERMOD in the non-regulatory mode using either the Plume Volume Molar Ratio Method ("PVMRM") or Ozone Limiting Method ("OLM") in modeling of NO_X emissions to account for the conversion of NO_X to NO_2.

Since the use of either PVMRM or OLM is considered a non-regulatory application of AERMOD, its use therefore changes the status of the model. As stated in Section 3.1.2(c) of 40 CFR Part 51, Appendix W,

> *A preferred model should be operated with the options listed in Appendix A as "Recommendations for Regulatory Use." If other options are*

exercised, the model is no longer "preferred." Any other modification to a preferred model that would result in a change in the concentration estimates likewise alters its status as a preferred model. Use of the model must then be justified on a case-by-case basis.

If non-regulatory options are to be used for regulatory purposes, justification must be made pursuant to five criteria presented at Section 3.2.2(e) of 40 CFR 51 Appendix W. The five Section 3.2.2(e) criteria are:

- i. The model has received a scientific peer review;
- ii. The model can be demonstrated to be applicable to the problem on a theoretical basis;
- iii. The databases which are necessary to perform the analysis are available and adequate;
- iv. Appropriate performance evaluations of the model have shown that the model is not biased toward underestimates; and
- v. A protocol on methods and procedures to be followed has been established.

The use of OLM or PVMRM meets these five criteria as discussed below:[1]

3.2.2(e)(i), "The model has received a scientific peer review"

As noted in the memorandum from Tyler Fox on June 28, 2010[2]; "Since AERMOD is the preferred model for dispersion for a wide range of application, the focus of the alternative model demonstration for use of the OLM/PVMRM options within AERMOD is on the treatment of NOx chemistry within the model, and does not need to address basic dispersion algorithms within AERMOD." Therefore the following will address the basic chemistry of each of the non-regulatory options.

Basic OLM Chemistry:
To provide some background, the following is a simplified explanation of the basic chemistry relevant to the OLM. First, the relatively high temperatures typical of most combustion sources promote the formation of NO_2 by the following thermal reaction:

$2\,NO + O_2 \Longrightarrow 2\,NO_2$ In-stack formation of NO_2

OLM assumes a default 10% of the NOx in the exhaust is converted to NO_2 by this reaction, and no further conversion by this reaction occurs once the exhaust leaves the stack. The remaining percentage of the NOx emissions is assumed to be nitric oxide (NO). As the exhaust leaves the stack and mixes with the ambient

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[1] The justification is adapted from a document prepared by the San Joaquin Valley Air Pollution Control District document, "Assessment of Non-Regulatory Options in AERMOD Specifically OLM and PVMRM", September 16, 2010.

[2] "Applicability of Appendix W Modeling Guidance for the 1-hour NO2 National Ambient Air Quality Standard", June 28, 2010.

air, the NO reacts with ambient ozone (O_3) to form NO_2 and molecular oxygen (O_2):

$NO + O_3 ==> NO_2 + O_2$ Oxidation of NO by ambient O3

The OLM assumes that at any given receptor location, the amount of NO that is converted to NO_2 by this reaction is proportional to the ambient O_3 concentration. If the O_3 concentration is less than the NO concentration, the amount of NO_2 formed by this reaction is limited. If the O_3 concentration is greater than or equal to the NO concentration, all of the NO is assumed to be converted to NO_2.

In the presence of radiation from the sun, ambient NO_2 can be destroyed:

NO2 + sunlight ==> NO + O Photo-dissociation of NO2

As a conservative assumption, the OLM ignores this reaction.

Another reaction that can form NO_2 in the atmosphere is the reaction of NO with reactive hydrocarbons (HC):

NO + HC ==> NO2 + HC Oxidation of NO by reactive HC

The OLM also ignores this reaction. This may be a non-conservative assumption with respect to NO_2 formation in urban/industrial areas with relatively large amounts of reactive HC emissions.

Basic PVMRM Chemistry:
Building on the basic OLM chemistry, the PVMRM determines the conversion rate for NO_x to NO_2 based on a calculation of the NO_x moles emitted into the plume, and the amount of O_3 moles contained within the volume of the plume between the source and receptor. The dispersion algorithms in AERMOD and other steadystate plume models are based on the use of total dispersion coefficients, which are formulated to represent the time-averaged spread of the plume. A more appropriate definition of the volume of the plume for purposes of determining the ozone moles available for conversion of NOx is based on the instantaneous volume of the plume, which is represented by the use of relative dispersion coefficients, (Cole and Summerhays, 1979; Bange, 1991). The implementation of PVMRM in AERMOD is based on the use of relative dispersion coefficients to calculate the plume volume. Weil (1996 and 1998) has defined formulas for relative dispersion that are consistent with the AERMOD treatment of dispersion, and which can be calculated using meteorological parameters available within AERMOD.

The chemistry for both models has been peer-reviewed as noted by the documents posted on EPA's Support Center for Regulatory Air Modeling (SCRAM) web site entitled "Sensitivity Analysis of PVMRM and OLM in AERMOD" and "Evaluation of Bias in

AERMOD-PVMRM". Both documents indicate that the models appear to perform as expected.

3.2.2(e)(ii), "The model can be demonstrated to be applicable to the problem on a theoretical basis"

As noted in the document entitled "Sensitivity Analysis of PVMRM and OLM In AERMOD" prepared by Roger W. Brode of MACTEC Federal Programs, Inc., (Now with EPA's Office of Air Quality Planning and Standards or OAQPS), "This report presents results of a sensitivity analysis of the PVMRM and OLM options for NO_x to NO_2 conversion in the AERMOD dispersion model. Several single source scenarios were examined as well as a multiple-source scenario. The average conversion ratios of NO_2/NO_x for the PVMRM option tend to be lower than for the OLM option and for the Tier 2 option or the Ambient Ratio Method which has a default value of 0.75 for the annual average. The sensitivity of the PVMRM and OLM options to emission rate, source parameters and modeling options appear to be reasonable and are as expected based on the formulations of the two methods. For a given NO_x emission rate and ambient ozone concentration, the NO_2/NO_x conversion ratio for PVMRM is primarily controlled by the volume of the plume, whereas the conversion ratio for OLM is primarily controlled by the ground-level NO_x concentration. Overall the PVMRM option appears to provide a more realistic treatment of the conversion of NO_x to NO_2 as a function of distance downwind from the source than OLM or the other NO_2 screening options (Hanrahan, 1999a; Hanrahan, 1999b). No anomalous behavior of the PVMRM or OLM options was identified as a result of these sensitivity tests." Based on this report for both OLM/PVMRM it appears to be applicable to the problem of NO_2 formation and as noted by the author provides a better estimation of the NO_2 impacts compared to other screening options.

3.2.2(e)(iii), "The data bases which are necessary to perform the analysis are available and adequate"

The data needed to conduct an OLM/PVMRM run are 1) hourly meteorological data, 2) hourly ozone data, and 3) in-stack NO_2/NO_x ratio. Both meteorological and ozone data sets must be processed into AERMOD ready formats. RTP will process both the meteorological and ozone data following applicable EPA guidance. The in-stack ratio employed will be derived from stack tests or vendor provided information (or other comparable sources).

3.2.2(e)(iv), "Appropriate performance evaluations of the model have shown that the model is not biased toward underestimates"

As noted in the document entitled "Evaluation Of Bias In AERMOD-PVMRM" prepared by Roger W. Brode, "This report presents results of an analysis of evaluation results to determine whether the AERMOD-PVMRM algorithm produces biased or unbiased estimates of the NO_2/NO_x ratio. Evaluation results from two aircraft studies and two long-term field studies were examined, as well as comparisons between AERMOD-

PVMRM and other refined chemically reactive plume models. Comparisons between predicted and observed NO_2/NO_x ratios were based on results paired in time and space, providing a more rigorous assessment than is commonly used in evaluating the performance of air dispersion models. While there does not appear to be a clear and objective criterion established by EPA for determining whether a model is biased or unbiased, a general "rule of thumb" that is commonly used as a benchmark in judging the performance of air dispersion models is agreement with observations within a factor of two. In all cases, the average ratio between predicted and observed NO_2/NO_x ratios showed agreement within a factor of two, and in most cases within about a factor of 1.5. Based on all of the data available, the AERMOD-PVMRM algorithm is judged to provide unbiased estimates of the NO_2/NO_x ratio based on criteria that are comparable to, or more rigorous than, evaluations performed for other dispersion models that are judged to be refined, implying unbiased performance." As noted in the above report it has been determined that PVMRM has been judged to provide unbiased estimates based on criteria that are comparable to, or more rigorous than, evaluations performed for other dispersion models. At the present time no assessment of bias has been conducted for the OLM model. It has been shown in the sensitivity analysis, see discussion on item 3.2.2 (e)(ii) above, that OLM provides similar more conservative results than PVMRM. Therefore is it assumed that OLM would also provide an unbiased estimate of concentration.

3.2.2 (e)(v), "A protocol on methods and procedures to be followed has been established"

RTP will prepare and submit a modeling protocol on behalf of Magnida that will be followed in conducting the analysis.

Conclusion:

Based on the information provided above, RTP believes the method for determining hourly NO_2 concentrations using AERMOD in conjunction with the non-regulatory OLM or PVMRM options is acceptable based on the requirements in 40 CFR Part 51, Appendix W, Section 3.2.2(e). We request IDEQ concurrence with our determination.

Should you have any questions or require additional information in assessing our request, please do not hesitate to contact me at (919) 845-1422 x41.

