Air Quality Permitting
Statement of Basis

March 24, 2005

Permit to Construct No. P-040045

Idaho Sand and Gravel, Nampa

Facility ID No. 777-00351

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FINAL PERMIT

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Acronyms, Units, And Chemical Nomenclatures

AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
gr/dscf	grain (1 lb = 7,000 grains) per dry standard cubic foot
HAPs	Hazardous Air Pollutants
HMA	hot mix asphalt
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
ISG	Idaho Sand and Gravel
lb/hr	pound per hour
MACT	Maximum Achievable Control Technology
MMBtu/hr	million British thermal units per hour
NAAQs	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
O&M	Operation and maintenance
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
ppm	parts per million
PSD	Prevention of Significant Deterioration
PTC	permit to construct
RAP	Recycled asphalt pavement
RCRA	Resource Conservation and Recovery Act
Rules	Rules for the Control of Air Pollution in Idaho
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	sulfur dioxide
TAP	toxic air pollutant
T/hr	tons per hour
T/yr	tons per year
$\mu g/m^3$	micrograms per cubic meter
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. PURPOSE

The purpose for this statement of basis is to satisfy the requirements of IDAPA 58.01.01.200, *Rules for the Control of Air Pollution in Idaho,* for issuing permits to construct.

2. FACILITY DESCRIPTION

Idaho Sand and Gravel (ISG) proposes to construct a portable hot mix asphalt (HMA) plant which initially will be located at 16265 Ten Lane in Nampa.

Stockpiled aggregate is transferred to eight cold feed bins. Aggregate is dispensed from the bins onto slow moving feeder conveyors, which transfer the aggregate to the inner barrel of the dryer, where heat is introduced. Only virgin aggregates are heated in the dryer. Recycled asphalt pavement (RAP) is transferred from stockpiles to a live bottom bin. The bin feeds onto a conveyor to a hammer mill which breaks up the lumps. From the mill, a conveyor feeds the RAP into the outer shell, (barrel), of the dryer where the pre-heated aggregate and the RAP are mixed with the liquid asphalt cement. The resulting hot mix asphalt (HMA) is then conveyed to heated storage silos until it can be loaded into trucks for transport off site.

This PTC is for a new ASTEC HMA plant, rated at 400 T/hr. Particulate matter emissions from the HMA plant are controlled by a baghouse.

When the facility is located in an area without power, a 1250-kilowatt (kW) ASTM Grade 2 fuel oil electrical generator is used to produce power.

3. FACILITY / AREA CLASSIFICATION

Idaho Sand and Gravel is classified as a synthetic minor facility because enforceable operational limits limit the facility's potential to emit to less than Tier I operating permit major source thresholds. The AIRS facility classification is "SM80" because the facility's potential to emit is within 80% of the Tier I operating permit major source threshold level for a criteria air pollutant. The SIC defining this facility is 2951. Currently, the facility is located in Nampa in Canyon county. Canyon county is designated unclassifiable or attainment for all criteria air pollutants. The facility will be permitted as a portable facility.

The AIRS information provided in Section 8 of this statement of basis lists the classification for each regulated air pollutant at this facility. This required information is entered into the EPA AIRS database.

4. APPLICATION SCOPE

Idaho Sand and Gravel submitted a PTC application for the construction of a new HMA plant and a generator with the following parameters:

- The maximum hourly production rate of the HMA plant is 400 T/hr.
- The HMA plant will be configured with recycled asphalt pavement (RAP) equipment.
- The annual production rate of the HMA plant is limited to 720,000 tons per any consecutive 12-month period (T/yr).
- Natural gas, liquefied petroleum gas (propane), ASTM Grade 2 fuel oil, and used oil are the fuel types allowed to be burned in drum dryer.

- When the facility is located in an area without power a 1250-kW ASTM Grade 2 fuel oil electrical generator is used to produce power. The generator hours of operations is limited to 3,650 hours per year to limit the facility's potential to emit to less than Tier I operating permit major source thresholds.

4.1 Application Chronology

December 17, 2004	DEQ received an application from ISG for a permit to construct. The permit number assigned for this project was PTC No. P-040045. The PTC application fees were included in the PTC application.
December 30, 2004	ISG submitted additional information to DEQ.
January 14, 2005	DEQ determined the P-040045 application complete.
January 18, 2005	ISG requested to review a draft PTC No. P-040045 prior to the final issuance.
January 27, 2005	An opportunity for public comment started on January 27, 2005, and ended on February 25, 2005. During this period no comments were received.
February 22, 2005	DEQ sent Boise Regional Office a copy of draft PTC No. P-040045 for review.
March 8, 2005	DEQ sent ISG a copy of draft PTC No. P-040045 for review.

5. PERMIT ANALYSIS

This section of the statement of basis describes the regulatory requirements for this PTC action.

5.1 Equipment Listing

Hot-mix Asphalt Plant

Manufacturer: ASTEC portable 8' x 35'
Type of HMA plant: Portable double barrel dryer/mixer
Model No.: PDDC-835-C
Maximum hot-mix asphalt production rate: 400 T/hr
Burner: Hauck SJ-580 ASTM Grade 2 fuel oil
Drum dryer maximum rated heat input capacity: 120 MMBtu/hr
HMA burner fuel type: Natural gas, propane, ASTM Grade 2 fuel oil, and used oil

Electrical Generator

Manufacturer: Caterpillar
Model No.: 3516 TA
Maximum rated heat input capacity: 10.98 MMBtu/hr
Maximum amount of fuel burned: 85.1 gallons/hr
Fuel type: ASTM Grade 2 fuel oil

HMA Baghouse

Manufacturer: ASTEC
Model: PBH-64:DB
Efficiency: 99.95%

5.2 Emissions Inventory

Emissions estimates were provided by Dan Salgado of CENTRA Consulting, Inc. and are included in the PTC application materials submitted to DEQ on December 17, 2004. Appendix A of this statement of basis contains the emissions estimates for particulate matter (PM), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}), carbon monoxide (CO), oxides of nitrogen (NO_x), sulfur dioxide (SO_2), and volatile organic compounds (VOC) that were provided by the facility and are shown in Table 5.2.1. Toxic air pollutants (TAPs) and hazardous air pollutants (HAPs) emissions estimates that were provided by the facility are shown in Appendix A of this document. Emissions estimates of PM, PM_{10}, CO, NO_x, SO_2, VOC, TAPs, and HAPs from the HMA plant dryer at the facility were obtained from emission factors described in U.S. EPA's Compilation of Air Pollutant Emission Factors, AP-42, Section 11.1, Hot Mix Asphalt Plant, 12/00. The hourly emission rates were estimated using the maximum HMA production rate of 400 T/hr. The annual emissions rates were determined based on HMA production limit of 720,000 T/yr.

Emissions of criteria air pollutants from the generator were estimated using emissions factors from AP-42 table 3.4-1, Large Stationary Diesel and All Stationary Dual-Fuel Engines. Emissions were estimated using the assumption that the generator will be operated for no more than 3,650 hours per year.

Emissions from the HMA plant and the generator are shown in Table 5.2.1. Table 5.2.1 shows no criteria air pollutant is emitted in an amount that exceeds the major source threshold of 100 T/yr.

Table 5.2.1 POTENTIAL EMISSIONS[a] FROM THE HMA PLANT DRYER

Source Description	PM[b]		PM_{10}[c]		CO[d]		NO_X[e]		SO_2[f]		VOC[g]		Pb[h]	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
HMA drum mix dryer stack	13.20	11.8	9.20	8.3	52.0	46.8	22.0	19.8	23.2	20.9	12.8	11.52	0.006	0.0054
1250 kW power generator	1.1	2.0	1.1	2.0	9.3	17.0	35.1	64.0	5.5	10.1	1.0	1.8	0.00	0.00

[a] Emissions were determined by using emissions factors from AP-42, Section 11.1, Hot Mix Asphalt Plants and process limits (e.g. throughput and hours of operation)
[b] Particulate matter
[c] Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
[d] Carbon monoxide
[e] Nitrogen oxides
[f] Sulfur dioxide
[g] Volatile organic compound
[h] Lead

The TAPs and HAPs emissions in the permit application were also based on processing of HMA of 720,000 T/yr and on the generator hours of operations of 3,650 hours per any consecutive 12-month period. Potential emissions of any single HAP were estimated to be less than 10 T/yr. Potential emissions for two HAPs or more were estimated to be well below the major source threshold of 25 T/yr for a combination of two HAPs or more – refer to Appendix A.