Sincerely,

David Keen
RTP Environmental

cc: Darrin Mehr, IDEQ
Tom Hornyak, Magnida
Colin Campbell, RTP Environmental

ATTACHMENT D

DETAILED REVIEW OF

METEOROLOGICAL DATA PROCESSING

STATE OF IDAHO
DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
1410 NORTH HILTON, BOISE, ID 83706 · (208) 373-0502
TIFFANY FLOYD, ADMINISTRATOR
BRUCE LOUKS, MANAGER, MONITORING, MODELING, & EMISSION INVENTORY

To: Darrin Mehr, NSR Modeling Analyst, MMEI, Air Quality Division
Kevin Schilling, NSR Modeling Coordinator, MMEI, Air Quality Division

From: Cheryl Robinson, P.E., NSR Modeling Analyst, MMEI, Air Quality Division

Date: March 3, 2014

Subject: Met Data Processing Review: INL_ABERDEEN Met Station (ABRBOS/ABE), 2008-2012

SUMMARY:

The Idaho National Laboratory's (INL) Air Resources Laboratory – Field Research Division (FRD) operates a network of meteorological stations located on and near the INL. The North Carolina office of RTP Environmental Associates, Inc. (RTP) obtained and processed data collected at the INL Aberdeen met tower (99999, ABRBOS/ABE, GMT-7) for the years 2008 through 2012.[1] DEQ determined that surface met data collected near Aberdeen were representative for the project location near American Falls.

Aberdeen data were supplemented with National Weather Service (NWS) surface Hourly Data (ISHD, 24156, GMT-7) collected at the nearby Pocatello Regional Airport (KPIH) for the years 2008 through 2012. NWS data were not supplemented by ASOS winds, so NWS winds were randomized. Heat flux under stable conditions was estimated using the Bulk Richardson Number option in AERMET.

Upper air soundings collected at the Boise NWS Station (24131, BOI, GMT-7) were obtained in FSL format for the same period. No actions were taken to fill missing upper air soundings. The locations and elevations of surface and upper air stations were determined using Google Earth, Bing Maps, INL Site Environmental documentation, and AERMAP results.

Monthly surface roughness values at the primary surface station near Aberdeen were determined for each of 12 sectors within a 1-kilometer radius of the met station using land use data drawn from a 1992 NLCD file, not at an airport, in a region that is not arid, with average moisture conditions, and with no continuous snow cover during the winter months of December, January, and February. Monthly values for the albedo and Bowen ratio were based on 1992 NLCD data for a 10-kilometer domain centered on the Aberdeen surface met station. No adjustments were made to the surface friction, u*.

The met data used for final AERMOD analyses for this project were processed by RTP using AERSURFACE v. 13016 and AERMET v. 12345 using Oris Solutions' BEEST graphical user interface.

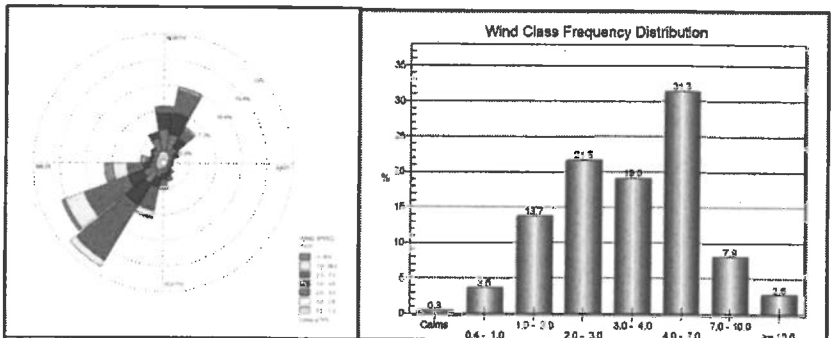

Figure S-1. WIND ROSE and WIND CLASS FREQUENCY PROFILE INL Aberdeen (WRPLOT View)

[1] Magnida, P-2013.0030 PROJ 61192, Revised Magnida Modeling Files and Modeling Report, Idaho DEQ TRIM Document No. 2014AAG94, received January 9, 2014.

Report Contents

1. ACRONYMS

AERMET	AERMOD Meteorological pre-Processor
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
AERSURFACE	Surface characteristics pre-processor for AERMET
ASOS	Automated Surface Observing System
DEQ	Idaho Department of Environmental Quality
EPA	Environmental Protection Agency
ESRL	Earth Systems Research Laboratory
FAA	Federal Aviation Administration
FSL	Forecast Systems Laboratory
ft	feet
GMT	Greenwich Mean Time
INL	Idaho National Laboratory
ISHD	Integrated Surface Hourly Data
km	kilometer
LST	local standard time
m	meter
NAD83	North American Datum, 1983
NED	National Elevation Dataset
NLCD	National Land Cover Database
NCDC	National Climatic Data Center
NOAA	National Oceanic and Atmospheric Administration
NWS	National Weather Service
MRLC	Multi-Resolution Land Characteristics Consortium (the current source for obtaining NED files)
PFL	Wind profile meteorology files, output from AERMET
SCRAM	Support Center for Regulatory Atmospheric Modeling
SFC	Surface meteorology files, output from AERMET
UTC	Coordinated Universal Time
WGS84	World Geodetic System, 1984

2. SELECTION OF REPRESENTATIVE SURFACE MET DATA: INL ABERDEEN

As described in the modeling report for the proposed Magnida project, surface meteorological data collected at the nearby INL Aberdeen station and Pocatello Regional Airport over a five-year period from 2008 through 2012 were evaluated for representativeness. **Proximity.** As shown in Figure 2-1, the Aberdeen site is located about 22 km north-northeast and the airport is located about 32 km northeast of the proposed project location. Important terrain features are shown in Figure 2-2.

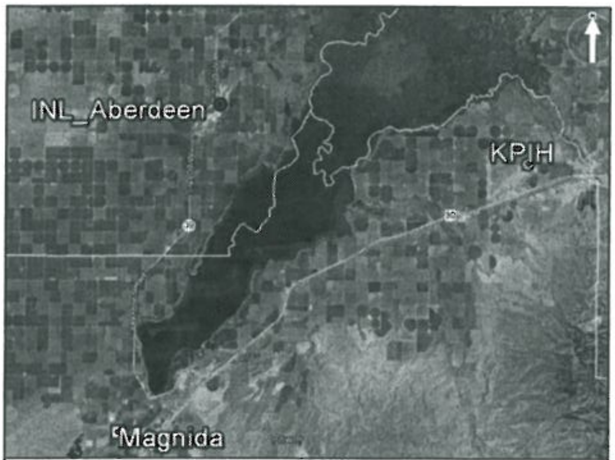

Figure 2-1. PROXIMITY TO MET STATIONS

Terrain. The Pocatello Regional Airport (KPIH) is located just below the mouth of the Portneuf Narrows, near the toe of the north-south trending Bannock Range. As shown in the inset wind rose for surface data collected at the airport, westerly winds flowing along the Snake River Plain appear to be attenuated by drainage flows from the Portneuf Narrows.

As shown in the inset wind rose in Figure 2-2, surface winds at the INL Aberdeen site reflect the influence of the prevailing winds along the plain, but may also be influenced by drainage winds from the valley bordered by the Deep Creek and Sublett ranges. The Aberdeen data better represent surface meteorological conditions at the Magnida location, which is located near the mouth of the Rock Creek drainage but would also be expected to experience prevailing winds in the Snake River Plain.

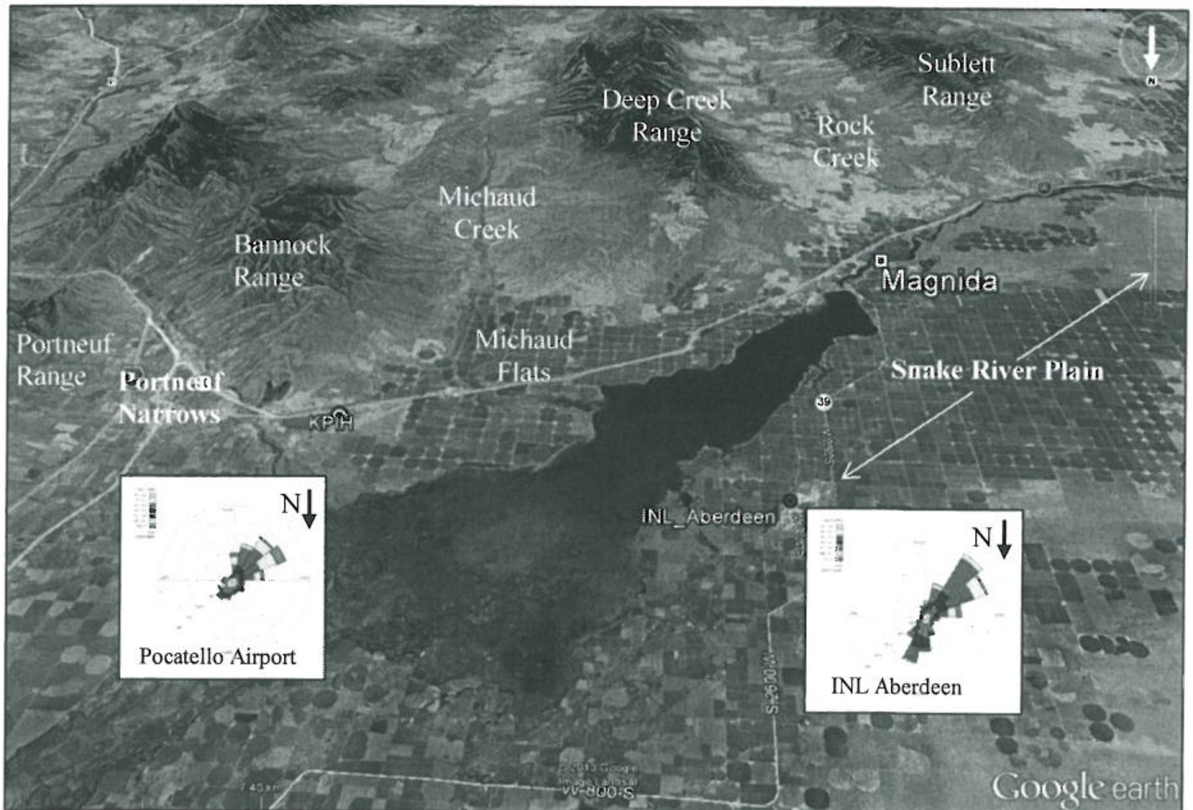

Figure 2-2. POTENTIAL TERRAIN INFLUENCES

model: the albedo, Bowen ratio, and surface roughness length z_0, changes in the surface roughness length typically have the greatest effect on modeled concentrations.[2] The surface roughness length depends on land use surrounding the surface met station location, and is calculated as the inverse-distance weighted geometric mean of gridded roughness values within 1 km of the wind measurement site.

Although not part of the regulatory AERMOD system, AERSURFACE is commonly used to streamline processing and produce reproducible values for surface characteristics. At this time, AERSURFACE accepts only 1992 National Land Cover Database (NLCD) data as input. A comparison of current land use and 1992 land use within a 1-km radius is shown in Figure 2-3 for the INL Aberdeen and Pocatello Airport meteorological stations and the proposed Magnida project location. As shown in the figure, current land use surrounding the Magnida location is predominantly rural, irrigated croplands, with the exception of the Lamb-Weston ConAgra plant located just to the north. In 1992, land use within 1 km of the INL Aberdeen station site was also dominated by irrigated cropland. In contrast, land use surrounding the Pocatello Airport met station in 1992 was dominated by mown areas of natural grasses, bare rock/sand/clay, and paved runways, taxiways, and ramp areas. Current land use is very similar to 1992 land use for all three locations.

Surface roughness lengths calculated using 1992 NLCD data for a 1-km radius around the INL Aberdeen site will be more representative of current conditions near the Magnida plant than roughness lengths based on 1992 land use near the Pocatello Airport met station.

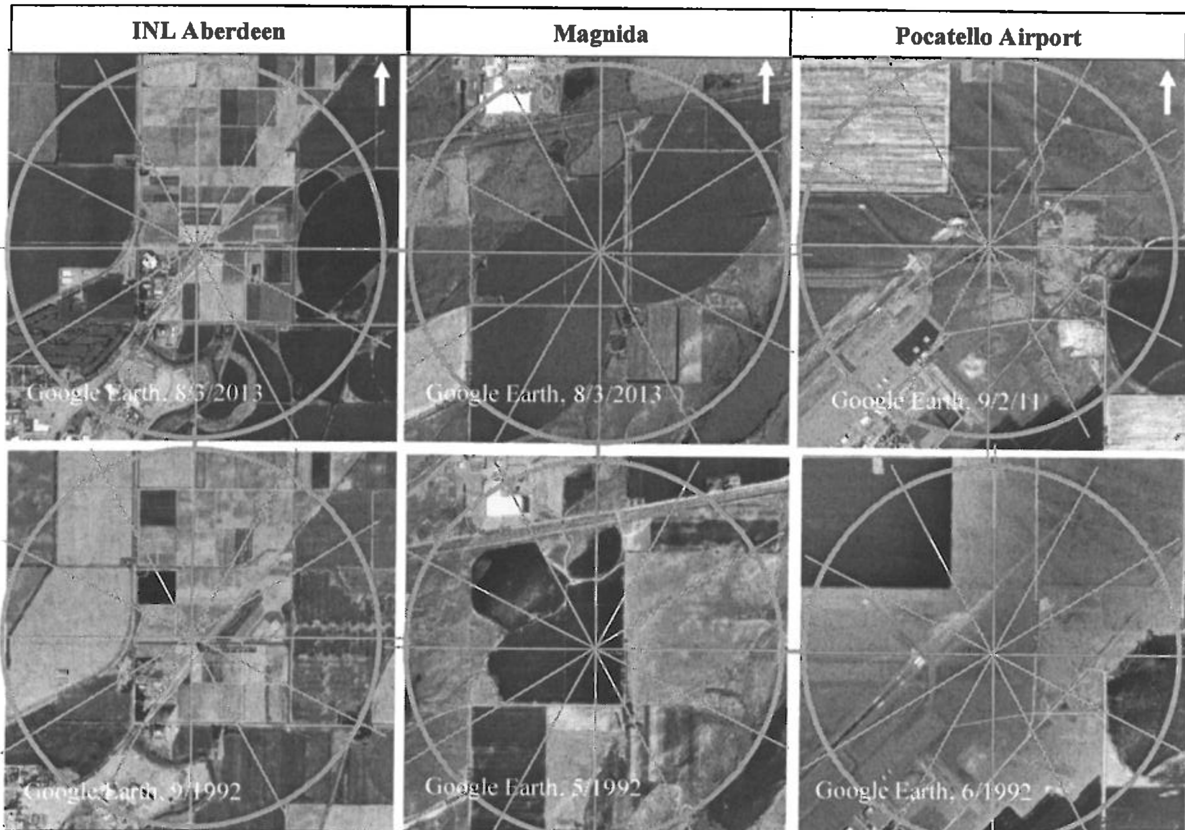

Figure 2-3. COMPARISON OF NEAR-FIELD LAND USE

[2] Carper, E. and E. Ottersburg. *Sensitivity Analysis Study Considering the Selection of Appropriate Land-Use Parameters in AERMOD Modeling Analysis.* Presented at the 2004 A&WMA Annual Conference, June 2004, accessed October 9, 2013 at www.trinityconsultants.com/WorkArea/DownloadAsset.aspx?id=1627

In the modeling report dated December 2013 for this project,[3] RTP ran AERSURFACE to confirm that surface roughness at the INL Aberdeen met station was similar to surface roughness characteristics at the Magnida project location when compared on a seasonal basis for each of twelve sectors, presuming average moisture conditions and no continuous snow during winter months. The results are shown in Figure 2-4 (Figure 9 from the December 2013 modeling report, with labels added for clarity).

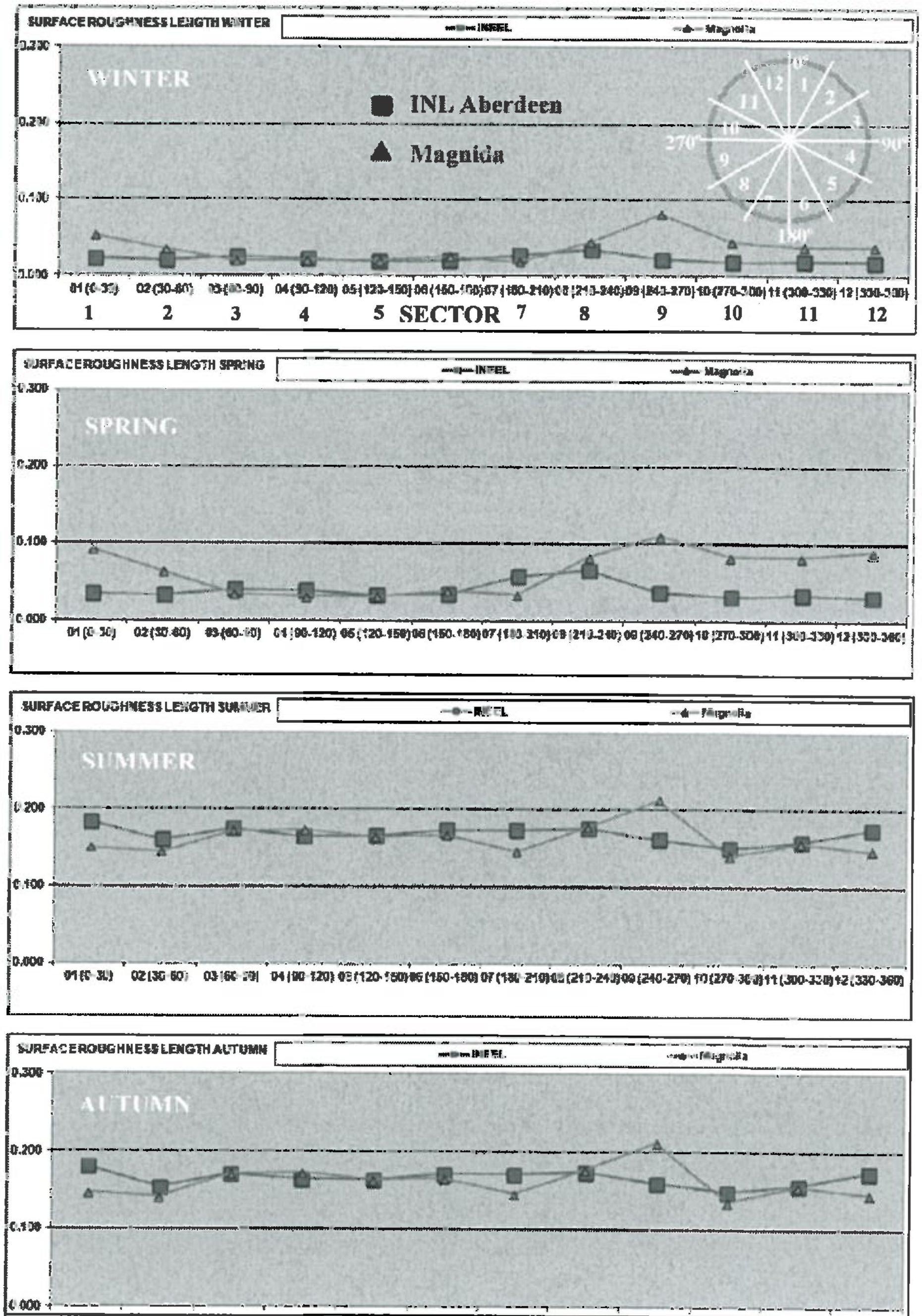

Figure 2-4. COMPARISON OF SURFACE ROUGHNESS, ABERDEEN & MAGNIDA

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[3] Magnida, P-2013.0030 PROJ 61192, Revised Magnida Modeling Files and Modeling Report, Idaho DEQ TRIM Document No. 2014AAG94, January 9, 2014.