It should be noted that ISG will use cold aggregate and RAP in the HMA process. Although the percentage of RAP use will vary, ISG plans an equal swap of RAP for cold aggregate. As a result, no PM emissions increase will occur as explained below.

RAP emissions are discussed in two sections in AP-42, Section 11.1 for Hot Mix Asphalt Plants. Section 11.1.1.3, Counterflow Drum Mix Plants, states, *"...A counterflow drum mix plant can normally process RAP at ratios up to 50 percent with little or no observed effect upon emissions."* Section 11.1.2.2, Parallel Flow Drum Mix Plants, states, *"...Although it has been suggested that the processing of RAP materials at these type plants may increase organic compound emissions because of an increase in mixing zone temperature during processing, the data supporting this hypothesis is very weak.*

Specifically, although the data show a relationship only between RAP content and condensible organic particulate emissions, 89 percent of the variations in the data were the result of other unknown process variables." Additionally, none of the emission factor tables in Section 11.1, AP-42 differentiates between aggregate types and RAP. The emission estimates for this permitting action are based on AP-42 emission factors. The calculations do not show an increase in emissions from the using of RAP in the process line.

Also, the use of used oil in the dryer will not result in increase of PM or PM_{10} emissions, as indicated in AP-42, Table 11.1-3 footnote (g), pertaining to the particulate matter emissions, as follows; "drum mix dryer fired with natural gas, propane, fuel oil, used oil, and coal. The data indicate that fuel type does not significantly effect PM emissions." Therefore, the PM and PM_{10} emissions estimates for the facility are not expected to increase as a result of using the used oil.

From AP-42, for all other pollutants, the emission factors for each type of fuel were compared, and the highest value for each pollutant was used to calculate the estimated emissions.

These emissions calculations provided the basis for the emissions limits for CO from the HMA plant dryer stack. They also provided the basis for CO, SO_2, and NO_x, compliance with the National Ambient Air Quality Standards (NAAQS) and the TAPs increment analyses – see Appendix B of this document for modeling analysis.

Detailed emissions estimates are included in Appendix A of this statement of basis. It should be noted that the point source information contained in this table was used to determine the processing fee assessed in accordance with IDAPA 58.01.01.225.

5.3 Modeling

Refer to the modeling review memorandum contained in Appendix B of this statement of basis for a discussion of the air dispersion analysis conducted for this project. Based on the modeling review memorandum, DEQ has determined that emissions of PM_{10}, CO, SO_2, and NO_2 from the facility have been successfully demonstrated to not cause or significantly contribute to violations of NAAQs.

The full impact modeling analysis results for the attainment areas for the PM_{10}, CO, SO_2, NO_2, and lead are summarized in Table 5.3.1.

Table 5.3.1 PM_{10}, CO, SO_2, NO_2, AND LEAD FULL IMPACT ANALYSIS RESULTS FOR ATTAINMENT AREAS

Pollutant	Averaging Period	Facility Ambient Impact ($\mu g/m^3$)[a]	Background Concentration ($\mu g/m^3$)[a]	Total Ambient concentration ($\mu g/m^3$)[a]	NAAQS[b] ($\mu g/m^3$)[a]	Percent of NAAQS[b]
PM_{10}	24-hour	18.8	103	121.8	150	81.2%
	Annual	1.2	34.1	35.3	50	70.6%
CO	1-hour	337.1	15,600	15,937.1	40,000	39.8%
	8-hour	236.0	5,200	5,436.0	10,000	54.4%
SO_2	3-hour	60.1	120	180.1	1,300	13.9%
	24-hour	72.8	40	112.8	365	30.9%
	Annual	5.1	10	15.1	80	18.9%
NO_2	Annual	27.6	40	67.6	100	67.6%
Lead	Quarterly	0.0019	0.04	0.042	1.5	2.8%

[a] Micrograms per cubic meter
[b] National Ambient Air Quality Standards

The TAPs emissions that exceeded the screening emission limits of IDAPA 58.01.01.585-586 are modeled and are included in Appendix B of this statement of basis. A summary of the modeled TAPs are included in Table 5.3.2 below. All TAPs emissions from this facility show compliance with the TAPs increments in accordance with IDAPA 58.01.01.585-586.

Table 5.3.2 TOXIC AIR POLLUTANT AMBIENT IMPACT RESULTS

Noncarcinogenic TAPs	24-hour Concentration ($\mu g/m^3$)	AAC ($\mu g/m^3$)	Percent of Standard
Hydrochloric Acid	7.99E-02	375	0.0%
Propionaldehyde	4.95E-02	21.5	0.2%
Quinone	6.09E-02	20	0.3%
Mercury	9.89E-04	0.5	0.2%
Phosphorus	1.07E-02	5	0.2%
Carcinogenic TAPs	**Annual Concentration ($\mu g/m^3$)**	**AACC ($\mu g/m^3$)**	**Percent of Standard**
Acetaldehyde	3.21E-02	4.50E-01	7.1%
Benzene	1.97E-02	1.20E-01	16.4%
Formaldehyde	7.68E-02	7.70E-02	99.7%
Benzo(a)pyrene	3.60E-06	3.00E-04	1.2%
PAH (mixture compared to Benzo(a)pyrene)	7.22E-05	3.00E-04	24.1%
Total Dioxins and Furans	2.93E-09	2.20E-08	13.3%
Arsenic	1.37E-05	2.30E-04	5.9%
Cadmium	1.00E-05	5.60E-04	1.8%
Hexavalent Chromium	1.10E-05	8.30E-05	13.2%
Nickel	1.54E-03	4.20E-03	36.6%

5.4 *Regulatory Review*

This PTC is subject to the following permitting requirements:

IDAPA 58.01.01.201..... Permit to Construct Required

The ISG proposes to construct a stationary source that does not qualify for a PTC exemption in any of Sections 220 through 223 of the Rules. Therefore, a PTC is required.

IDAPA 58.01.01.203..... Permit Requirements for New and Modified Stationary Sources

All PTC applications are required to demonstrate compliance with the terms of IDAPA 58.01.01.203. This section of the Rules requires that ISG demonstrate that emissions from the new HMA drum mix dryer and the generator will comply with all applicable emissions standards, and will not cause or significantly contribute to a violation of any ambient air quality standard.

IDAPA 58.01.01.205..... Permit Requirements for New Major Facilities or Major Modifications in Attainment or Unclassifiable Areas

This facility does not emit or have the potential to emit any regulated PSD pollutant at major source threshold levels. Therefore, PSD permitting requirements do not apply.

IDAPA 58.01.01.209.01.c.....Opportunity for Public Comment

This PTC is subject to the provisions of IDAPA 58.01.01.209.01.c. An opportunity for public comment on the PTC application was provided, in accordance with IDAPA 58.01.01.209.01.c., during which time, no comments on the proposed action were received.

IDAPA 58.01.01.210..... Demonstration of Preconstruction Compliance with Toxic Standards

The TAPs emissions resulting from burning of natural gas, propane gas, ASTM Grade 2 fuel oil, and used oil in the HMA drum dryer and the generator were estimated. Appendix A of this document contains all TAPs emissions from the HMA drum dryer and the generator. All TAPs emissions from the HMA dryer and the generator were demonstrated to meet the requirements specified in IDAPA 58.01.01.210. Refer to the modeling review memorandum in Appendix B of this document.

IDAPA 58.01.01.212..... Obligation to Comply

Receipt of this PTC does not relieve ISG from the responsibility to comply with all federal, state, and local rules and regulations.