Bowen Ratio and Albedo. The Bowen ratio is the ratio of sensible heat to latent heat flux from the ground to the atmosphere, which determines how much solar heating goes to evaporation of surface moisture. The Bowen ratio is based on a simple unweighted geometric mean for a 10 km square domain centered on the surface station site. The albedo is a measure of the reflectivity of a surface, and is calculated based on a simple unweighted arithmetic mean for a 10 km by 10 km domain centered on the surface station site.

As shown in Figure 2-5, land use in within a 10 km by 10 km domain centered on the INL Aberdeen met station has not changed substantially during the past two decades. Values of the Bowen ratio and albedo calculated using 1992 NLCD data should still be representative for processing meteorological data collected during the period from 2008 through 2012. Bowen ratio and albedo values based on 1992 land use surrounding the INL Aberdeen met station should also be reasonably representative of current surface characteristics for a similarly-sized domain centered on the Magnida project location.

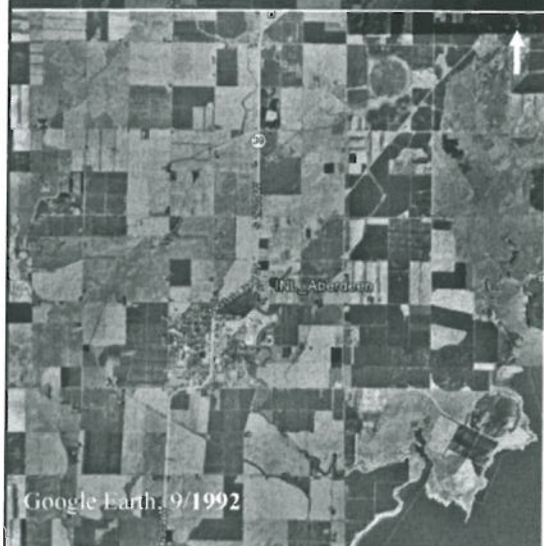
INL Aberdeen	Magnida
	
	Bowen ratio and Albedo based on 1992 land use at INL Aberdeen site are reasonably representative of characteristics at the Magnida project location.

Figure 2-5. COMPARISON OF LAND USEIN A 10-KM DOMAIN, INL ABERDEEN & MAGNIDA

3. SELECTION OF REPRESENTATIVE UPPER AIR SOUNDINGS: BOISE

DEQ typically uses three criteria to determine which upper air soundings should be paired with the surface station data being processed:

1) Influence of elevated terrain and mountain ranges,
2) Geographic proximity to the surface station site, and
3) Ground-level elevation similar to the elevation at the surface data collection site. A profile interpolation scheme is used in AERMET if the surface station elevation is lower than the elevation at the upper air station. Selecting an upper air station located at a similar elevation as the surface site helps reduce the use of this profile interpolation scheme. In addition, it should be noted that AERMET disregards soundings at levels higher than 5,000 meters above mean sea level.

As shown in Figure 3-1, the Snake River Valley or Snake River Plain falls east to west in a gentle arc across almost the entire width of southern Idaho. The surface elevation of the river drops from about 1331 m (4,367 ft) above the dam at American Falls to 954 m (3,130 ft) as it passes near Twin Falls and to 690 m (2,264 ft) as it flows across the border into Oregon. The valley rims define the northern and southern boundaries of three climate divisions: the southwestern valleys, the central plains, and the upper Snake River Plains. At the eastern end of the valley near American Falls and Pocatello, a series of parallel ridges trending north-south affect local surface meteorological conditions, but upper air flows for near-field dispersion modeling appear to be more heavily influenced by the east-west orientation of the major terrain feature extending across the southern part of the state. This strongly suggests that upper air sounding data collected at the Boise NWS office—rather than soundings collected at Elko, Nevada or Salt Lake City, Utah—should be paired with eastern Idaho surface data.

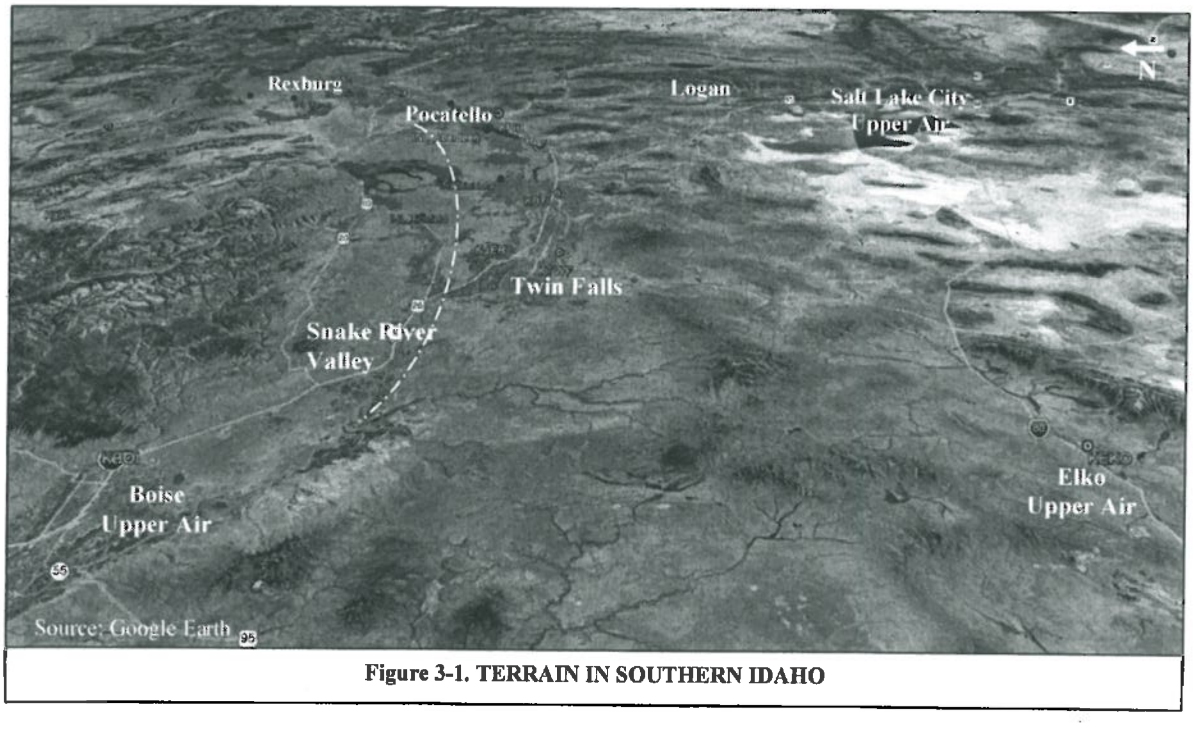


Figure 3-1. TERRAIN IN SOUTHERN IDAHO

There are six upper air sounding sites in or near Idaho, including Spokane, Boise, Great Falls, Salt Lake City, Elko, and Riverton. Information for these sites, all of which are located at NWS offices, is shown in Table 3-1.

Table 3-1. UPPER AIR SOUNDINGS STATIONS

Location	State	FAA/ ICS	WMO ID	WBAN ID	FSL Header		Local Time
					Elevation AMSL	Lat/Lon (degrees)	
Spokane, Washington 2601 N. Rambo Rd.	WA	OTX	72797	04106	728 m (2388 ft)	47.68 / -117.63	Pacific (GMT-8)
Boise, Idaho 3833 Development Ave #3807	ID	BOI	72681	24131	871 m (2858 ft)	43.57 / -116.22	Mountain (GMT-7)
Great Falls, Montana 5324 Tri-Hill Frontage Rd	MT	TFX	72776	04102	1130 m (3707 ft)	47.45 / -111.38	Mountain (GMT-7)
Salt Lake City, Utah 2242 West North Temple	UT	SLC	72572	24127	1288 m (4226 ft)	40.77 / -111.97	Mountain (GMT-7)
Elko, Nevada 3720 Paradise Drive	NV	LKN	72582	04105	1608 m (5276 ft)	40.87 / -115.73	Pacific (GMT-8)
Riverton, Wyoming 12744 West U.S. Hwy 26	WY	RIW	72672	24061	1688 m (5538 ft)	43.06 / -108.47	Mountain (GMT-7)

Thiessen polygons were used to determine the upper air station located closest to the surface data collection site. The polygons, defined by the perpendicular bisectors of the lines between the locations of the upper air data collection sites, are shown in Figure 3-2.