IDAPA 58.01.01.225..... Permit to Construct Processing Fees

The combined emissions increase from this project is subject to the fee provisions of IDAPA 58.01.01.225, and ISG was assessed a PTC processing fee of $7,500.00 for an increase in emissions of 202.2 T/yr. The processing fee was not paid yet.

IDAPA 58.01.01.577..... Ambient Air Quality Standards for Specific Air Pollutants

Ambient air quality modeling predicts this facility will not cause or contribute to a violation of any applicable ambient air quality standard. The modeling analysis is presented in Appendix B.

IDAPA 58.01.01.625..... Visible Emissions Limitation

Emissions from all stationary point sources in the state of Idaho are required to comply with the opacity standards of IDAPA 58.01.01.625-626, unless exempted under Section 625.01. The HMA drum mix dryer stack and the generator stack at the facility are subject to this standard.

IDAPA 58.01.01.650..... Rules for the Control of Fugitive Dust

All stationary sources are required to comply with the fugitive dust prevention requirements of IDAPA 58.01.01.650-651.

40 CFR 60 Subpart I..... Standards of Performance for Hot Mix Asphalt Facilities

This subpart is applicable to the HMA plant facility and to the RAP processing system according to 60.90 (a), as follows: "*(a) The affected facility to which the provisions of this subpart apply is each hot mix asphalt facility. For the purpose of this subpart a hot mix asphalt facility is comprised only of any combination of the following: dryers, systems for screening, handling, storing, and weighing hot aggregate, systems for loading, transferring, and storing mineral filler, systems for mixing hot mix asphalt, and the loading, transfer, and storage systems associated with emission control systems.*" Also, per 60.90(b), the HMA plant dryer and the RAP system are a facility that "*commences construction or modification after June 11, 1973.*"

Section 60.92, Standard for particulate matter, states: *(a) On and after the date on which the performance test required to be conducted by 60.8 is completed, no owner or operator subject to the provisions of this subpart shall discharge or cause the discharge into the atmosphere from any affected facility any gases which: (1) Contain particulate matter in excess of 90 mg/dscm (0.04 gr/dscf). (2) Exhibit 20 percent opacity, or greater.*

The loading, transferring, and storing systems associated with the HMA plant facility are subject to the opacity testing requirement specified in 40 CFR 60.8, 60.92(a)(2), and 60.93(b)(2). 40 CFR 60.93(b)(2) specifies that Method 9 and the procedures in 60.11 be used to determine opacity. Permit Conditions 2.3 and 2.4 incorporate the 40 CFR 60.92 requirements. Permit Condition 2.20 requires testing. Permit Condition 2.22 recommends that a test protocol be submitted prior to testing and Permit Condition 2.23 requires that the test results be submitted to DEQ within 30 days after the date that the testing is concluded.

In addition to the testing required by Subpart I, the facility is required to test the affected facility for particulate emissions and visible emissions at least once every five years.

40 CFR 60 Subpart OOO ..... Standards of Performance for Nonmetallic Mineral Processing Plants

Subpart OOO does not apply to the HMA facility or to the RAP equipment.

The section for applicability and designation of affected facility, 60.670 (a)(1), is as follows: *"Except as provided in paragraphs (a)(2), (b), (c), and (d) of this section, the provisions of this subpart are applicable to the following affected facilities in fixed or portable nonmetallic mineral processing plants: each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, enclosed truck or railcar loading station. Also, crushers and grinding mills at hot mix asphalt facilities that reduce the size of nonmetallic minerals embedded in recycled asphalt pavement and subsequent affected facilities up to, but not including, the first storage silo or bin are subject to the provisions of this subpart."*

"(b) An affected facility that is subject to the provisions of subpart F or I or that follows in the plant process any facility subject to the provisions of subparts F or I of this part is not subject to the provisions of this subpart."

Section 40 CFR 60.670(a)(1) above does not apply to the RAP in this PTC. Section 40 CFR 60.670(a)(1) specifically applies to crushers and grinding mills (and subsequent facilities). This permit application does not include a RAP crusher or grinding mill. It has a lump breaker. The RAP is crushed at a separate facility prior to processing at this facility. The lump breaker at this facility breaks up clumps of conglomerated RAP to a size that is fed onto a conveyor. Oversize stone is rejected, not crushed, by the system.

In addition, this facility is subject to Subpart I, and, per Subpart OOO (b), Subpart OOO is not applicable to facilities, which are subject to Subpart I.

40 CFR 279 ..... Standards for the Management of Used Oil

Part 279.11 contains specifications for used oil which include allowable levels for arsenic, cadmium, chromium, lead, the flash point, and total halogens. The limit for total halogens is listed at 4,000 ppm maximum. However, used oil containing more than 1,000 ppm total halogens is presumed to be a hazardous waste under the rebuttable presumption provided under § 279.10(b)(1). Such used oil is subject to subpart H of part 266 of this chapter rather than this part when burned for energy recovery unless the presumption of mixing can be successfully rebutted.

Permit Condition 2.9 states that, in accordance with 40 CFR 279.11, used oil burned for energy recovery shall not exceed any of the allowable levels of the constituents and property listed in Table 2.2.

Table 2.2 USED OIL SPECIFICATIONS[1]

Constituent/property	Allowable level
Arsenic	5 ppm[2] maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Flash point	100 deg. F minimum
Total halogens	1,000 ppm maximum

[1] The specification does not apply to mixtures of used oil and hazardous waste that continue to be regulated as hazardous waste (see 40 CFR 279.10(b)).

[2] parts per million

This table is based on Table 1 from 40 CFR 279.11, incorporating the 1,000 ppm limit for total halogens as explained above.

6. PERMIT CONDITIONS

This section lists the permit conditions required to demonstrate compliance with emissions and ambient air quality standards.

Permit Condition 2.3 limits PM emissions from the drum dryer stack to the NSPS emissions limit of 0.4 gr/dscf and the opacity to no more than 20% opacity as required by 40 CFR Part 60.92(a)(1).

Permit Condition 2.4 limits the opacity from all other affected facilities to no more than 20% opacity as required by 40 CFR Part 60.92(a)(2).

Permit Condition 2.5 limits CO emissions from the drum dryer stack to 46.8 T/yr and from the generator stack to 17.0 T/yr. In addition, it limits the NO_x emissions from the drum dryer stack to 19.8 T/yr and from the generator stack to 64.0 T/yr. The CO and NO_x are the pollutants emitted in the greatest quantities and their limits establish the facility's potential to emit.

Permit Condition 2.8 limits the type of fuel that can be burned in the drum dryer burner. The allowable fuels are natural gas, propane, diesel fuel (ASTM Grade 2 fuel oil), and used oil.

Permit Condition 2.9 limits the concentration of arsenic, cadmium, chromium, lead and total halogens in any used oil the facility may burn. The used oil's flash point is also limited. Total halogens are limited to 1,000 ppm to assure the used oil cannot be classified as hazardous waste.

Permit Condition 2.10 limits the sulfur content in the ASTM Grade 2 fuel oil and used oil to a maximum 0.5% by weight.

Permit Condition 2.11 limits the hot-mix asphalt production of the facility to 720,000 T/yr. This limit and Permit Condition 2.16 establish the facility's potential to emit.

Permit Condition 2.12 restricts operations of the generator in any PM_{10} nonattainment area or proposed PM_{10} nonattainment area. If the permittee wants to operate in one of these areas, a permit allowing such operations is required.

Permit Condition 2.16 limits the generator's hours of operation to 3,650 hr/yr.

Permit Condition 2.17 requires the permittee to monitor the pressure drop across the drum dryer baghouse stack once per day when operating to make sure the baghouse is operating according to the manufacturers recommended pressure drop operating range; requires the permittee to monitor and record the hot-mix asphalt production to demonstrate compliance with Permit Condition 2.11; and requires the permittee to monitor and record the generator hours of operation to demonstrate compliance with Permit Condition 2.16.

Permit Condition 2.20 requires that the permittee conduct a performance test to measure PM emissions to demonstrate compliance with Permit Condition 2.3. Testing is required at least once every five years.