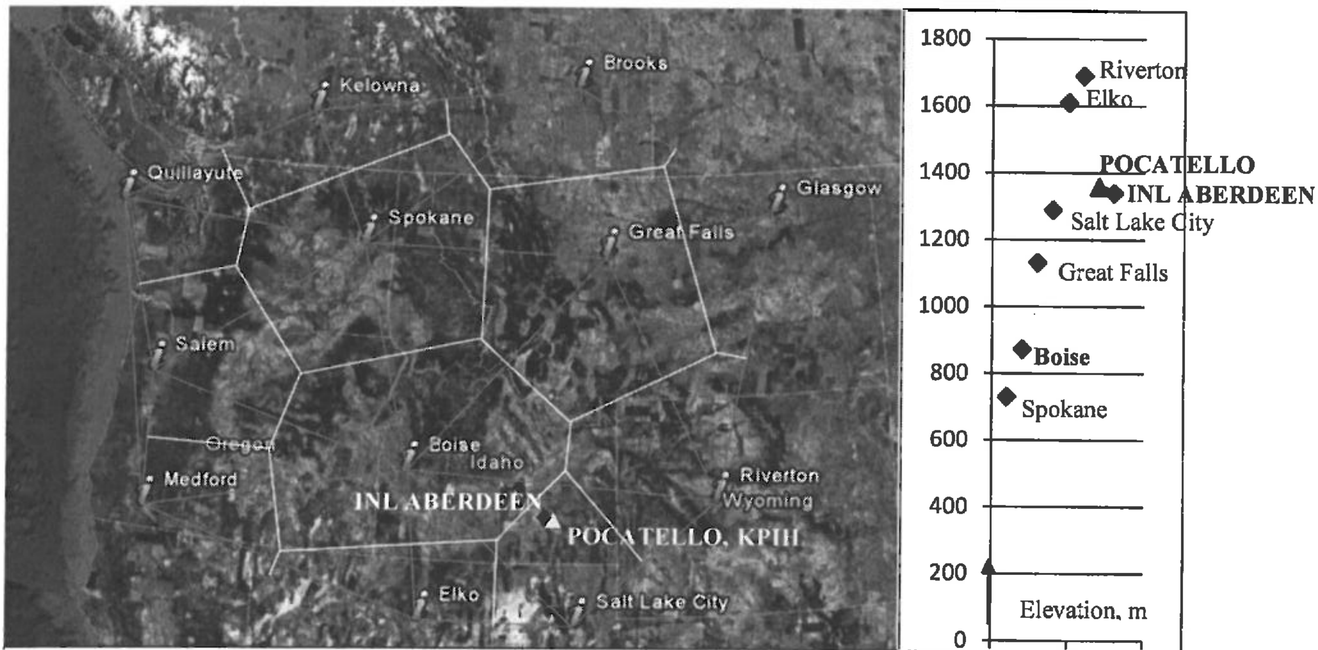


Figure 3-2. SURFACE STATION GEOGRAPHIC PROXIMITY (THIESSEN POLYGONS) AND ELEVATION COMPARISON WITH UPPER AIR SOUNDINGS STATIONS

As shown in Figure 3-2, the INL Aberdeen met tower and the Pocatello Regional Airport met station are located at elevations comparable to the upper air soundings site in Salt Lake City, and are geographically closer to Salt Lake City than to Boise. However, it appears that the influence of the Snake River Valley and the east-west trending elevated terrain separating the valley from the Great Basin in northern Nevada and northern Utah are the deciding factors for selecting upper air data for this project.

Accordingly, RTP paired surface data collected at the INL Aberdeen met station and Pocatello Regional Airport with upper air soundings collected at the Boise NWS station during the same period.

4. SURFACE DATA COMPLETENESS: GREATER THAN 90 PERCENT

EPA guidance[4] requires that the meteorological record be 90 percent complete (before substitution) in order to be acceptable for use in regulatory dispersion modeling. The 90 percent recovery requirement applies on a quarterly basis if only a single year of data is available, i.e., the one-year data set must consist of four consecutive quarters with 90 percent recovery. For multi-year data sets, each year of data must be 90 percent complete (before substitution). Although not strictly required for a multi-year data set, RTP ran an AERMET Stage 1 analysis for each quarter of the 5-year data set (2008-2012) to determine data completeness for all parameters reported for the INL Aberdeen met station. As shown in Table 4-1, this data set easily meets the minimum 90 percent recovery requirement for each year. In fact, the data set meets 90 percent recovery for all quarters but one and for only a single parameter (1st Quarter 2009, 15-m temperature, recovery = 84.9%) .

Table 4-1. INL ABERDEEN DATA RECOVERY

Year	Quarter	Parameter Recovery per Quarter (Percent)						
		Wind Speed WS	Wind Direction WD	Temp TT01 2 m	Temp TT02 15 m	Relative Humidity RH	Precip PAMT	Insolation INSO
2008	Qtr 1	98.4	97.9	94.1	96.8	94.1	98.6	100
	Qtr 2	100	99.5	100	100	100	100	100
	Qtr 3	100	99.2	100	100	100	100	100
	Qtr 4	98.2	97.4	100	99.9	100	100	100
2009	Qtr 1	98.0	97.4	100	84.9	100	100	100
	Qtr 2	100	99.6	100	100	100	100	100
	Qtr 3	100	99.0	100	100	100	100	100
	Qtr 4	100	98.9	100	100	100	100	100
2010	Qtr 1	99.8	99.1	99.95	99.95	99.95	99.95	100
	Qtr 2	99.7	99.5	99.95	91.9	99.95	100	100
	Qtr 3	100	99.3	100	93.8	100	100	100
	Qtr 4	99.6	98.6	94.6	96.3	96.3	100	100
2011	Qtr 1	99.8	99.1	92.8	92.8	92.8	100	100
	Qtr 2	100	99.5	100	100	100	100	100
	Qtr 3	100	99.2	99.55	99.6	99.55	100	100
	Qtr 4	100	99.1	100	100	100	100	100
2012	Qtr 1	99.7	99.2	100	100	100	100	100
	Qtr 2	100	99.2	100	100	100	100	100
	Qtr 3	100	99.2	100	100	100	100	100
	Qtr 4	99.8	99.1	99.95	99.95	99.95	99.95	100

[4] EPA, Meteorological Monitoring Guidance for Regulatory Modeling Applications, Section 5.3.2, Completeness Requirement, EPA-454/R-99-005, February 2000, http://www.epa.gov/scram001/guidance/met/mmgrma.pdf

5. CONFIRM METEOROLOGICAL STATION LOCATION AND ELEVATION

The actual location of surface met towers is very important in determining appropriate surface parameters used in the AERMOD model. This is especially true when determining the surface roughness length, which affects the reduction in wind speed and the level of turbulence and vertical mixing in the wind layers as the air flows over the ground surface. The surface roughness length is calculated based on land use within a one-kilometer radius of the surface met station location.

RTP and DEQ reviewed online sources of aerial photography, including Google Earth and Bing Maps (aerial and bird's eye views), INL Site Environmental information,[5] to determine or confirm the published coordinates and base elevations for the INL Aberdeen met tower, NWS surface meteorological station at the Pocatello Regional Airport, and the NWS upper air sounding location at the Boise NWS Station (datum WGS84/ NAD83).

Where there appeared to be a substantial difference in the published elevation and the elevation shown in various sources, the elevation was checked against the value contained in the National Elevation Database (NED) for the "confirmed" coordinates.

Coordinates of the upper air stations were based on the observed location of the rawinsonde balloon inflation shelter/ radiotheodolite dome at each site.

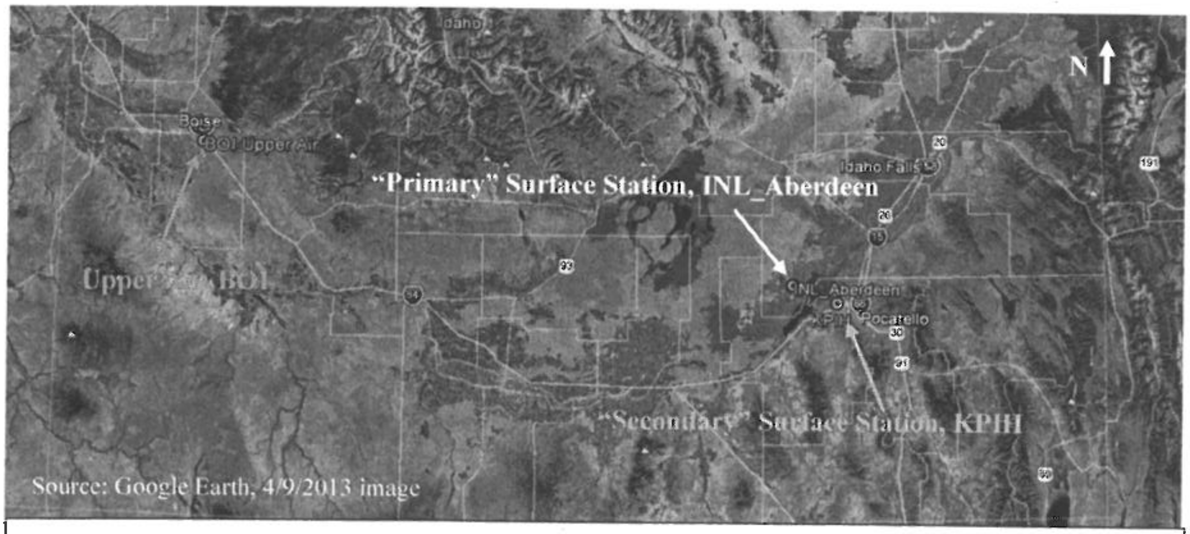


Figure 5-1. SURFACE AND UPPER AIR MET STATION LOCATIONS

[5] Meteorological Monitoring, A Supplement to the *INL Site Environmental Report for 2012*, http://www.gsseser.com/Annuals/2012/Supplements/Meteorological%20Monitoring%202012%20FINAL.pdf

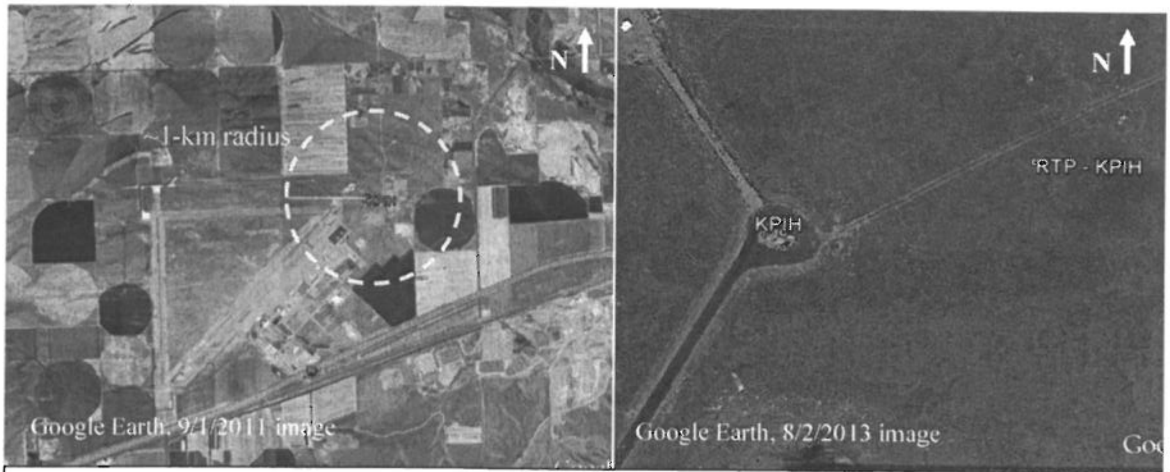


Figure 5-2a. SURFACE DATA LOCATION: POCATELLO REGIONAL AIRPORT, NWS

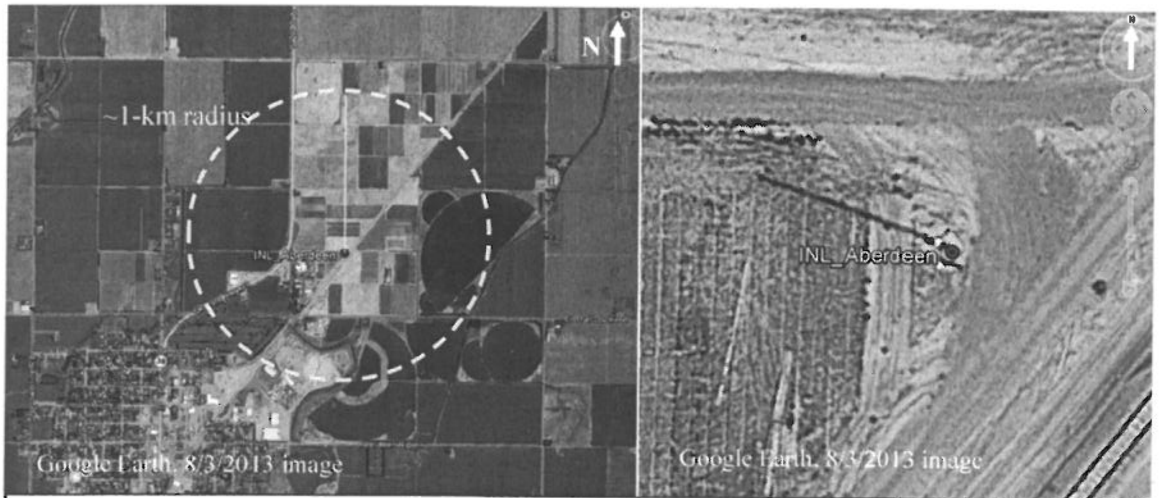


Figure 5-2b. SURFACE DATA LOCATION: INL ABERDEEN MET STATION

Figure 5-3. UPPER AIR SOUNDINGS LOCATION – BOISE NATIONAL WEATHER SERVICE STATION

6. METEOROLOGICAL STATION INFORMATION: SUMMARY TABLE

SURFACE DATA	**INL ABERDEEN MET TOWER** Located about 250 meters ENE of the main building at the University of Idaho Aberdeen Research and Extension Center 1693 S 2700 W, ABERDEEN, IDAHO 83210					**Time Zone** Mountain, GMT-7	
Data Collection	**Data Format**	**Time Format**	**Call**	**WBAN**	**USAF**	**Height 1 (T, RH)**	**Height 2 (T, Winds, Insolation)**
INL ARD-FRD Tower	---	LST	"ABRBOS"	99999	---	2.0 m	15.0 m
Coordinates/Elevation	**Latitude/ Northing (m)**	**Longitude/ Easting (m)**	**Elevation**				
			(m)	**(ft)**			
INL, 2012 Report	42.955	-112.825	1338.7	4,392	ABRBOS = used by RTP ABE = INL Mesowest		
Magnolia.IN1 file:	**42.955**	**-112.825**	**1342.034** NED:1354.1	**4,403** 4,443			

SURFACE DATA (NWS)	**POCATELLO REGIONAL AIRPORT** POCATELLO, IDAHO					**Time Zone** Mountain, GMT-7	
Data Collection	**Data Format**	**Time Format**	**Call**	**WBAN**	**USAF**	**Height 1 (T, RH)**	**Height 2 (Winds)**
NWS	ISHD	UTC/GMT	KPIH	24156	725780	2.0 m	10.0 m
Coordinates/Elevation	**Latitude/ Northing (m)**	**Longitude/ Easting (m)**	**Elevation**				
			(m)	**(ft)**			
ISHD Header	42.920	-112.571	1365	4,478			
DEQ, Google Earth	42.9197	-112.5723	**1358** **NED:1356.2**	**4,455** **4,449**			
Magnolia.IN1 file:	**42.920**	**-112.571**	**1365** **NED:1356.2**	4,478 4,449			

SURFACE DATA ASOS Winds	POCATELLO REGIONAL AIRPORT POCATELLO, IDAHO ASOS WINDS WERE NOT INCLUDED					**Time Zone** Mountain, GMT-7	
Data Collection	**Data Format**	**Time Format**	**Call**	**WBAN**	**ASOS Commission Date**	**IFW Sensor Install Date**	**Height 2 (Winds)**
NWS	Metric	LST	KPIH	24156	19960301	3/6/2007	10.05 m (33.0 ft)
Coordinates/Elevation	**Latitude/ Northing (m)**	**Longitude/ Easting (m)**	**Elevation**				
			(m)	**(ft)**			
ASOS Comm. Date File	42.92	-112..57					
FAA ASOS Map	42.91	-112.596					
Google Earth, WGS84	**42.9197**	**-112.5723**	**1358**	4,455			

UPPER AIR DATA:	**NWS, BOISE STATION** 3833 Development Ave #3807, BOISE, IDAHO					**Time Zone** Mountain, GMT-7	
Data Collection	**Data Format**	**Time Format**	**Call**	**WBAN**	**USAF**		
NWS	FSL	UTC/GMT	BOI	24131	72681		
Coordinates/Elevation	**Latitude/ Northing (m)**	**Longitude/ Easting (m)**	**Elevation**				
			(m)	**(ft)**			
FSL Header	43.57	-116.22	871	2,858			
DEQ, Google Earth	43.568	-116.211	871	2,858			
Magnolia.IN1 file:	**43.565**	**-116.220**	---				

7. NWS SURFACE DATA AND UPPER AIR DATA: NO ADJUSTMENT FOR GMT

Integrated Surface Hourly Data (ISHD) provided by the NCDC's Integrated Surface Database and upper air data obtained from the NOAA/Earth Systems Research Laboratory (ESRL) Radiosonde Database are reported in Coordinated Universal Time Code (UTC), which is the same as Greenwich Mean Time (GMT). Ordinarily, users append data for the first day of the following year to each raw data file to ensure that the last few hours on December 31st are not missing when these data are converted from GMT to local time.

Although RTP elected not to make this adjustment to the NWS surface data collected at the Pocatello Regional Airport or to upper air data collected at the Boise NWS station, this results in only seven additional missing hours on December 31 for each year of the AERMOD-ready surface (SFC) and profile (PFL) files produced by AERMET. DEQ is aware of no reason why missing a handful of hours at the end of each met data year would measurably change dispersion modeling results when using these data sets in AERMOD compared to the same data set that included available data collected during last seven hours of each year.

8. 1-MINUTE ASOS DATA AND AERMINUTE: NOT USED

On page 3-13 of the modeling report for this project, RTP noted that ASOS wind data collected at the Pocatello Regional Airport were not included because less than 1 percent calms were identified in the INL Aberdeen dataset. Based on this reasoning, DEQ concurs that including ASOS wind data would not be expected to measurably change dispersion modeling results when using this data set in AERMOD compared to the same data set that included available ASOS data.