Permit Condition 2.21 requires an analysis of all used oil to demonstrate that its constituents do not exceed the limits provided by Permit Condition 2.9.

Permit Condition 2.24 requires that the permittee monitor and record the fuel sulfur content (diesel fuel and used oil) on an as-received-basis to demonstrate compliance with Permit Condition 2.10.

7. PUBLIC COMMENT

A draft permit is being provided for facility review on February 28, 2005.

The draft permit is also being provided to Boise Regional Office of DEQ.

An opportunity for public comment period was provided in accordance with IDAPA 58.01.01.209.01.c from January 27 through February 25, 2005. During this time, there were no comments on the application and no request for a public comment.

8. AIRS INFORMATION

Table 8.1 AIRS/AFS[a] FACILITY-WIDE CLASSIFICATION[b] DATA ENTRY FORM

AIR PROGRAM POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION A-Attainment U-Unclassified N- Nonattainment
SO_2	B							U
NO_x	SM					Y	SM80	U
CO	B							U
PM_{10}	B							U
PT (Particulate)	B							U
VOC	B							U
THAP (Total HAPs)	B							A
			APPLICABLE SUBPART					
			I					

[a] Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

[b] AIRS/AFS Classification Codes:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, or each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.

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

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).

9. FEES

The ISG paid the $1,000 application fee as required in IDAPA 58.01.01.224 on January 17, 2004.

In accordance with IDAPA 58.01.01.225, a processing fee of $7,500.00 is required because the increase in emissions from the HMA plant and the generator was greater than 100 T/yr.

Idaho Sand & Gravel is not a major facility as defined in IDAPA 58.01.01.008.10. Therefore, registration fees are not applicable in accordance with IDAPA 58.01.01.387.

Table 9.1 PTC Processing Fee Summary

Emissions Inventory	
Pollutant	**Permitted Emissions**
PM_{10}	10.3
CO	63.8
NO_X	83.8
SO_2	31.0
VOC	13.3
Total:	**202.2**
PTC Fee	$7,500.00
Fees paid to date	$0.00
Fee Due	**$7,500.00**

10. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommends that Idaho Sand and Gravel in Nampa be issued a final PTC No. P-040045 for the new HMA plant and the diesel-fired electrical generator. An opportunity for public comment on the air quality aspects of the proposed permit to construct was provided in accordance with IDAPA 58.01.01.209.01.c.

HE/sd Permit No. P-040045

APPENDIX A

Idaho Sand & Gravel

Emissions Inventory

P-040045

Idaho Sand Gravel Portable Hot Mix Asphalt Plant
Asphalt Dryer Emission Calculations and Modeling Analysis

DATA/ASSUMPTIONS

Max Production	400 T/hr	720,000 T/yr
Nonattainment area daily hours of operation	8 hr/day	
Max 1-hr Concentration	2.378 ug/m³	

ATTAINMENT AREA CRITERIA POLLUTANT CALCULATIONS

						Ambient Impact				
Particulate Matter (PM)	0.03	0.03	0.03	13.2	11.9					
Particulate Matter 10 Micron(PM_{10})	0.023	0.023	0.023	9.2	8.3			8.75		0.36
Carbon Monoxide (CO)	0.13	0.13	0.13	52	46.8	123.66	86.56			
Nitrogen Oxides (NO_x)	0.026	0.055	0.055	22	19.8					0.86
Sulfur Dioxide (SO_2)	0.0034	0.011	0.058	23.2	20.9	49.65		22.07		0.91
VOC	0.032	0.032	0.032	12.8	11.5					
Lead	6.20E-07	1.50E-05	1.50E-05	6.00E-03	5.4E-03				1.85E-03	

NONATTAINMENT AREA CRITERIA POLLUTANT CALCULATIONS

						Ambient Impact				
Particulate Matter (PM)	0.03	0.03	0.03	13.2	11.9					
Particulate Matter 10 Micron(PM_{10})	0.023	0.023	0.023	9.2	8.3			2.92		0.36
Carbon Monoxide (CO)	0.13	0.13	0.13	52	46.8	123.66	86.56			
Nitrogen Oxides (NO_x)	0.026	0.055	0.055	22	19.8					0.86
Sulfur Dioxide (SO_2)	0.0034	0.011	0.058	23.2	20.9	49.65		7.36		0.91
VOC	0.032	0.032	0.032	12.8	11.5					
Lead	6.20E-07	1.50E-05	1.50E-05	6.00E-03	5.4E-03				1.85E-03	

PM and PM_{10} emission factors are from AP-42, Table 11.1-3 (March 2004)

CO, NO_x, and SO_2 emission factors are from AP-42, Table 11.1.7 (March 2004)

VOC emission factors are from AP-42, Table 11.1-8 (March 2004)

TAPS/HAPS CALCULATIONS

Acetaldehyde	75-07-0			1.30E-03	5.20E-01	4.68E-01		3.00E-03	4.50E-01		3.18E-02
Acrolein	107-02-8			2.60E-05	1.04E-02	9.36E-03	1.70E-02		12.5	9.89E-03	
Benzene	71-43-2	3.90E-04	3.90E-04	3.90E-04	1.56E-01	1.40E-01		8.00E-04	1.20E-01		9.53E-03
Ethylbenzene	100-41-4	2.40E-04	2.40E-04	2.40E-04	9.60E-02	8.64E-02	2.90E+01		2.18E+04	9.13E-02	
Formaldehyde	50-00-0	3.10E-03	3.10E-03	3.10E-03	1.24E+00	1.12E+00		5.10E-04	7.70E-02		7.57E-02
Hexane	110-54-3	9.20E-04	9.20E-04	9.20E-04	3.68E-01	3.31E-01	1.20E+01		9.00E+03	3.50E-01	
Hydrochloric Acid	7647-1-0			2.10E-04	8.40E-02	7.56E-02	5.00E-02		3.75E+02	7.99E-02	
Isooctane (2,2,4-trimethylpentane)	540-84-1	4.00E-05	4.00E-05	4.00E-05	1.60E-02	1.44E-02	2.33E+01		1.75E+04	1.52E-02	
Methyl chloroform	71-55-6	4.80E-05	4.80E-05	4.80E-05	1.92E-02	1.73E-02	1.27E+02		9.55E+04	1.83E-02	
Methyl Ethyl Ketone	78-93-3			2.00E-05	8.00E-03	7.20E-03	3.93E+01		2.95E+04	7.61E-03	
Propionaldehyde	123-38-6			1.30E-04	5.20E-02	4.68E-02	2.87E-02		2.15E+01	4.95E-02	
Quinone	106-51-4			1.60E-04	6.40E-02	5.76E-02	2.70E-02		2.00E+01	6.09E-02	
Toluene	108-88-3	1.50E-04	2.90E-03	2.90E-03	1.16E+00	1.04E+00	2.50E+01		1.88E+04	1.10E+00	
Xylene	1330-20-7	2.00E-04	2.00E-04	2.00E-04	8.00E-02	7.20E-02	2.90E+01		2.18E+04	7.61E-02	
Benzo(a)anthracene	56-55-3	2.10E-07	2.10E-07	2.10E-07	8.40E-05	7.56E-05					
Benzo(a)pyrene	50-32-8	9.80E-09	9.80E-09	9.80E-09	3.92E-06	3.53E-06		2.00E-06	3.00E-04		2.39E-07
Benzo(b)fluoranthene	205-99-2	1.00E-07	1.00E-07	1.00E-07	4.00E-05	3.60E-05					
Benzo(k)fluoranthene	207-08-9	4.10E-08	4.10E-08	4.10E-08	1.64E-05	1.48E-05					
Chrysene	218-01-9	1.80E-07	1.80E-07	1.80E-07	7.20E-05	6.48E-05					
Indeno(1,2,3-cd)pyrene	193-39-5	1.00E-09	7.00E-09	7.00E-09	2.80E-06	2.52E-06					
PAH (mixture compared to Benzo(a)pyrene)					2.19E-04	0.00E+00		2.00E-06	3.00E-04		1.34E-05
Naphthalene	91-20-3	9.00E-05	6.50E-04	6.50E-04	2.60E-01	2.34E-01	3.33E+00		2.50E+03	2.47E-01	
Acetone	67-64-1			8.30E-04	3.32E-01	2.99E-01	119		89000	3.16E-01	
Benzaldehyde	100-52-7			1.10E-04	4.40E-02	3.96E-02					
Butane	106-97-8	6.70E-04	6.70E-04	6.70E-04	2.68E-01	2.41E-01					
Butyraldehyde	78-84-2			1.60E-04	6.40E-02	5.76E-02					
Crotonaldehyde	4170-30-3			8.60E-05	3.44E-02	3.10E-02	3.80E-01		285	3.27E-02	
Ethylene	74-85-1	7.00E-03	7.00E-03	7.00E-03	2.80E+00	2.52E+00					
Heptane	142-82-5	9.40E-03	9.40E-03	9.40E-03	3.76E+00	3.38E+00					
Hexanal	66-25-1			1.10E-04	4.40E-02	3.96E-02					
Isovaleraldehyde	590-86-3			3.20E-05	1.28E-02	1.15E-02					
2-Methyl-1-pentene	763-29-1	4.00E-03	4.00E-03	4.00E-03	1.60E+00	1.44E+00					
2-Methyl-2-butene	513-35-9	5.80E-04	5.80E-04	5.80E-04	2.32E-01	2.09E-01					
3-Methylpentane	96-14-0	1.90E-04	1.90E-04	1.90E-04	7.60E-02	6.84E-02					
1-Pentene	109-67-1	2.20E-03	2.20E-03	2.20E-03	8.80E-01	7.92E-01					
n-Pentane	109-66-0	2.10E-04	2.10E-04	2.10E-04	8.40E-02	7.56E-02	1.18E+02		8.85E+04	7.99E-02	
Valeraldehyde	110-62-3			6.70E-05	2.68E-02	2.41E-02	11.7		8750	2.55E-02	
Total Dioxins and Furans	varies		1.20E-10	1.20E-10	4.80E-08	4.32E-08		1.50E-10	2.20E-08		2.93E-09
Antimony	7440-36-0	1.80E-07	1.80E-07	1.80E-07	7.20E-05	6.48E-05	3.30E-02		2.50E+01	6.85E-05	
Arsenic	7440-38-2	5.60E-07	5.60E-07	5.60E-07	2.24E-04	2.02E-04		1.50E-06	2.30E-04		1.37E-05
Barium	7440-39-3	5.80E-06	5.80E-06	5.80E-06	2.32E-03	2.09E-03	3.30E-02		2.50E+01	2.21E-03	
Cadmium	7440-43-9	4.10E-07	4.10E-07	4.10E-07	1.64E-04	1.48E-04		3.70E-06	5.80E-04		1.00E-05
Chromium	7440-47-3	5.50E-06	5.50E-06	5.50E-06	2.20E-03	1.98E-03	3.30E-02		2.50E+01	2.09E-03	
Cobalt	7440-48-4	2.60E-06	2.60E-06	2.60E-06	1.04E-05	9.36E-06	3.30E-03		2.50E+00	9.89E-06	
Copper	7440-50-8	3.10E-06	3.10E-06	3.10E-06	1.24E-03	1.12E-03	1.30E-02		1.00E+01	1.18E-03	
Hexavalent chromium		4.50E-07	4.50E-07	4.50E-07	1.80E-04	1.62E-04		5.60E-07	8.30E-05		1.10E-05
Manganese	7439-96-5	7.70E-06	7.70E-06	7.70E-06	3.08E-03	2.77E-03	6.70E-02		5.00E+01	2.93E-03	
Mercury	7439-97-6	2.40E-06	2.60E-06	2.60E-06	1.04E-03	9.36E-04	1.00E-03		5.00E-01	9.89E-04	
Nickel	7440-2-0	6.30E-05	6.30E-05	6.30E-05	2.52E-02	2.27E-02		2.70E-05	4.20E-03		1.54E-03
Phosphorus	7723-14-0	2.80E-05	2.80E-05	2.80E-05	1.12E-02	1.01E-02	7.00E-03		5.00E+00	1.07E-02	
Silver	7440-22-4	4.80E-07	4.80E-07	4.80E-07	1.92E-04	1.73E-04	1.00E-03		5.00E+00	1.83E-04	
Selenium	7782-49-2	3.50E-07	3.50E-07	3.50E-07	1.40E-04	1.26E-04	1.30E-02		1.00E+01	1.33E-04	
Thallium	7440-28-0	4.10E-09	4.10E-09	4.10E-09	1.64E-06	1.48E-06	7.00E-03		5.00E+00	1.56E-06	
Zinc	7440-66-6	6.10E-05	6.10E-05	6.10E-05	2.44E-02	2.20E-02	3.33E-01		5.00E+01	2.32E-02	

Idaho Sand Gravel Portable Hot Mix Asphalt Plant
Generator Emission Calculations and Modeling Analysis

DATA/ASSUMPTIONS

Generator Capacity:	1250	KW
	10.96	MMBtu/hr
Max annual operating hours:	3650	hr/yr
Max daily operating hours (nonattainment only)	9	hr/day
Max. 1-hr Ambient Impact:	11.53	ug/m^3

ATTAINMENT AREA CRITERIA POLLUTANT CALCULATIONS

Particulate Matter (PM/PM $_{10}$)	0.1	1.10	2.0				5.05	0.42
Carbon Monoxide (CO)	0.85	9.32	17.0	107.41		75.19		
Nitrogen Oxides (NO $_x$)	3.2	35.07	64.0					13.48
Sulfur Doxide (SO $_2$)	0.505	5.53	10.1		5.24		25.53	2.13
VOC	0.09	0.99	1.8					

NONATTAINMENT AREA CRITERIA POLLUTANT CALCULATIONS

Particulate Matter (PM/PM $_{10}$)	0.1	1.10	2.0				1.90	0.42
Carbon Monoxide (CO)	0.85	9.32	17.0	107.41		75.19		
Nitrogen Oxides (NO $_x$)	3.2	35.07	64.0					13.48
Sulfur Doxide (SO $_2$)	0.505	5.53	10.1		5.24		0.96	2.13
VOC	0.09	0.99	1.8					

Criteria pollutant emission factors from AP-42 Table 3.4-1 (October 1996)

TAP/HAP CALCULATIONS

Benzene	7.76E-04	8.50E-03		8.00E-04		5.11E-03	1.20E-01
Toluene	2.81E-04	3.08E-03	2.50E+01		1.42E-02		1.88E+04
Xylenes	1.93E-04	2.12E-03	2.90E+01		9.76E-03		2.18E+04
Propylene	2.79E-03	3.06E-02					
Formaldehyde	7.89E-05	8.65E-04		5.10E-04		5.19E-04	7.70E-02
Acetaldehyde	2.52E-05	2.76E-04		3.00E-03		1.66E-04	4.50E-01
Acrolein	7.88E-06	8.64E-05	1.70E-02		3.98E-04		12.5
Naphthalene	1.30E-03	1.42E-02	3.33E+00		6.57E-02		2.50E+03
Phenanthrene	4.08E-05	4.47E-04					
Pyrene	3.71E-06	4.07E-05					
Benz(a)anthracene	6.22E-07	6.82E-06					
Chrysene	1.53E-06	1.68E-05					
Benzo(b)fluoranthene	1.11E-06	1.22E-05					
Benzo(k)fluoranthene <	2.18E-07	2.39E-06					
Benzo(a)pyrene <	2.57E-07	2.82E-06		2.00E-06		1.69E-06	3.00E-04
Indeno(1,2,3-cd)pyrene <	4.14E-07	4.54E-06					
Dibenz(a,h)anthracene <	3.46E-07	3.79E-06					
PAH (mixture compared to Benzo(a)pyrene)		4.93E-05		2.00E-06		2.96E-05	3.00E-04

TAP and HAP emission factors are from AP-42 Tables 3.4-3 and 3.4-4 (October 1996)

Idaho Sand Gravel Portable Hot Mix Asphalt Plant
Facility Wide Emission Calculations and Modeling Analysis

CRITERIA POLLUTANTS

							Attainment Area Dryer and Generator Impact				
Particulate Matter (PM)	13.20	11.88	1.10	2.00	14.30	13.88					
Particulate Matter 10 Micron (PM_{10})	9.2	8.28	1.096	2.0002	10.3	10.3			13.81		0.78
Carbon Monoxide (CO)	52	46.8	9.316	17.0017	61.3	63.6	231.07	161.75			
Nitrogen Oxides (NO_x)	22	19.8	35.072	64.0064	57.1	63.8					14.34
Sulfur Dioxide (SO_2)	23.2	20.88	5.5348	10.10101	28.7	31.0		54.89	47.59		3.03
VOC	12.6	11.52	0.9664	1.80018	13.8	13.3					
Lead	0.006	0.0054			6.00E-03	5.40E-03				1.85E-03	

	Background Concentrations				
Particulate Matter (PM/PM_{10})			103.00		34.10
Carbon Monoxide (CO)	15600.00	5200.00			
Nitrogen Oxides (NO_x)					40.00
Sulfur Dioxide (SO_2)	120.00		40.00		10.00
VOC					
Lead				4.00E-02	

	NAAQS					Impact Plus Background					
Particulate Matter (PM/PM_{10})				150.00	50.00			115.81		34.88	TRUE
Carbon Monoxide (CO)	40000.00		10000.00			15831.07	5361.75				TRUE
Nitrogen Oxides (NO_x)					100.00					54.34	TRUE
Sulfur Dioxide (SO_2)		1300.00		365.00	80.00		174.89	87.59		13.03	TRUE
VOC											
Lead					1.50E+00				4.19E-02		TRUE

PM_{10} Nonattainment Area Dryer and Generator Impact			Allowable Impact	
Particulate Matter 10 Micron (PM_{10})	4.81	0.78	5.00	1.00

Note: Ambient impacts are determined by summing the maximum modeled impacts from SCREEN3 modeling runs for the drum dryer and the generator.

Idaho Sand Gravel Portable Hot Mix Asphalt Plant
Facility Wide Emission Calculations and Modeling Analysis

HAPS/TAPS																	
Acetaldehyde	5.20E-01	4.68E-01	2.76E-04	5.04E-04	5.20E-01	4.69E-01		3.00E-03				3.18E-02	1.66E-04	3.19E-02	4.50E-01	Y	N
Acrolein	1.04E-02	9.36E-03	8.64E-05	1.56E-04	1.05E-02	9.52E-03	1.70E-02		9.89E-03	3.98E-04	1.03E-02				1.25E+01	N	N
Benzene	1.56E-01	1.40E-01	8.50E-03	1.55E-02	1.65E-01	1.58E-01		8.00E-04				9.53E-03	5.11E-03	1.46E-02	1.20E-01	Y	N
Ethylbenzene	9.60E-02	8.64E-02			9.60E-02	8.64E-02	2.90E+01		9.13E-02		9.13E-02				2.18E+04	N	N
Formaldehyde	1.24E+00	1.12E+00	8.65E-04	1.58E-03	1.24E+00	1.12E+00		5.10E-04				7.57E-02	5.19E-04	7.63E-02	7.70E-02	Y	N
Hexane	3.68E-01	3.31E-01			3.68E-01	3.31E-01	1.20E+01		3.50E-01		3.50E-01				9.00E+03	N	N
Hydrochloric Acid	8.40E-02	7.56E-02			8.40E-02	7.56E-02	5.00E-02		7.99E-02		7.99E-02				3.75E+02	Y	N
Isooctane (2,2,4-trimethylpentane)	1.60E-02	1.44E-02			1.60E-02	1.44E-02	2.33E+01		1.52E-02		1.52E-02				1.75E+04	N	N
Methyl chloroform	1.92E-02	1.73E-02			1.92E-02	1.73E-02	1.27E+02		1.83E-02		1.83E-02				9.55E+04	N	N
Methyl Ethyl Ketone	8.00E-03	7.20E-03			8.00E-03	7.20E-03	3.93E+01		7.61E-03		7.61E-03				2.95E+04	N	N
Propionaldehyde	5.20E-02	4.68E-02			5.20E-02	4.68E-02	2.87E-02		4.95E-02		4.95E-02				2.15E+01	Y	N
Quinone	6.40E-02	5.76E-02			6.40E-02	5.76E-02	2.70E-02		6.09E-02		6.09E-02				2.00E+01	Y	N
Toluene	1.16E+00	1.04E+00	3.08E-03	5.62E-03	1.16E+00	1.05E+00	2.50E+01		1.10E+00	1.42E-02	1.12E+00				1.88E+04	N	N
Xylene	8.00E-02	7.20E-02	2.12E-03	3.86E-03	8.21E-02	7.59E-02	2.90E+01		7.61E-02	9.78E-03	8.59E-02				2.18E+04	N	N
Benzo(a)anthracene	8.40E-05	7.56E-05			8.40E-05	7.56E-05											
Benzo(a)pyrene	3.92E-06	3.53E-06	2.82E-06	5.14E-06	6.74E-06	8.67E-06		2.00E-06				2.39E-07	1.69E-06	1.93E-06	3.00E-04	Y	N
Benzo(b)fluoranthene	4.00E-05	3.60E-05	1.22E-05	2.22E-05	5.22E-05	5.82E-05											
Benzo(k)fluoranthene	1.84E-05	1.48E-05	2.39E-06	4.36E-06	1.88E-05	1.91E-05											
Chrysene	7.20E-05	6.48E-05	1.68E-05	3.06E-05	8.88E-05	9.54E-05											
Indeno(1,2,3-cd)pyrene	2.80E-06	2.52E-06	4.54E-06	8.28E-06	7.34E-06	1.08E-05											
PAH (mixture compared to Benzo(a)pyrene)	2.19E-04	0.00E+00	4.9287E-05	8.99E-05	2.68E-04	8.99E-05		2.00E-06				1.34E-05	2.96E-05	4.30E-06	3.00E-04	Y	N
Naphthalene	2.80E-01	2.34E-01			2.80E-01	2.34E-01		3.33E+00		6.57E-02		2.47E-01		2.47E-01	2.50E+03	N	N
Acetone	3.32E-01	2.99E-01			3.32E-01	2.99E-01	1.19E+02		3.16E-01		3.16E-01				8.90E+04	N	N
Benzaldehyde	4.40E-02	3.96E-02			4.40E-02	3.96E-02											
Butane	2.68E-01	2.41E-01			2.68E-01	2.41E-01											
Butyraldehyde	6.40E-02	5.76E-02			6.40E-02	5.76E-02											
Crotonaldehyde	3.44E-02	3.10E-02			3.44E-02	3.10E-02	3.80E-01		3.27E-02		3.27E-02				2.85E+02	N	N
Ethylene	2.80E+00	2.52E+00			2.80E+00	2.52E+00											
Heptane	3.76E+00	3.38E+00			3.76E+00	3.38E+00											
Hexanal	4.40E-02	3.96E-02			4.40E-02	3.96E-02											
Isovaleraldehyde	1.28E-02	1.15E-02			1.28E-02	1.15E-02											
2-Methyl-1-pentene	1.60E+00	1.44E+00			1.60E+00	1.44E+00											
2-Methyl-2-butene	2.32E-01	2.09E-01			2.32E-01	2.09E-01											
3-Methylpentane	7.60E-02	6.84E-02			7.60E-02	6.84E-02											
1-Pentene	8.80E-01	7.92E-01			8.80E-01	7.92E-01											
n-Pentane	8.40E-02	7.56E-02			8.40E-02	7.56E-02	1.18E+02		7.99E-02		7.99E-02				8.85E+04	N	N
Valeraldehyde	2.68E-02	2.41E-02			2.68E-02	2.41E-02	1.17E+01		2.55E-02		2.55E-02				8.75E+03	N	N
Total Dioxins and Furans	4.80E-06	4.32E-06			4.80E-06	4.32E-06		1.50E-10				2.93E-09		2.93E-09	2.20E-06	Y	N
Antimony	7.20E-05	6.48E-05			7.20E-05	6.48E-05	3.30E-02		6.85E-05		6.85E-05				2.50E+01	N	N
Arsenic	2.24E-04	2.02E-04			2.24E-04	2.02E-04		1.50E-06				1.37E-05		1.37E-05	2.30E-04	Y	N
Barium	2.32E-03	2.09E-03			2.32E-03	2.09E-03	3.30E-02		2.21E-03		2.21E-03				2.50E+01	N	N
Cadmium	1.64E-04	1.48E-04			1.64E-04	1.48E-04		3.70E-06				1.00E-05		1.00E-05	5.60E-04	Y	N
Chromium	2.20E-03	1.98E-03			2.20E-03	1.98E-03	3.30E-02		2.09E-03		2.09E-03				2.50E+01	N	N
Cobalt	1.04E-05	9.36E-06			1.04E-05	9.36E-06	3.30E-03		9.89E-06		9.89E-06				2.50E+00	N	N
Copper	1.24E-03	1.12E-03			1.24E-03	1.12E-03	1.30E-02		1.18E-03		1.18E-03				1.00E+01	N	N
Hexavalent chromium	1.80E-04	1.62E-04			1.80E-04	1.62E-04		5.60E-07				1.10E-05		1.10E-05	8.30E-05	Y	N
Manganese	3.08E-03	2.77E-03			3.08E-03	2.77E-03	6.70E-02		2.93E-03		2.93E-03				5.00E+01	N	N
Mercury	1.04E-03	9.36E-04			1.04E-03	9.36E-04	1.00E-03		9.89E-04		9.89E-04				5.00E-01	Y	N
Nickel	2.52E-02	2.27E-02			2.52E-02	2.27E-02		2.70E-06				1.54E-03		1.54E-03	4.20E-03	Y	N
Phosphorus	1.12E-02	1.01E-02			1.12E-02	1.01E-02	7.00E-03		1.07E-02		1.07E-02				5.00E+00	Y	N
Silver	1.92E-04	1.73E-04			1.92E-04	1.73E-04	1.00E-03		1.83E-04		1.83E-04				5.00E+00	N	N
Selenium	1.40E-04	1.26E-04			1.40E-04	1.26E-04	1.30E-02		1.33E-04		1.33E-04				1.00E+01	N	N
Thallium	1.64E-06	1.48E-06			1.64E-06	1.48E-06	7.00E-03		1.56E-06		1.56E-06				5.00E+00	N	N
Zinc	2.44E-02	2.20E-02			2.44E-02	2.20E-02	3.33E-01		2.32E-02		2.32E-02				5.00E+01	N	N

Note: Ambient impacts are determined by summing the maximum modeled impacts from SCREEN3 modeling runs for the drum dryer and the generator.

APPENDIX B

Idaho Sand & Gravel

Modeling Analysis

P-040045

MODELING MEMORANDUM

DATE: February 15, 2005

TO: Harbi Elshafei, Air Quality Division

THROUGH: Kevin Schilling, Stationary Source Modeling Coordinator, Air Quality Division

FROM: Dustin Holloway, Modeling Analyst, Air Quality Division

PROJECT NUMBER: P-040045

SUBJECT: Modeling Review for the Idaho Sand and Gravel Co.

1.0 SUMMARY

CENTRA Consulting, Inc. conducted dispersion modeling in support of a permit to construct (PTC) application for the Idaho Sand and Gravel Co. (ISG). The analysis includes a screening analysis for criteria pollutants and toxic air pollutants (TAPs) whose emissions exceed the applicable screening emission levels in IDAPA 58.01.01.585-586.

Table 1.1 KEY ASSUMPTIONS USED IN MODELING ANALYSIS SUBMITTED BY THE APPLICANT	
Assumption	**Explanation**
Asphalt plant operations are limited to 1,800 hours per year and generator emissions are limited to 3,650 hours per year.	The hours of operation were used to demonstrate compliance with the applicable national ambient air quality standards (NAAQS).
Asphalt plant operations are limited to 12 hours per day while operating in nonattainment areas.	
The diesel-fired electrical generator can not be used in nonattainment areas.	Conservatively modeled impacts from the generator exceed the significant contribution levels.

Based on the results of the analyses, DEQ has determined that the analysis: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) appropriately adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed that predicted pollutant concentrations at all receptor locations, when appropriately combined with background concentrations, were below stated air quality standards.

2.0 BACKGROUND INFORMATION

2.1 *Applicable Air Quality Impact Limits*

ISG is currently located in Nampa, in Canyon county. Canyon county is designated unclassifiable or attainment for all criteria air pollutants. ISG requested to be permitted to operate anywhere in the state of Idaho. However, the analysis submitted is not valid in the Sandpoint PM_{10} nonattainment area because fugitive emissions were not modeled. The following table summarizes the applicable air quality limits for the remainder of the state. In PM_{10} nonattainment areas, the significant contribution levels are the applicable limit, and in other areas of the state the regulatory limit for each pollutant is the applicable standard.

Table 2.1 APPLICABLE REGULATORY LIMITS				
Pollutant	**Averaging Period**	**Significant Contribution Levels (µg/m³)[a, b]**	**Regulatory Limit (µg/m³)[c]**	**Modeled Value Used[d]**
PM_{10}[e]	Annual	1	50[f]	Maximum 1st highest[g]
	24-hour	5	150[h]	Maximum 6th highest[f] Highest 2nd highest[i]
CO	8-hour	500	10,000[k]	Highest 2nd highest[g]
	1-hour	2,000	40,000[k]	Highest 2nd highest[g]
SO_2	Annual	1	80[k]	Maximum 1st highest[g]
	24-hour	5	365[k]	Highest 2nd highest[g]
	3-hour	25	1,300[k]	Highest 2nd highest[g]
NO_2	Annual	1	100[f]	Maximum 1st highest[g]
Noncarcinogenic TAPs				
Hydrochloric Acid	24-hour	NA	375	Maximum 1st highest[f]
Propionaldehyde	24-hour	NA	21.5	Maximum 1st highest[f]
Quinone	24-hour	NA	20	Maximum 1st highest[f]
Mercury	24-hour	NA	0.5	Maximum 1st highest[f]
Phosphorus	24-hour	NA	5	Maximum 1st highest[f]
Carcinogenic TAPs				
Acetaldehyde	Annual	NA	4.50E-01	Maximum 1st highest[f]
Benzene	Annual	NA	1.20E-01	Maximum 1st highest[f]
Formaldehyde	Annual	NA	7.70E-02	Maximum 1st highest[f]
Benzo(a)pyrene	Annual	NA	3.00E-04	Maximum 1st highest[f]
PAH (mixture compared to Benzo(a)pyrene)	Annual	NA	3.00E-04	Maximum 1st highest[f]
Total Dioxins and Furans	Annual	NA	2.20E-08	Maximum 1st highest[f]
Arsenic	Annual	NA	2.30E-04	Maximum 1st highest[f]
Cadmium	Annual	NA	5.60E-04	Maximum 1st highest[f]
Hexavalent Chromium	Annual	NA	8.30E-05	Maximum 1st highest[f]

[a] IDAPA 58.01.01.006.93
[b] Micrograms per cubic meter.
[c] IDAPA 58.01.01.577 for criteria pollutants, IDAPA 58.01.01.585 for non-carcinogenic toxic air pollutants IDAPA 58.01.01.586 for carcinogenic toxic air pollutants.
[d] The maximum 1st highest modeled value is always used for significant impact analysis and for all toxic air pollutants.
[e] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers.
[f] Never expected to be exceeded in any calendar year.
[g] Concentration at any modeled receptor.
[h] Never expected to be exceeded more than once in any calendar year.
[i] Concentration at any modeled receptor when using five years of meteorological data.
[j] The highest 2nd high is considered to be conservative for five years of meteorological data.
[k] Not to be exceeded more than once per year.

2.2 Background Concentrations

DEQ provided CENTRA with background concentrations for portable sources in Idaho. The following table summarizes the background concentrations used in this analysis.

Table 2.2 BACKGROUND CONCENTRATIONS		
Pollutant	**Averaging Period**	**Background concentrations (µg/m³)[a]**
PM10	24-hour	103
	Annual	34.1
CO	1-hour	15,600
	8-hour	5,200
SO_2	3-hour	120
	24-hour	40
	Annual	10
NO_2	Annual	40
Lead	quarterly	0.04

[a] Micrograms per cubic meter.

3.0 ASSESSMENT OF SUBMITTED, CERTIFIED MODELING ANALYSIS

3.1 Modeling Methodology

Table 3.1 MODELING PARAMETERS		
Parameter	**What Facility Submitted**	**DEQ's Review/Determination**
Modeling protocol	No protocol was submitted	Although the applicant did not submit a protocol, the analysis adhered to established guidelines for regulatory dispersion modeling.
Model Selection	SCREEN3	This is an appropriate model for this facility
Meteorological Data	Screening meteorological data	Screening meteorological data is appropriate since this facility may be moved to a different location.
Model Options	Regulatory defaults	This is appropriate
Land Use	Rural	The area surrounding this facility is open and lightly populated
Complex Terrain	Complex terrain was not analyzed in this analysis	DEQ does not currently require minor portable sources to account for complex terrain in dispersion analysis.
Building Downwash	Downwash was not included	DEQ does not currently require minor portable sources to account for downwash in dispersion analysis.
Receptor Network	Default SCREEN3 receptor grid	SCREEN3 was run in a mode to calculate the maximum downwind concentration
Facility Layout	N/A	This analysis summed the maximum concentrations from each source. This is a conservative estimate of the concentrations for any plant configuration.

3.2 Emission Rates

Table 3.2 CRITERIA POLLUTANT EMISSION RATES				
Pollutant	**Asphalt Plant Emissions**		**Generator Emissions**	
	lb/hr	**T/yr**	**lb/hr**	**T/yr**
PM_{10}	9.2	8.3	1.1	2.0
CO	52	46.8	9.3	17.0
NO_x	22	19.8	35.1	64.0
SO_2	23.2	20.9	5.5	10.1
Lead	0.006	0.0054		

Table 3.3 ASPHALT PLANT TAP EMISSIONS	
Noncarcinogenic TAPs	**lb/hr**
Hydrochloric Acid	8.40E-02
Propionaldehyde	5.20E-02
Quinone	6.40E-02
Mercury	1.04E-03
Phosphorus	1.12E-02
Carcinogenic TAPs	**lb/hr**
Acetaldehyde	5.20E-01
Benzene	1.56E-01
Formaldehyde	1.24E+00
Benzo(a)pyrene	3.92E-06
Total PAH	2.19E-04
Total Dioxins and Furans	4.80E-08
Arsenic	2.24E-04
Cadmium	1.64E-04
Hexavalent chromium	1.80E-04
Nickel	2.52E-02

3.3 Emission Release Parameters

Table 3.4 EMISSION RELEASE PARAMETERS		
	Asphalt Dryer Stack	Generator Stack
Height	23 ft	10
Exit Diameter	3.8 ft	0.667
Exit Gas Volume	64,940 acfm	6,871 acfm[a] (9,666 acfm)
Exit Gas Velocity	29.0 m/s	100 m/s[a] (140 m/s)
Exit Gas Temperature	240 °F	375 °F[a] (919 °F)
[a] The exit gas volume and temperature were reduced by DEQ. The values in parenthesis are the values submitted by the applicant.		

DEQ staff believe that the manufacturers data for the electrical generator represent conditions at the exhaust manifold while the generator is operating at maximum design capacity. DEQ reduced the exit velocity, exit flow rate, and exit temperatures to more accurately represent the conditions at the stack tip during typical operating conditions.

3.4 Results

3.4.1 Screen3 Model Results

Table 3.5 SCREEN3 RESULTS	
Source/Group ID	Unity Concentration ($\mu g/m^3$)
Asphalt Dryer	2.38
Generator	22.91

The unity concentration calculated with Screen3 was multiplied by the emission rate of each pollutant to determine the 1-hour average ambient concentration from each source. The maximum concentrations for each pollutant from each source are summed together to determine the maximum impact from the facility. The maximum one hour concentrations were then multiplied by the applicable persistence factors (0.9, 0.7, 0.4, 0.13, 0.08, and 0.125 for the 3-hr, 8-hr, 24-hr, quarterly, annual, and carcinogen averaging periods, respectively)

3.4.2 Attainment Area Full Impact Analysis Results

Table 3.6 FULL IMPACT ANALYSIS RESULTS FOR ATTAINMENT AREAS						
Pollutant	Averaging Period	Facility Ambient Impact ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Ambient concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Percent of NAAQS
PM_{10}	24-hour	18.8	103	121.8	150	81.2%
	Annual	1.2	34.1	35.3	50	70.6%
CO	1-hour	337.1	15,600	15,937.1	40,000	39.8%
	8-hour	236.0	5,200	5,436.0	10,000	54.4%
SO_2	3-hour	60.1	120	180.1	1,300	13.9%
	24-hour	72.8	40	112.8	365	30.9%
	Annual	5.1	10	15.1	80	18.9%
NO_2	Annual	27.6	40	67.6	100	67.6%
Lead	Quarterly	0.0019	0.04	0.042	1.5	2.8%

3.4.3 PM_{10} Nonattainment Area Impact Analysis Results

Table 3.7 PM_{10} NONATTAINMENT AREA RESULTS				
Pollutant	**Averaging Period**	**Ambient Concentration ($\mu g/m^3$)**	**Significant Contribution Levels ($\mu g/m^3$)**	**Exceeds the SCL (Y or N)**
PM_{10}	24-hour	4.38	5	N
	Annual	0.36	1	N

After revising the exhaust parameters for the generator DEQ found that operating the generator in PM_{10} nonattainment areas would cause an exceedance of the significant contribution levels. The revised analysis demonstrates that the asphalt plant can operate for 12 hours per day without exceeding the significant contribution level when a generator is not used. This analysis is considered a screening level analysis. The applicant could conduct a refined analysis, the results of which could potentially indicate that the generator impacts would be acceptable within PM_{10} nonattainment areas.

3.4.4 Toxic Air Pollutants Results

Table 3.8 TOXIC AIR POLLUTANT ANALYSIS RESULTS			
Noncarcinogenic TAPs	**24-hour Concentration ($\mu g/m^3$)**	**AAC ($\mu g/m^3$)**	**Percent of Standard**
Hydrochloric Acid	7.99E-02	375	0.0%
Propionaldehyde	4.95E-02	21.5	0.2%
Quinone	6.09E-02	20	0.3%
Mercury	9.89E-04	0.5	0.2%
Phosphorus	1.07E-02	5	0.2%
Carcinogenic TAPs	**Annual Concentration ($\mu g/m^3$)**	**AACC ($\mu g/m^3$)**	**Percent of Standard**
Acetaldehyde	3.21E-02	4.50E-01	7.1%
Benzene	1.97E-02	1.20E-01	16.4%
Formaldehyde	7.68E-02	7.70E-02	99.7%
Benzo(a)pyrene	3.60E-06	3.00E-04	1.2%
PAH (mixture compared to Benzo(a)pyrene)	7.22E-05	3.00E-04	24.1%
Total Dioxins and Furans	2.93E-09	2.20E-08	13.3%
Arsenic	1.37E-05	2.30E-04	5.9%
Cadmium	1.00E-05	5.60E-04	1.8%
Hexavalent Chromium	1.10E-05	8.30E-05	13.2%
Nickel	1.54E-03	4.20E-03	36.6%

The dispersion modeling analysis demonstrates, to DEQ's satisfaction, that the ISG facility will not cause or contribute to a violation of any ambient air quality standards if the assumptions in this analysis become enforceable permit requirements. This includes limiting the annual hours of operation, daily hours of operation in nonattainment areas, and requiring that the generator not be operated in nonattainment areas.