9. CLIMATE/SURFACE MOISTURE CONDITIONS: DRY, AVERAGE, OR WET

Surface characteristics calculated in AERMET depend on whether conditions have been dry, average, or wet compared to normal conditions for the area. The Palmer Drought Severity Index (PDSI) is based on a relatively simple water balance model that considers precipitation and temperature as well as the influence of these on evapotranspiration, soil moisture, and runoff.[6] The Palmer Z-index (anomaly value) is a measure of the conditions during a particular month from the average moisture conditions for that month and location.

As a starting point for updating DEQ's "default" met data sets for PSD-minor source projects using NWS surface data collected at airports, DEQ downloaded the Palmer Z-index values and anomaly values (averaged over each year, January through December) from the NCDC website for the years 1895 through 2012. Data were obtained for all nine climate divisions in Idaho, Montana division 1 (Western), Nevada divisions 1 (North West) and 2 (North East), Oregon divisions 8 (Northeast) and 9 (Southeast), Utah divisions 3 (North Central) and 5 (Northern Mountains), and Washington divisions 9 (North Eastern) and 10 (Palouse/Blue Mountains). The upper and lower 30th percentiles were calculated based on the annual average Z-index values and anomaly values reported for the 30-year period from 1983 through 2012. Years with average anomaly values in the lower 30th percentile were considered "dry," years with anomaly values in the upper 30th percentile were considered "wet," and conditions for all other years were considered "average." As illustrated in Table 9-1 and the accompanying figure, annual moisture conditions for the *whole* of Climate Division 9 varied from year to year.

RTP presumed moisture conditions were Average for each of the years 2008 through 2012. Mean annual precipitation recorded at the Aberdeen met station (ABE) for the 30-year period from 1981-2010 was 9.14 inches.[7] Total precipitation (the sum of P05I, 5-minute) reported at this station for the years 2008 through 2012 was 0, 4.89, 5.22, 4.57, and 3.50 inches, respectively, which suggests that normal surface moisture due to rainfall was below normal for each year of the five-year met data period for the INL Aberdeen station. The relative surface moisture affects the Bowen ratio, which can typically be varied

[6] William M. Alley, The Palmer Drought Severity Index: Limitations and Assumptions, *Journal of Climate and Applied Meteorology* 23 (1984): 1100, http://www.engr.colostate.edu/~jsalas/classes/ce624/Handouts/Palmer%20Index-alley%201984.pdf

[7] http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?id0010

without any noticeable effect in dispersion modeling results using the processed met data. In addition, as shown in Figure 2-5, much of the land use within a 10 km by 10 km domain centered on the Aberdeen met tower is—and has been for a considerable period of time--under irrigation: normal or average surface moisture conditions will be maintained during the crop-growing season regardless of local precipitation events.

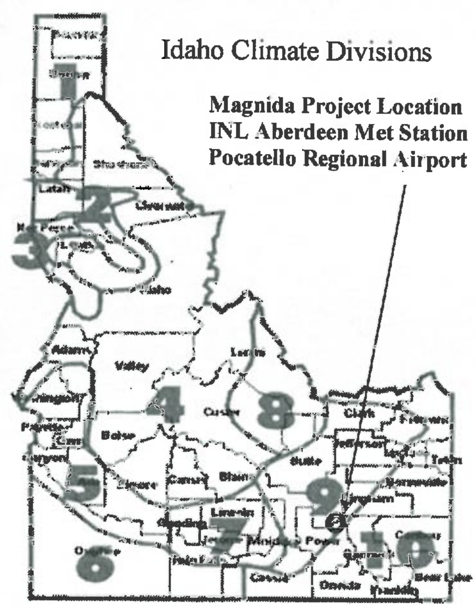
The Magnida project location, INL Aberdeen met station, and the nearby Pocatello Regional Airport are located in the southern end of Idaho Climate Division 9 (Upper Snake River Plains). Eastern Idaho's climate has a more continental character than the west and north, a fact quite evident not only in the somewhat greater range between winter and summer temperatures, but also in the reversal of the wet winter-dry summer pattern.... In the eastern part of the state, ...many reporting stations show maximum monthly amounts [of precipitation] in summer and minimum amounts in winter.[8]

This area has a cold semi-arid steppe climate.[9] The annual average Palmer Z Index anomaly for the representative state climate division can be used to determine relative moisture conditions for each year of a met data set based on the 30-year period from 1983 through 2012. Years with annual anomaly values in the lower 30th percentile were considered "Dry" and years with values in the upper 30th percentile were considered "Wet."

Table 9-1. Idaho, Climate Division 9

Date	Palmer Z-Index Jan-Dec		AERMET Moisture Conditions
	Value	Anomaly	
198312	2.65	2.54	WET
198412	2.22	2.11	WET
198512	0.1	-0.01	AVERAGE
198612	0.52	0.41	WET
198712	-1.42	-1.53	DRY
198812	-1.92	-2.03	DRY
198912	-0.43	-0.54	AVERAGE
199012	-1.67	-1.78	DRY
199112	0.06	-0.05	AVERAGE
199212	-2.13	-2.24	DRY
199312	2.24	2.13	WET
199412	-0.9	-1.01	AVERAGE
199512	2.48	2.37	WET
199612	0.41	0.3	AVERAGE
1997			AVERAGE
199812	0.88	0.77	WET
199912	0.36	0.25	AVERAGE
200012	-1.28	-1.39	DRY
200112	-1.64	-1.75	DRY
200212	-1.04	-1.15	AVERAGE
200312	-1.58	-1.69	DRY
200412	-0.06	-0.17	AVERAGE
2005			AVERAGE
200612	1.03	0.92	WET
200712	-1.43	-1.54	DRY
200812	-0.73	-0.84	AVERAGE
200912	0.78	0.67	WET
201012	0.24	0.13	AVERAGE
201112	1.02	0.91	WET
201212	-1.23	-1.34	DRY

30-YEARS	1983-2012 Anomaly
Top 30th percentile, above	0.399
Lower 30th percentile, below	-1.321



[8] Western Regional Climate Center, Desert Research Institute, Reno, Nevada, *Climate of Idaho*, accessed October 29, 2013 at http://www.wrcc.dri.edu/narratives/IDAHO.htm

[9] http://weatherspark.com/averages/31263/Pocatello-Idaho-United-States

10. SNOW COVER

Snow accumulation during winter months for each year was determined by DEQ by reviewing NCDC daily snow depth data collected at the Pocatello Airport (USW00024156, 42.9202, -112.5711). As shown in Table 10-1, during the period from 2008 through 2012 the area experienced snow cover intermittently during the winter months of December, January, and February. RTP processed the surface met data presuming there was no continuous snow cover during the winter months, which is consistent with the snow depth information obtained by DEQ for the Pocatello area during this five-year period.

Figure 10-1. SNOW DEPTH REPORTING STATION, POCATELLO

Table 10-1. DAILY SNOW DEPTHS (MM) AT POCATELLO REGIONAL AIRPORT WINTER MONTHS 2008-2012

Day: MO_YR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total Days	DAYS w/o Snow Cover
JAN2008	25	25	25	25	25	0	0	0	0	0	0	0	51	51	25	0	0	25	0	0	25	25	25	25	0	0	0	0	0	0	0	31	18
FEB2008	0	0	0	51	51	51	25	0	0	0	0	0	0	127	102	102	76	76	51	51	51	25	25	0	0	0	0	0	0			29	15
DEC2008	0	0	0	0	0	0	0	0	25	25	25	25	25	25	51	51	127	76	76	25	25	152	203	203	279	356	279	229	102	51	25	31	8
JAN2009	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	25	51	76	76	76	76	76	76	31	21
FEB2009	76	76	76	76	76	25	25	25	25	51	25	25	25	25	25	25	51	76	76	76	76	76	76	0	0	0	0	0				28	5
DEC2009	0	0	0	0	0	25	25	76	76	76	76	76	127	127	76	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	20
JAN2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	25	0	0	0	0	0	0	0	25	31	28
FEB2010	25	0	0	0	0	0	0	0	0	0	25	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				28	25
DEC2010	254	152	102	102	127	127	76	76	51	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	31	20
JAN2011	25	25	25	25	25	25	25	0	51	51	51	51	25	25	0	0	0	0	51	25	25	25	25	25	76	127	127	102	76	76	76	31	5
FEB2011	76	76	76	76	76	51	51	51	51	25	25	25	0	0	0	0	25	0	0	0	0	0	0	0	51	102	76	51				28	11
DEC2011	25	25	25	25	25	25	25	25	25	0	0	0	0	0	0	0	0	0	0	0	0	76	76	76	51	51	25	0	0	0	0	31	16
JAN2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	31
FEB2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0			29	28
DEC2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	25	102	102	102	102	102	31	24

11. DATA SOURCES (DEQ ACCEPTANCE REVIEW)

NOAA Met Station Lookup, http://www.nws.noaa.gov/tg/siteloc.php
Note: Do not use the lat/long or elevation data from this site.

NWS/ISHD Surface Data: National Climatic Data Center (NCDC), NOAA Satellite and Information Service
http://www.ncdc.noaa.gov/oa/climate/isd/index.php

FSL Upper Air Soundings: NOAA/Earth Systems Research Laboratory (ESRL) Radiosonde Database
http://esrl.noaa.gov/raobs/

Land Use Data: Multi-Resolution Land Characteristics Consortium (MRLC)
http://www.mrlc.gov/

National Land Cover 1992 Database, zipped *.gz file for the entire state of Idaho
http://landcover.usgs.gov/show_data.php?code=ID&state=Idaho

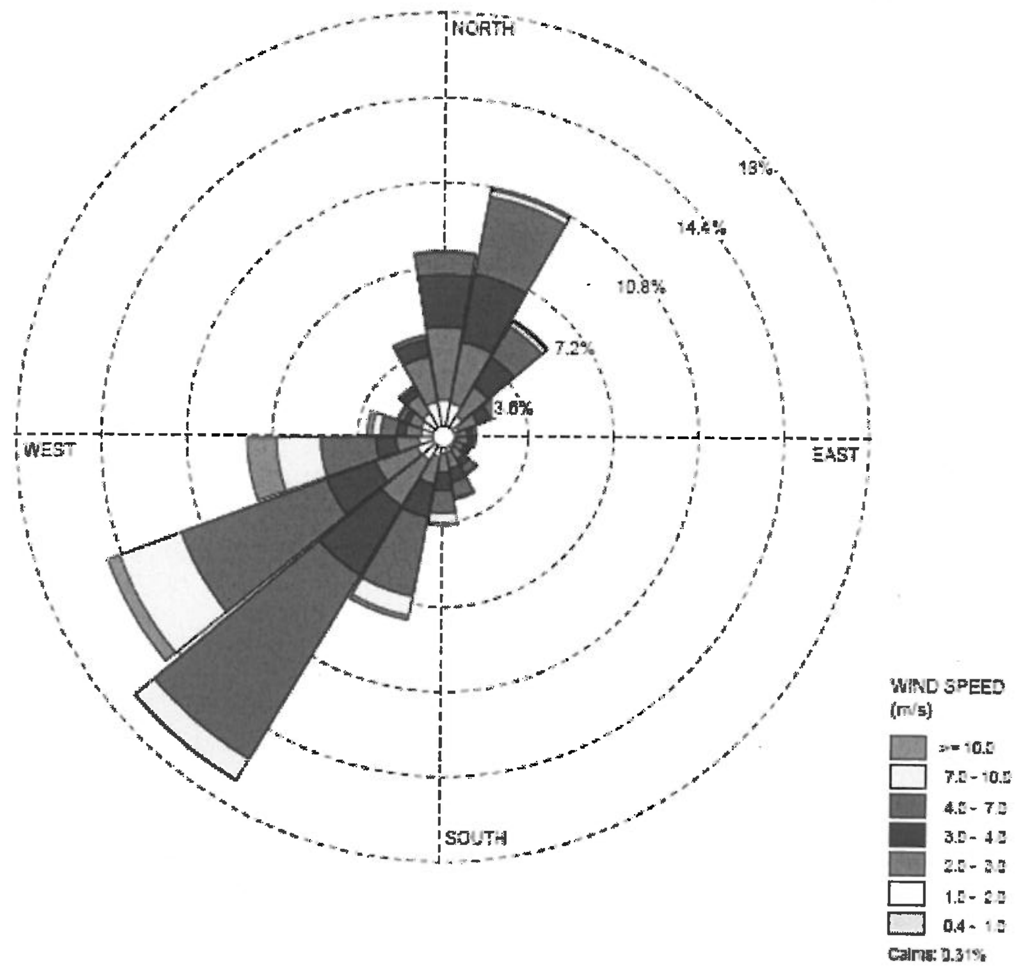
Source Cite: Vogelmann, J.E., S.M. Howard, L. Yang, C. R. Larson, B. K. Wylie, and J. N. Van Driel, 2001, Completion of the 1990's National Land Cover Data Set for the conterminous United States, Photogrammetric Engineering and Remote Sensing 67:650-662.

U.S. Palmer Drought Indices: NCDC
http://www.ncdc.noaa.gov

Snow Depth Historical Data
NOAA NCDC, Climate Data Online: Search Tool, http://www.ncdc.noaa.gov/cdo-web/search

12. WIND ROSE

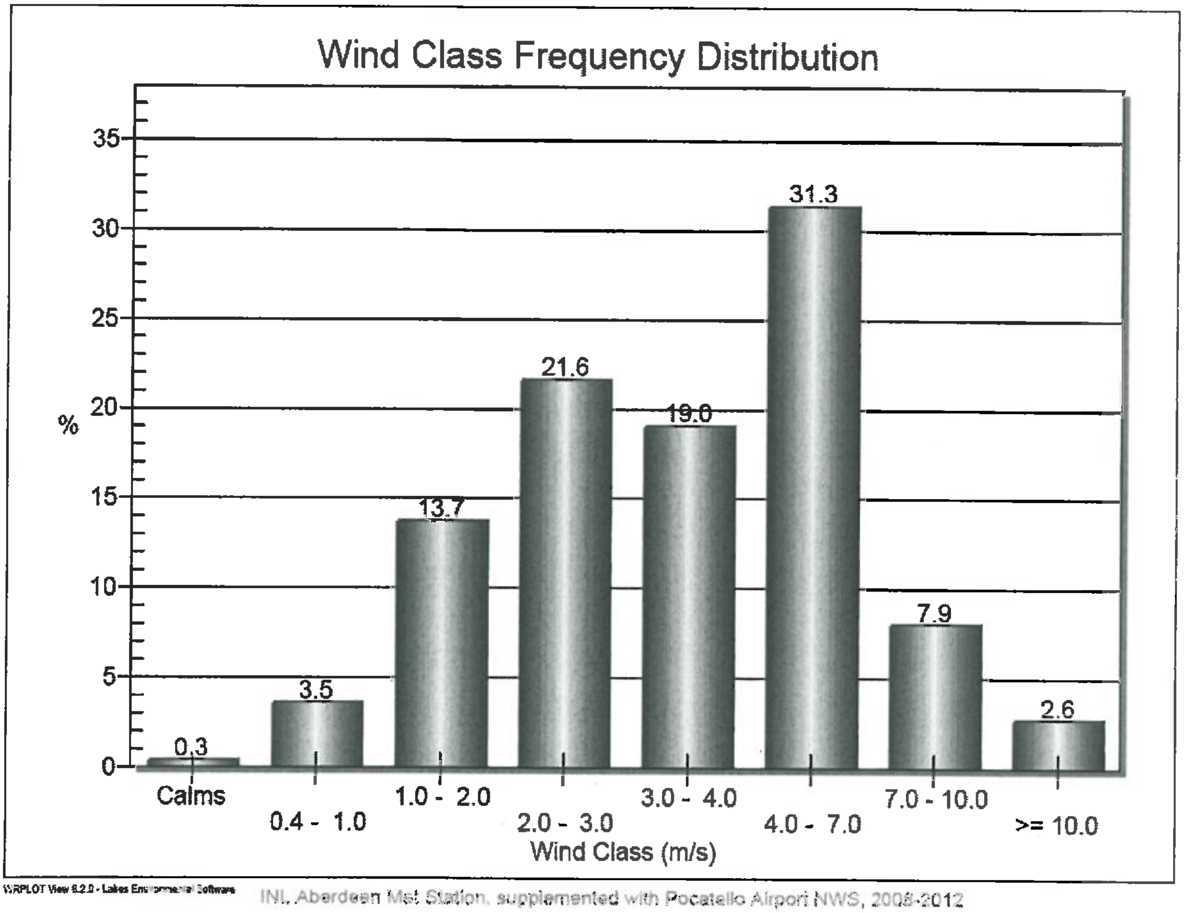
WIND ROSE PLOT:	DISPLAY:
INL_ABERDEEN, supplemented by KPIH NWS 2008-2012 **MAGNIDA PSD PROJECT, AMERICAN FALLS, P-2013.0030 PROJ 61192**	**Wind Speed** **Direction (blowing from)**



COMMENTS:	DATA PERIOD:	COMPANY NAME:	
INL Aberdeen Station 99999 42.955 -112.825 Elev. 1342.034 m WS WD TT01 TT02 RH INSO Pocatello Airport KPIH NWS only, omitted ASOS 24156 42.920 -112.571 Elev 1365 m WIND DIRECTIONS = 15 DEQ ACCEPTANCE REVIEW: Cheryl Robinson, P.E.	**Start Date: 1/1/2008 - 00:00** **End Date: 12/31/2012 - 23:00**	**RTP ENVIRONMENTAL, NORTH CAROLINA**	
		MODELER: **David Keen**	
	CALM WINDS: **0.31%**	TOTAL COUNT: **43830 hrs.**	
	AVG. WIND SPEED: **4.03 m/s**	DATE: **2/25/2014**	PROJECT NO.: **DEQ PROJ 61192**

WRPLOT View - Lakes Environmental Software

13. WIND CLASS FREQUENCY PROFILE



APPENDIX B – PROCESSING FEE

PTC Fee Calculation

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

Company:	**Magnolia Nitrogen Idaho (Magnida)**
Address:	**12727 Kimberly Lane, Suite 204**
City:	**Houston**
State:	**Texaa**
Zip Code:	**77024**
Facility Contact:	**Joe McCarthy**
Title:	**Excutive Vice President**
AIRS No.:	**077-00035**

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

Y Did this permit require engineering analysis? Y/N

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

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO_X	170.4	0	170.4
SO_2	3.8	0	3.8
CO	140.3	0	140.3
PM10	144.1	0	144.1
VOC	38.2	0	38.2
TAPS/HAPS	34.1	0	34.1
Total:	0.0	0	**530.9**
Fee Due	**$ 10,000.00**		

Comments: