Air Quality Permitting
Statement of Basis

October 31, 2006

Permit to Construct No. P-060515

Walters Ready Mix, Inc.
Rexburg, ID

Facility ID No. 777-00126

Prepared by:

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AIR QUALITY DIVISION

FINAL

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Acronyms, Units, and Chemical Nomenclatures

AACC	acceptable ambient concentration of carcinogenic
acfm	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
BMPs	best management practices
CAA	Clean Air Act
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
°F	degree Fahrenheit
HAPs	Hazardous Air Pollutants
hp	horsepower
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
IFRO	Idaho Falls Regional Office
km	kilometer
kW	kilowatt
lb/hr	pound per hour
MACT	Maximum Achievable Control Technology
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NOx	nitrogen oxides
NSPS	New Source Performance Standards
O_3	ozone
PAH	polyaromatic hydrocarbon
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
POM	polycyclic organic matter
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	Rules for the Control of Air Pollution in Idaho
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SM	Synthetic Minor
SO_2	sulfur dioxide
SOx	sulfur oxides
TAP	Toxic Air Pollutant
T/yr	tons per year
$\mu g/m^3$	micrograms per cubic meter
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum 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. This PTC replaces permit-by-rule registration PR-040500, issued March 4, 2004, the terms and conditions of which no longer apply.

2. FACILITY DESCRIPTION

Walters Ready Mix, Inc. operates this portable rock crushing and screening facility. The facility crushes pit rock and aggregate to reduce the material in size to desired specifications. The facility will consist of two working sections, Section A and Section B. Section A is proposed to operate 8 hours per day, 5 days per week, and 20 weeks per year, for a total of 800 hours per year. Section B is proposed to operate 8 hours per day, 5 days per week, and 10 weeks per year for a total of 400 hours per year. The maximum combined capacity of the primary crushers is 600 tons per hour. Electricity is supplied to Section A by a 500 kW (670.5 horsepower [hp]) diesel-fired generator, and to Section B by a 650 hp (484.7 kW) diesel-fired generator.

3. FACILITY / AREA CLASSIFICATION

This facility is classified as a minor facility because the Walters Ready Mix crushing facility's potential to emit is less than major source thresholds without requiring limits on its potential to emit. This facility is not a designated facility (or a source listed pursuant to Section 302(j) of the Clean Air Act [CAA]) and does not belong to any stationary source category which, as of August 7, 1980, was regulated under Sections 111 (NSPS) or 112 (NESHAP) of the CAA. Therefore, fugitive emissions do not aggregate towards the determination of major facility. This being the case, the Aerometric Information Retrieval System (AIRS) facility classification is "B." The SIC code defining the facility is 1442.

This facility is a portable facility and may locate anywhere in the state of Idaho except the Sandpoint PM_{10} nonattainment area.

The AIRS information provided in the Appendix defines the classification for each regulated air pollutant. This required information is entered into the EPA AIRs database.

4. APPLICATION SCOPE

Walters Ready Mix requested a PTC for this existing portable crushing plant because they intend to operate the plant at the same location for more than 12 consecutive months. The initial location is in Bonneville County, approximately ½-mile north of 2500 West 65th South in Idaho Falls. This PTC replaces permit by rule (PBR) registration PR-040500, issued March 4, 2004, the terms and conditions of which no longer apply.

In a separate, but related, permitting action, the permittee is proposing to collocate two Walters Ready Mix concrete batch plants (777-00290 and 777-00291) at the Valley Ready Mix facility (777-00177) located at 2500 West 65th South in Idaho Falls. Crusher operations were considered in the facility-wide (full impact) modeling for the nearby collocated operations.

The permittee is also proposing to operate different equipment at this location compared to the equipment covered under the previous PBR. Table 4.1 lists the equipment covered under the old PBR as well as the equipment proposed to be covered under this "initial" PTC.

Table 4.1 CHANGE IN CRUSHING FACILITY EQUIPMENT

Equipment	Permit by Rule Registration PR-040500, March 4, 2004	Proposed Configuration (this PTC)
Primary Crusher	Texas Vertical Impact Crusher s/n 2003-163, Mfr: 2003, 250 T/hr capacity, with Cedar Rapids 8' x 20' 3-deck screen, s/n P8-20-257-03, Mfr date 2003	(C-1A) Texas Vertical Impact Crusher 2000-600, 500 T/hr capacity, Mfr: 2003, with Cedar Rapids 8' x 20' 3-deck screen, s/n P8-20-257-03, Mfr: 2003 (C-1B) Vertical Impact Crusher, Mfr: 1998 Remco-Sand Max 7000, 100 T/hr capacity, with JCI 7' x 20' 3-deck screen, serial no. (s/n) 99H21C38, Mfr: 1999
Secondary Crusher(s)	Trico/Jaw Crusher, s/n C512X52201, Mfr: 2003, 100 T/hr capacity, with JCI 7' x 30' 3-deck screen, serial no. (s/n) 99H21C38, Mfr: 1999 Cedar Rapids/Cone Crusher, s/n 50694, Mfr: 8/98, 100 T/hr capacity, with El Jay 6' x 20' 3-deck screen, s/n 34D0594, Mfr: 1994	(C-3A) Trico/Jaw Crusher, Mfr: 2003 100 T/hr capacity, with Telsmith 5 x 16 2-deck screen, Mfr: 1985 (C-2A) Cedar Rapids MVP 550/Cone Crusher, 350 T/hr capacity, Mfr: 08/1998 with Coleman 3 x 6 single deck screen, Mfr: 1976
Generator(s)	Detroit 600 kW (804.6 hp) generator, #2 diesel-fired Cummins-Onan 2000, 1500 kW (2011.5 hp) generator, #2 diesel fired	Detroit Diesel 650 hp (484.7 kW) generator, diesel fired Cummins 500 kW (670.5 hp) generator, diesel fired

4.1 Application Chronology

June 30, 2006	Receipt of the PTC application and $1,000 PTC application fee.
July 24, 2006	Receipt of additional application information (PERF).
July 27, 2006	Application declared complete.
August 2, 2006	DEQ requested clarification regarding the facility generators and screens.
September 5, 2006	DEQ sent 2nd request regarding the facility generators and screens.
September 13, 2006	Receipt of updated generator and screen information..
September 25, 2006	Draft permit and statement of basis was provided to the facility and to DEQ's Idaho Falls Regional Office (IFRO) for review.
September 26, 2006	Minor comments received from IFRO.
October 16, 2006	Receipt of processing fee.

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this PTC action.

5.1 Equipment Listing

Table 5.1 REGULATED EMISSIONS SOURCES

Source Description	Emissions Control(s)
Section A Operations Primary Crusher: C-1A Vertical Impact Crusher Mfr/Model: Texas 2000-600 Type: vertical impact Rated Capacity: 500 tons per hour Date of Manufacture: 2003	Best Management Practices (BMPs)
Secondary Crusher: C-2A Cone Crusher Mfr/Model: Cedar Rapids MVP 550 Type: Cone crusher Rated Capacity: 350 tons per hour Date of Manufacture: 08/1998	BMPs
Secondary Crusher: C-3A Jaw Crusher Mfr/Model: Trico Type: Jaw crusher Rated Capacity: 100 tons per hour Date of Manufacture: 2003	BMPs
500 kW (670.5 hp) Generator Mfr/Model: Cummins Fuel: Diesel Max Fuel Usage: 24.2 gallons per hour Requested Operation: 8 hrs per day, 800 hours per year	None – Stack Parameters: Height Above Ground: 15 feet Inside Diameter: 1.7 feet Exhaust Flow Rate: 8330 acfm Exhaust Temperature: 850°F
Associated screen, aggregate and sand transfer operations (conveyor belts and transfer points) and aggregate and sand transport operations. Screens: Cedar Rapids 8' x 20' 3-deck screen, s/n P8-20-257, Mfr date 2003 Screens: Telsmith 5 x 16 2-deck screen, Mfr date 1985 Screens: Coleman 3 x 6 single deck, Mfr date 1976	BMPs
Section B Operations Primary Crusher: C-1B Vertical Impact Crusher Mfr/Model: Remco-Sand Max 7000 Type: vertical impact Rated Capacity: 100 tons per hour Date of Manufacture: 1998	BMPs
650 hp (484.7 kW) Generator Mfr/Model: Detroit Diesel, Model 12 V-71 Fuel: Diesel Max Fuel Usage: 23.07 gallons per hour Requested Operation: 8 hours per day, 400 hours per year	None – Stack Parameters: Height Above Ground: 11 feet Inside Diameter: 0.333 feet Exhaust Flow Rate: 1050 acfm Exhaust Temperature: 950°F
Associated screen, aggregate and sand transfer operations (conveyor belts and transfer points) and aggregate and sand transport operations. Screens: JCI 7 x 20 3-deck screen, Mfr date 1999	BMPs

5.2 Emissions Inventory

The emissions inventory for the generator engines was estimated by DEQ based on emission factors from AP-42 Section 3.4 (for generators larger than 600 hp) and equipment and production data provided in the application. Emissions from the rock crushing and screening were considered fugitive emissions and were quantified only for the full impact analysis for the related permitting action to collocate two Walters Ready Mix concrete plants at the Valley Ready Mix location.

The emissions associated with this PTC reflect the equipment changes described in Table 4.1 and Table 5.1. These emissions—based on 24-hour per day operation of both generators—are summarized in Table 5.2 for criteria pollutants and for the toxic air pollutants (TAPs) whose uncontrolled emissions exceeded the applicable the pound per hour applicable screening emission level (EL). The detailed emissions inventory for the crushing plant point sources is contained in Appendix B. Fugitive emissions from crushing and screening are summarized in Table 5 of the modeling analysis contained in Appendix C.

Table 5.2 SUMMARY OF EMISSIONS ASSOCIATED WITH THIS INITIAL PTC

	Cummins 500 kW (670.5 hp)		Detroit 650 hp (484.7 kW)		Total Emissions	
Criteria Pollutants	**Lb/hr**	**T/yr 800 hrs/yr**	**Lb/hr**	**T/yr 400 hrs/yr**	**Lb/hr**	**T/yr 1,200 hrs/yr**
PM_{10}	0.19	0.08	0.18	0.04	0.37	0.11
NO_x	10.6	4.24	10.1	2.02	20.7	6.27
CO	2.82	1.13	2.69	0.54	5.51	1.66
SO_2	1.68	0.67	1.60	0.32	3.27	0.99
Idaho TAPs	**Uncontrolled (lb/hr)**		**Uncontrolled (lb/hr)**		**Uncontrolled (lb/hr)**	**EL (lb/hr)**
PAH	7.01E-04	---	6.69E-04	---	1.37E-03	9.1E-05
POM (7-PAH group)	1.49E-05	---	1.42E-05	---	2.19E-05	2.0E-06
Benzene	2.57E-03	---	2.45E-03	---	5.03E-03	8.00E-04
Formaldehyde	2.62E-04	---	2.49E-04	---	5.11E-04	5.10E-04

5.3 Modeling

Based on DEQ's modeling threshold guidance[1], modeling for point source emissions was not required for CO, but was required for PM_{10}, NOx, and SO_2. In accordance with IDAPA 58.01.01.210, modeling was also required for the TAPs with uncontrolled emissions that exceeded the applicable pound per hour screening EL.

Screening level modeling for the generator emissions was conducted by DEQ, and modeling results are shown in Table 5.3 for the maximum allowable generator hours. Impacts from fugitive emissions were estimated by DEQ modeling coordinator Kevin Schilling at about 10 $\mu g/m^3$ per 100 tons per hour capacity. The detailed modeling results for the generator emissions are contained in Appendix C.

Table 5.3 SUMMARY OF SCREENING MODEL RESULTS

	Averaging Period	Ambient Impact ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)[1]	Total Ambient Impact ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Percent of NAAQS
Criteria Pollutants		Max Allowable[2]		Max Allowable[2]		Max Allowable[2]
PM_{10}	24-hour	3.58 + 60 (fugitives)	73	136.58	150	91.1%
	Annual	0.06	26	26.06	50	52.1%
CO	1-hour	Modeling not req'd	3,600	---	40,000	---
	8-hour	Modeling not req'd	2,300	---	10,000	---
NO_x	Annual	3.16	17	20.16	100	20.2%
SO_2	3-hour	106	34	140	1,300	10.8%
	24-hour	31.6	26	57.6	365	15.8%
	Annual	0.5	8	8.5	80	10.6%
TAPs		**Uncontrolled Ambient Impact ($\mu g/m^3$)**	**Background Concentration ($\mu g/m^3$)[1]**	**Uncontrolled Ambient Impact ($\mu g/m^3$)**	**AACC ($\mu g/m^3$)**	**Percent of AACC**
PAH	Annual	6.2E-03		6.2E-03	1.4E-02	44.3%
POM (7-PAH group)	Annual	1.32E-04	---	1.32E-04	3.0E-04	43.9%
Benzene	Annual	2.27E-02	---	2.27E-02	1.2E-01	18.9%
Formaldehyde	Annual	2.31E-03	---	2.31E-03	7.7E-02	3.0%

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

[2] Max Allowable = 24 hrs/day, 800 hrs/yr for Cummins generator, 400 hrs/yr for Detroit generator

[1] State of Idaho Air Quality Modeling Guidance, Document ID AQ-011, Rev. 1, 12/31/02.

5.4 *Regulatory Review*

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.006..... Facility

"Facility" is defined in IDAPA 58.01.01.006 as all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person or persons. Although the Walters Ready Mix crusher is under the control of the same persons as the Valley Ready Mix concrete plant located about ½-mile to the south of the crusher's location, the crusher (SIC code 1442) and the concrete plants (SIC code 3273) do not belong to the same industrial grouping. The crusher was therefore treated as a separate facility from the Valley Ready Mix facility.

IDAPA 58.01.01.201..... Permit to Construct Required

This rock crushing and screening facility (Facility ID 777-00126) was originally issued a permit to construct in 1995, which was subsequently modified to increase capacity, add a second crusher, and allow collocation (PTC No. 777-00126, dated May 6, 1999). On March 22, 2002, the PTC for the facility was terminated and replaced with permit-by-rule (PBR) registration PR-020901. On March 4, 2004, that PBR was replaced by PR-040500, which included the equipment listed in Table 4.1 of this statement of basis. In late 2005, DEQ determined that the crushing facility had been operated, or could have been operated, at a single location for more than 12 consecutive months. Because Walters Ready Mix wished to continue to operate this facility at the Idaho Falls location for more than 12 consecutive months, Walters resolved Violation No. 6 of Consent Order Case No. E-050023 by submitting this PTC application.

IDAPA 58.01.01.203..... National Ambient Air Quality Standards (NAAQS)

Screening level dispersion modeling for the emissions from the two generators demonstrated to DEQ's satisfaction that the emissions of criteria pollutants do not exceed the NAAQS. Modeling was based on the fuel usage, hours of operation, and plant operations described in the application and in supplemental information submitted during September 2006. Facility-wide modeling was conducted by DEQ for proposed collocation of two Walters Ready Mix concrete batch plants (777-00290 and 777-00291) at the Valley Ready Mix location (777-00177) about ½-mile south of the initial crusher location. Modeling results that demonstrated compliance with the NAAQS were based on operating the crushing plant for no more than 16 hours per day.

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

The estimated uncontrolled emissions of TAPs from the operation of the generators at this facility were less than the applicable screening emission level in pounds per hour, or were modeled to demonstrate that uncontrolled ambient impact would not exceed the applicable acceptable ambient concentration for carcinogens (AACC) increment listed in IDAPA 58.01.01.586.

IDAPA 58.01.01.625..... Visible Emissions

Requirements to control visible emissions (opacity) from point sources of emissions apply to all Idaho facilities. This rule has been incorporated as a permit condition to require control of particulate emissions from point sources at the facility.

IDAPA 58.01.01.650-651..... Rules for the Control of Fugitive Dust

Requirements to take reasonable precautions to control fugitive dust apply to all Idaho facilities. This rule has been incorporated as a permit condition to require control of fugitive dust from facility operations.

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

New Source Performance Standards (NSPS) apply to portable rock crushing plants that commenced construction or were modified after August 31, 1983, and for which the cumulative rated capacity of all initial crushers at this facility is greater than 150 tons per hour. The capacity of the plant's initial crushers is 600 tons per hour (primary crusher C-1A is rated at 500 tons per hour, and primary crusher C-1B is rated at 100 tons per hour). The rock crushing facility is therefore subject to NSPS Subpart OOO.

In accordance with 40 CFR 60, Subpart OOO, NSPS affected facilities at this rock crushing facility include each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operations, storage bin, and any enclosed truck or railcar loading station that commenced construction, reconstruction, or modification after August 31, 1983. For this rock crushing plant, each of the plant components are affected facilities, except for the 1976 Coleman single deck screen.
Because the proposed set of crushers and screens may be replaced at any time by similar equipment with earlier manufacture dates, permit conditions were included to cover NSPS affected facilities as well as any pre-1983 equipment that would not be subject to NSPS.

5.5 *Permit Conditions Review*

5.5.1 Permit Condition 3.4 limits the daily combined throughput for the two primary crushers to 9,600 tons per day, combined. This limit was based on operating both crushers at capacity (600 tons per hour) for a 16-hour work day, which was based on the full impact modeling analysis for the proposed collocation of the crusher about ½-mile to the north of the proposed collocated Walters Ready Mix and Valley Ready Mix concrete batch plants. Permit Condition 3.6 requires monitoring and recordkeeping to demonstrate compliance with Permit Condition 3.4.

5.5.2 Permit Condition 4.4 limits the daily hours of operation for the generators to a maximum of 32 hours per day, combined. This was based on facility-wide modeling for the proposed collocation of two Walters Ready Mix concrete batch plants at the Valley Ready Mix location. Permit Condition 4.7 requires daily monitoring and recordkeeping to demonstrate compliance with Permit Condition 4.4.

5.5.3 Permit Condition 4.4 also limits annual hours of operation for the generators to 1,200 hours, combined. The demonstration of compliance with NAAQS and Idaho TAPs standards was based on operating both generators for 24 hours per day, with the Cummins generator operating for the requested 800 hours per year and the Detroit Diesel generator operating for the requested 400 hours per year. An analysis by DEQ determined that operating either of the two generators for the full 1,200 hours per year did not significantly change either the emissions inventory or the estimated ambient impacts. Individual annual hourly limits for each generator were therefore not necessary. Permit Condition 4.7 requires monthly and annual monitoring and recordkeeping to demonstrate compliance with Permit Condition 4.4.

The remaining permit conditions are self-explanatory.

6. PERMIT FEES

An application fee of $1,000 is required in accordance with IDAPA 58.01.01 224. The application fee was received by DEQ on July 25, 2005. A permit processing fee of $2,500.00 is required in accordance with IDAPA 58.01.01 225, because the total increase in emissions of 9.41 tons per year is between one and ten tons per year. DEQ received the processing fee on October 16, 2006. This facility is not a major facility and is not subject to Tier I operating permit registration fees.

Table 6.1 PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	**Annual Emissions Increase (T/yr)**	**Annual Emissions Reduction (T/yr)**	**Annual Emissions Change (T/yr)**
NO_X	6.27	0	6.27
SO_2	0.99	0	0.99
CO	1.66	0	1.66
PM_{10}	0.11	0	0.11
VOC	0.18	0	0.18
HAPS	3.08E-03	0	3.08E-03
Total:	**9.41**	0	**9.41**
Fee Due	**$ 2,500.00**		

7. PERMIT REVIEW

Facility-wide modeling for a proposed collocation of two Walters Ready Mix plants at the Valley Ready Mix location about ½-mile south of the crusher location demonstrated compliance with the NAAQS based on operation of the crushing plant for a maximum of 16 hours per day. For the final permit, Permit Condition 3.4 was added to limit daily crushing operations based on the modeling results, and to add an annual limit on the crushing operations to reflect the operations requested in the permit application. Permit Condition 3.6 was added to require monitoring and recordkeeping for the primary crusher throughputs. Permit Conditions 4.4 and 4.7 were modified to include the 16-hour per day operational limit on the two generators (32 hours per day, combined).

For the final permit, Sections 4 (Application Scope), 5.2 (Emissions Inventory), 5.3 (Modeling), 5.4 (Regulatory Review), and 5.5 (Permit Conditions Review) were modified to clarify the relationship between the facilities and the impact of the related permitting actions for the collocation of two Walters Ready Mix concrete plants at the Valley Ready Mix location.

7.1 Regional Review of Draft Permit

On September 25, 2006, a draft of the permit and statement of basis was provided electronically to the Idaho Falls Regional Office for review. On September 26, the IFRO suggested that the requirement that the facility develop and maintain an O&M manual be deleted. For the final permit, draft Permit Condition 2.2 was deleted, and all subsequent permit conditions in Section 2 were renumbered.

7.2 Facility Review of Draft Permit

On September 25, 2006, a draft of the permit and statement of basis was issued for facility review. No comments were received.

7.3 Public Comment

An opportunity for public comment period on the PTC application was provided from August 3, 2006, through September 5, 2006, in accordance with IDAPA 58.01.01.209.01.c. No comments or requests for a public comment period were received.

8. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommends that Walters Ready Mix, Inc. be issued final PTC No. P-060515 for the rock crushing and screening operation. No public comment period is recommended, no entity has requested a comment period, and the project does not involve PSD requirements.

CR/bf Permit No. P-060515

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APPENDIX A

AIRS Information

P-060515

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

Facility Name: Walters Ready Mix, Inc., Crushing Plant
Facility Location: Portable
AIRS Number: 777-00126

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	B							U
CO	B							U
PM_{10}	B		B					U
PT (Particulate)	B		B					U
VOC	B							U
THAP (Total HAPs)	B							
			APPLICABLE SUBPART					
			OOO					

[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).

APPENDIX B

Emissions Inventory

P-060515

Facility: Walters Ready Mix, Rexburg Crusher Facility 10/31/2006
Facility ID/Permit: 777-00126 P-060515
Initial Location: ~1/2 mile north of 2500 West 65th South, Idaho Falls

Electrical Generators			
	"A" Side	"B" Side	
Generator Make/Model	Cummins	Detroit Diesel	
	500 kW (670.5 hp)	650 hp (484.7 kW)	
FUEL OPTIONS: #2 Fuel Oil (Diesel)			
Max Sulfur weight percent (w/o)	0.5	0.5	
Max Fuel Use Rate, gal/hr	24.20	23.07	
Fuel Heating Value, Btu/gal	137,030	137,030	
Calculated MMBtu/hr	3.32	3.16	
Max Operational Hours per Day	16	16	
Max Operational Hours per Year	800	400	
Max Hrs (facility classification)	8,760	8,760	

EMISSIONS AT 16 hr/day GENERATOR HOURS

	Emissions (lb/hr)							
Pollutant	Cummins	Detroit Diesel	TOTAL (lb/hr)	TAPs Screening Emission Limit (EL) Increment[b] (lb/hr)	TAPs Emissions Exceed EL Increment?	PTE Emissions at Proposed Max Hours (T/yr)	Emissions for Facility Classification (T/yr)	
PM (total) [b]	0.332	0.316	0.648			0.20	2.84	
PM-10 (total) [d]	0.190	0.181	0.371			0.11	1.63	
P.M.-2.5								
CO [b]	2.819	2.687	5.51E+00			1.66	24.12	
NOx [b]	10.612	10.116	2.07E+01			6.27	90.79	
SO_2 [b] (total SOx presumed SO2)	1.675	1.596	3.27E+00			0.99	14.33	
VOC [b] (total TOC--> VOCs)	0.298	0.285	5.83E-01			0.18	2.55	
Lead								
PAH HAPs			Total lb/hr, uncontrolled					
Acenaphthene[c1]	1.55E-05	1.48E-05	3.03E-05	see PAH	see PAH	9.17E-06	1.33E-04	
Acenaphthylene[c1]	3.06E-05	2.92E-05	5.98E-05	see PAH	see PAH	1.81E-05	2.62E-04	
Anthracene[c1]	4.08E-06	3.89E-06	7.97E-06	see PAH	see PAH	2.41E-06	3.49E-05	
Benzo(a)anthracene[c1,e]	2.06E-06	1.97E-06	4.03E-06	see POM	see POM	1.22E-06	1.76E-05	
Benzo(a)pyrene[c1,e]	8.52E-07	8.12E-07	1.66E-06	see POM	see POM	5.03E-07	7.29E-06	
Benzo(b)fluoranthene[c1,e]	3.68E-06	3.51E-06	7.19E-06	see POM	see POM	2.17E-06	3.15E-05	
Benzo(g,h,i)perylene[c1]	1.84E-06	1.76E-06	3.60E-06	see PAH	see PAH	1.09E-06	1.58E-05	
Benzo(k)fluoranthene[c1,e]	7.23E-07	6.89E-07	1.41E-06	see POM	see POM	4.27E-07	6.18E-06	
Chrysene[c1,e]	5.07E-06	4.84E-06	9.91E-06	see POM	see POM	3.00E-06	4.34E-05	
Dibenzo(a,h)anthracene[c1,e]	1.15E-06	1.09E-06	2.24E-06	see POM	see POM	6.78E-07	9.82E-06	
Fluoranthene[c1]	1.34E-05	1.27E-05	2.61E-05	see PAH	see PAH	7.89E-06	1.14E-04	
Fluorene[c1]	4.24E-05	4.05E-05	8.29E-05	see PAH	see PAH	2.51E-05	3.63E-04	
Indeno(1,2,3-cd)pyrene[c1,e]	1.37E-06	1.31E-06	2.68E-06	see POM	see POM	8.11E-07	1.17E-05	
Naphthalene[c1,e]	4.31E-04	4.11E-04	8.42E-04	3.33	No	2.55E-04	3.69E-03	
Phenanthrene[c1]	1.35E-04	1.29E-04	2.64E-04	see PAH	see PAH	7.99E-05	1.16E-03	
Pyrene[c1]	1.23E-05	1.17E-05	2.40E-05	see PAH	see PAH	7.27E-06	1.05E-04	
PAH HAPs			**1.37E-03**	**9.10E-05**	Exceeds, Modeling Required			Carcinogen, Annual Std
Polycyclic Organic Matter (POM)			**2.19E-05**	**2.00E-06**	Exceeds, Modeling Required			Carcinogen, Annual Std
Non-PAH HAPs								
Acetaldehyde[c,e]	8.36E-05	7.97E-05	1.63E-04	3.00E-03	No	4.94E-05	7.15E-04	Carcinogen, Annual Std
Acrolein[c,e]	2.61E-05	2.49E-05	5.10E-05	0.017	No	1.54E-05	2.24E-04	
Benzene[c,e]	2.57E-03	2.45E-03	5.03E-03	8.00E-04	Exceeds, Modeling Required	1.52E-03	2.20E-02	Carcinogen, Annual Std
Formaldehyde[c,e]	2.62E-04	2.49E-04	5.11E-04	5.10E-04	Exceeds, Modeling Required	1.55E-04	2.24E-03	Carcinogen, Annual Std
Toluene[c,e]	9.32E-04	8.88E-04	1.82E-03	25	No	5.50E-04	7.97E-03	
Xylene[c,e]	6.40E-04	6.10E-04	1.25E-03	29	No	3.78E-04	5.48E-03	

Total HAPs						**3.08E-03**	tons/yr	
Total Criteria Pollutants						**9.41**	tons/yr	

a) Emission factors are from AP-42
b) AP-42, Table 3.4-1, Gaseous Emission Factors for Large Stationary Diesel and All Stationary Dual Fuel Engines, 10/96
c) AP-42, Table 3.4-3, Speciated Organic Compound Emission Factors for Large Uncontrolled Stationary Diesel Engines, Emission Factor Rating E, 10/96
c1) AP-42, Table 3.4-4, PAH Emission Factors for Large Uncontrolled Stationary Diesel Engines, Emission Factor Rating E, 10/96
d) AP-42, Table 3.4-2, Particulate and Particle-Sizing Emission Factors for Large Uncontrolled Stationary Diesel Engines, Emission Factor Rating E, 10/96
e) IDAPA Toxic Air Pollutant

Toolkit_**TOTAL Generator Emissions**

Facility: Walters Ready Mix, Rexburg Crusher Facility 10/31/2006
Facility ID/Permit: 777-00126 P-060515
Initial Location: ~1/2 mile north of 2500 West 65th South, Idaho Falls

Electrical Generator > 600 hp (447 kW) AP-42 Section 3.4 (diesel fueled, uncontrolled)

Electrical Generator > 600 hp (447 kW) AP-42 Section 3.4 (diesel-fueled)			
Generator Make/Model	Cummins	Section A Operations	
500 kW (670.5 hp)			
FUEL OPTIONS: #2 Fuel Oil (Diesel)			
Max Sulfur weight percent (w/o)	0.5	Stack Height, ft	15
Max Fuel Use Rate, gal/hr	24.20	Stack ID, ft	1.7
Fuel Heating Value, Btu/gal	137,030	Exhaust Flow, acfm	8,330
Calculated MMBtu/hr	3.32	Exhaust Temp, F	850
Max Operational Hours per Day	16		
Max Operational Hours per Year	800		
Max Hrs (facility classification)	8,760		

EMISSIONS AT 16 hr/day GENERATOR HOURS

Note: AP-42 Tables 3.3-x,3.4-x: avg diesel heating value is based on 19,300 Btu/lb with density equal 7.1 lb/gal=> Btu/gal

Pollutant	Uncontrolled Emission Factor[a] (lb/MMBtu)	Emissions (lb/hr)	Emissions (lb/hr 24-hr or annual average)	PTE Emissions at Proposed Max Hours (T/yr)	Emissions for Facility Classification (T/yr)	
PM (total) [b]	0.1	0.332		0.13	1.45	
PM-10 (total) [d]	0.0573	0.190		0.08	0.83	
P.M.-2.5						
CO [b]	0.85	2.819		1.13	12.35	
NOx [b]	3.2	10.612		4.24	46.48	
SO_2 [b] (total SOx presumed SO2)	0.505	1.675		0.67	7.33	
VOC [b] (total TOC--> VOCs)	0.09	0.298		0.12	1.31	
Lead						
PAH HAPs						
Acenaphthene[c1]	4.68E-06	1.55E-05		6.21E-06	6.80E-05	not specific Idaho TAP, see PAH
Acenaphthylene[c1]	9.23E-06	3.06E-05		1.22E-05	1.34E-04	not specific Idaho TAP, see PAH
Anthracene[c1]	1.23E-06	4.08E-06		1.63E-06	1.79E-05	not specific Idaho TAP, see PAH
Benzo(a)anthracene[c1,e]	6.22E-07	2.06E-06		8.25E-07	9.03E-06	see POM
Benzo(a)pyrene[c1,e]	2.57E-07	8.52E-07		3.41E-07	3.73E-06	see POM
Benzo(b)fluoranthene[c1,e]	1.11E-06	3.68E-06		1.47E-06	1.61E-05	see POM
Benzo(g,h,i)perylene[c1]	5.56E-07	1.84E-06		7.38E-07	8.08E-06	not specific Idaho TAP, see PAH
Benzo(k)fluoranthene[c1,e]	2.18E-07	7.23E-07		2.89E-07	3.17E-06	see POM
Chrysene[c1,e]	1.53E-06	5.07E-06		2.03E-06	2.22E-05	see POM
Dibenzo(a,h)anthracene[c1,e]	3.46E-07	1.15E-06		4.59E-07	5.03E-06	see POM
Fluoranthene[c1]	4.03E-06	1.34E-05		5.35E-06	5.85E-05	not specific Idaho TAP, see PAH
Fluorene[c1]	1.28E-05	4.24E-05		1.70E-05	1.86E-04	not specific Idaho TAP, see PAH
Indeno(1,2,3-cd)pyrene[c1,e]	4.14E-07	1.37E-06		5.49E-07	6.01E-06	see POM
Naphthalene[c1,e]	1.30E-04	4.31E-04		1.72E-04	1.89E-03	Specific Idaho TAP, plus see PAH
Phenanthrene[c1]	4.08E-05	1.35E-04		5.41E-05	5.93E-04	not specific Idaho TAP, see PAH
Pyrene[c1]	3.71E-06	1.23E-05		4.92E-06	5.39E-05	not specific Idaho TAP, see PAH
PAH HAPs		**7.01E-04**	**6.41E-05**	**2.81E-04**	**3.07E-03**	Carcinogen, Annual Std
Polycyclic Organic Matter (POM)		**1.49E-05**	**1.36E-06**	**5.97E-06**	**6.53E-05**	Carcinogen, Annual Std
Non-PAH HAPs						
Acetaldehyde[c,e]	2.52E-05	8.36E-05	7.63E-06	3.34E-05	3.66E-04	Carcinogen, Annual Std
Acrolein[c,e]	7.88E-06	2.61E-05		1.05E-05	1.14E-04	
Benzene[c,e]	7.78E-04	2.57E-03	2.35E-04	1.03E-03	1.13E-02	Carcinogen, Annual Std
Formaldehyde[c,e]	7.89E-05	2.62E-04	2.39E-05	1.05E-04	1.15E-03	Carcinogen, Annual Std
Toluene[c,e]	2.81E-04	9.32E-04		3.73E-04	4.08E-03	
Xylene[c,e]	1.93E-04	6.40E-04		2.56E-04	2.80E-03	

a) Emission factors are from AP-42
b) AP-42, Table 3.4-1, Gaseous Emission Factors for Large Stationary Diesel and All Stationary Dual Fuel Engines, 10/96
c) AP-42, Table 3.4-3, Speciated Organic Compound Emission Factors for Large Uncontrolled Stationary Diesel Engines, Emission Factor Rating E, 10/96
c1) AP-42, Table 3.4-4, PAH Emission Factors for Large Uncontrolled Stationary Diesel Engines, Emission Factor Rating E, 10/96
d) AP-42, Table 3.4-2, Particulate and Particle-Sizing Emission Factors for Large Uncontrolled Stationary Diesel Engines, Emission Factor Rating E, 10/96
e) IDAPA Toxic Air Pollutant

DEQ Toolkit_**EI Cummins Gen >600 hp (447 kW)**

Facility: Walters Ready Mix, Rexburg Crusher Facility **10/31/2006**
Facility ID/Permit: 777-00126 P-060515
Initial Location: ~1/2 mile north of 2500 West 65th South, Idaho Falls

Electrical Generator > 600 hp (447 kW) AP-42 Section 3.4 (diesel fueled, uncontrolled)

Electrical Generator > 600 hp (447 kW) AP-42 Section 3.4 (diesel-fueled)			
Generator Make/Model	Detroit Diesel	Section B Operations	
650 hp (484.7 kW)			
FUEL OPTIONS: #2 Fuel Oil (Diesel)			
Max Sulfur weight percent (w/o)	0.5	Stack Height, ft	11
Max Fuel Use Rate, gal/hr	23.07	Stack ID, ft	0.333
Fuel Heating Value, Btu/gal	137,030	Exhaust Flow, acfm	1,050
Calculated MMBtu/hr	3.16	Exhaust Temp, F	950
Max Operational Hours per Day	16		
Max Operational Hours per Year	400		
Max Hrs (facility classification)	8,760		

EMISSIONS AT 16 hr/day GENERATOR HOURS

Note: AP-42 Tables 3.3-x,3.4-x: avg diesel heating value is based on 19,300 Btu/lb with density equal 7.1 lb/gal=> Btu/gal

Pollutant	Uncontrolled Emission Factor[a] (lb/MMBtu)	Emissions (lb/hr)	Emissions (lb/hr 24-hr or annual average)	PTE Emissions at Proposed Max Hours (T/yr)	Emissions for Facility Classification (T/yr)	
PM (total) [b]	0.1	0.316		0.06	1.38	
PM-10 (total) [d]	0.0573	0.181		0.04	0.79	
P.M.-2.5						
CO [b]	0.85	2.687		0.54	11.77	
NOx [b]	3.2	10.116		2.02	44.31	
SO_2 [b] (total SOx presumed SO2)	0.505	1.596		0.32	6.99	
VOC [b] (total TOC--> VOCs)	0.09	0.285		0.06	1.25	
Lead						
PAH HAPs						
Acenaphthene[c1]	4.68E-06	1.48E-05		2.96E-06	6.48E-05	not specific Idaho TAP, see PAH
Acenaphthylene[c1]	9.23E-06	2.92E-05		5.84E-06	1.28E-04	not specific Idaho TAP, see PAH
Anthracene[c1]	1.23E-06	3.89E-06		7.78E-07	1.70E-05	not specific Idaho TAP, see PAH
Benzo(a)anthracene[c1,e]	6.22E-07	1.97E-06		3.93E-07	8.61E-06	see POM
Benzo(a)pyrene[c1,e]	2.57E-07	8.12E-07		1.62E-07	3.56E-06	see POM
Benzo(b)fluoranthene[c1,e]	1.11E-06	3.51E-06		7.02E-07	1.54E-05	see POM
Benzo(g,h,I)perylene[c1]	5.56E-07	1.76E-06		3.52E-07	7.70E-06	not specific Idaho TAP, see PAH
Benzo(k)fluoranthene[c1,e]	2.18E-07	6.89E-07		1.38E-07	3.02E-06	see POM
Chrysene[c1,e]	1.53E-06	4.84E-06		9.67E-07	2.12E-05	see POM
Dibenzo(a,h)anthracene[c1,e]	3.46E-07	1.09E-06		2.19E-07	4.79E-06	see POM
Fluoranthene[c1]	4.03E-06	1.27E-05		2.55E-06	5.58E-05	not specific Idaho TAP, see PAH
Fluorene[c1]	1.28E-05	4.05E-05		8.09E-06	1.77E-04	not specific Idaho TAP, see PAH
Indeno(1,2,3-cd)pyrene[c1,e]	4.14E-07	1.31E-06		2.62E-07	5.73E-06	see POM
Naphthalene[c1,e]	1.30E-04	4.11E-04		8.22E-05	1.80E-03	Specific Idaho TAP, plus see PAH
Phenanthrene[c1]	4.08E-05	1.29E-04		2.58E-05	5.65E-04	not specific Idaho TAP, see PAH
Pyrene[c1]	3.71E-06	1.17E-05		2.35E-06	5.14E-05	not specific Idaho TAP, see PAH
PAH HAPs		**6.69E-04**	3.05E-05	**1.34E-04**	**2.93E-03**	Carcinogen, Annual Std
Polycyclic Organic Matter (POM)		**1.42E-05**	6.49E-07	**2.84E-06**	**6.23E-05**	Carcinogen, Annual Std
Non-PAH HAPs						
Acetaldehyde[c,e]	2.52E-05	7.97E-05	3.64E-06	1.59E-05	3.49E-04	Carcinogen, Annual Std
Acrolein[c,e]	7.88E-06	2.49E-05		4.98E-06	1.09E-04	
Benzene[c,e]	7.76E-04	2.45E-03	1.12E-04	4.91E-04	1.07E-02	Carcinogen, Annual Std
Formaldehyde[c,e]	7.89E-05	2.49E-04	1.14E-05	4.99E-05	1.09E-03	Carcinogen, Annual Std
Toluene[c,e]	2.81E-04	8.88E-04		1.78E-04	3.89E-03	
Xylene[c,e]	1.93E-04	6.10E-04		1.22E-04	2.67E-03	

a) Emission factors are from AP-42
b) AP-42, Table 3.4-1, Gaseous Emission Factors for Large Stationary Diesel and All Stationary Dual Fuel Engines, 10/96
c) AP-42, Table 3.4-3, Speciated Organic Compound Emission Factors for Large Uncontrolled Stationary Diesel Engines, **Emission Factor Rating E**, 10/96
c1) AP-42, Table 3.4-4, PAH Emission Factors for Large Uncontrolled Stationary Diesel Engines, **Emission Factor Rating E**, 10/96
d) AP-42, Table 3.4-2, Particulate and Particle-Sizing Emission Factors for Large Uncontrolled Stationary Diesel Engines, **Emission Factor Rating E**, 10/96
e) IDAPA Toxic Air Pollutant

DEQ Toolkit_**EI Detroit Gen >600 hp (447 kW)**

APPENDIX C

Modeling Review

P-060515

Facility: Walters Ready Mix, Rexburg Crusher Facility
Facility ID/Permit: 777-00126 P-060515
Initial Location: ~1/2 mile north of 2500 West 65th South, Idaho Falls

AMBIENT AIR QUALITY MODELING - INITIAL PERMIT

EMISSIONS AT 16 hr/day GENERATOR HOURS

Ambient Impacts - Screening Modeling

Release Parameters	Cummins	Detroit Diesel		
Stack Height (ft)	15	11		
Stack Diameter (ft)	1.70	0.3330		
Stack Gas Temp (°F)	850	950		
Stack Gas Flow (acfm)	8,330	1,050		
Hours of Operation per Day	16	16		
Hours of Operation per Year	800	400		
SCREEN 3 Dispersion Coeff	10.870	62.710		

[1] Persistence Factors from Appendix A to the Idaho DEQ Air Quality Modeling Guide, rev 1, 12/31/02

Max ambient impacts from criteria pollutants are based on each unit hrs/day and hrs/yr limits specified
Material Handling Impacts estimated from a generic analysis (e-mail, Kevin Schilling to Cheryl Robinson, 9/18/06) at 10 ug/m3 per 100 T/hr, based on including a tertiary crusher, two screens,6 conveyor transfers and truck loading (total capacity of primary crushers for this facility is 600 T/hr). (information for annual impacts not yet available.)

			Cummins			Detroit Diesel			Material Handling					
Pollutant	Averaging Period	Persistence Factor, Simple Terrain[1] (unitless)	SCREEN 3 Dispersion Coefficient (µg/m³/lb/hr)	Estimated Change in Emission Rate (lb/hr)	Maximum Predicted Ambient Impact (µg/m3)	SCREEN3 Dispersion Coefficient (µg/m³/lb/hr)	Estimated Change in Emission Rate (lb/hr)	Maximum Predicted Ambient Impact (µg/m3)	Predicted Ambient Impact (µg/m3)	FACILITY AMBIENT IMPACT (µg/m³)	Background Concentration (µg/m3)	TOTAL AMBIENT IMPACT (µg/m³)	NAAQS (µg/m3)	Percent of NAAQS
PM-10	24-hour	0.4	10.870	0.190	0.551	62.710	0.181	3.03E+00	60	3.58	73	136.58	150	91.1%
	Annual	0.08	10.870	0.190	0.015	62.710	0.181	4.15E-02		5.56E-02	26	26.06	50	52.1%
CO	1-hour	1	10.870	2.819	30.639	62.710	2.687	1.69E+02		199.15	3600	3799.15	40,000	9.5%
	8-hour	0.7	10.870	2.819	21.448	62.710	2.687	1.18E+02		139.40	2300	2439.40	10,000	24.4%
NO_2	Annual	0.08	10.870	10.612	0.843	62.710	10.116	2.32E+00		3.16	17	20.16	100	20.2%
SO_2	3-hour	0.9	10.870	1.675	16.383	62.710	1.596	9.01E+01		106.48	34	140.48	1,300	10.8%
	24-hour	0.4	10.870	1.675	4.854	62.710	1.596	2.67E+01		31.55	26	57.55	365	15.8%
	Annual	0.08	10.870	1.675	0.133	62.710	1.596	3.66E-01		0.50	8	8.50	80	10.6%
Ozone (as VOCs/TOCs)	8-hour	0.7	10.870	0.298	2.271	62.710	0.285	1.25E+01		14.76			0.08 ppm	
Lead	Quarterly	0.130	10.870		0.000	62.710		0.00E+00		0.00E+00	3.00E-02	0.03	1.5	2.0%
Non-Carcinogenic (586)[6]				Uncontrolled Emissions (lb/hr)	Uncontrolled Impact (µg/m3)		Uncontrolled Emissions (lb/hr)	Uncontrolled Impact (µg/m3)				Uncontrolled Impact (µg/m3)	AAC (mg/m³) (24-hr avg)	Percent of AAC
	24-hour	0.4	10.870		0.000	62.710		0.00E+00		0.00E+00		0.00E+00		
	24-hour	0.4	10.870		0.000	62.710		0.00E+00		0.00E+00		0.00E+00		
	24-hour	0.4	10.870		0.000	62.710		0.00E+00		0.00E+00		0.00E+00		
	24-hour	0.4	10.870		0.000	62.710		0.00E+00		0.00E+00		0.00E+00		
Carcinogenic (586)[6]													AACC (µg/m3) (Annual avg)	Percent of AACC
PAH	Annual	0.125	10.870	7.01E-04	9.53E-04	62.710	6.69E-04	5.24E-03		6.20E-03		6.20E-03	1.4E-02	44.3%
PolycyclicOrganic Matter	Annual	0.125	10.870	1.49E-05	2.03E-05	62.710	1.42E-05	1.11E-04		1.32E-04		1.32E-04	3.0E-04	43.9%
Benzene	Annual	0.125	10.870	2.57E-03	3.50E-03	62.710	2.45E-03	1.92E-02		2.27E-02		2.27E-02	1.2E-01	18.9%
Formaldehyde	Annual	0.125	10.870	2.62E-04	3.56E-04	62.710	2.49E-04	1.96E-03		2.31E-03		2.31E-03	7.7E-02	3.0%

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 95250 ***

SECTION A OPERATIONS

777-00126 WALTERS READY MIX, CRUSHER P-060515 - CUMMINS 500 KW GENERATOR

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT	
EMISSION RATE (G/S)	=	.126000	
STACK HEIGHT (M)	=	4.5720	(15 FEET)
STK INSIDE DIAM (M)	=	.5182	(1.7 FEET)
STK EXIT VELOCITY (M/S)	=	18.6432	(41.2 MPH)
STK GAS EXIT TEMP (K)	=	727.5944	(850 F)
AMBIENT AIR TEMP (K)	=	293.0000	
RECEPTOR HEIGHT (M)	=	.0000	
URBAN/RURAL OPTION	=	RURAL	
BUILDING HEIGHT (M)	=	.0000	
MIN HORIZ BLDG DIM (M)	=	.0000	
MAX HORIZ BLDG DIM (M)	=	.0000	

STACK EXIT VELOCITY WAS CALCULATED FROM
VOLUME FLOW RATE = 8330.0000 (ACFM)

BUOY. FLUX = 7.330 M**4/S**3; MOM. FLUX = 9.395 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
10.	.0000	1	1.0	1.0	320.0	100.01	5.32	4.42	NO
100.	9.345	4	20.0	20.0	6400.0	8.76	8.26	4.75	NO
200.	9.244	4	15.0	15.0	4800.0	10.67	15.67	8.69	NO
300.	7.429	4	10.0	10.0	3200.0	14.12	22.77	12.40	NO
400.	6.196	4	8.0	8.0	2560.0	16.50	29.65	15.65	NO
500.	5.333	4	5.0	5.0	1600.0	23.66	36.56	19.09	NO
600.	4.745	4	5.0	5.0	1600.0	23.66	43.06	21.90	NO
700.	4.229	4	4.0	4.0	1280.0	28.43	49.66	24.98	NO
800.	3.817	4	4.0	4.0	1280.0	28.43	55.99	27.64	NO
900.	3.493	4	3.5	3.5	1120.0	31.84	62.37	30.48	NO
1000.	3.217	4	3.0	3.0	960.0	36.39	68.73	33.36	NO
MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 10. M:									
133.	**10.87**	**4**	**20.0**	**20.0**	**6400.0**	**8.76**	**10.81**	**6.11**	**NO**

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

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      ****************************************
      *** SUMMARY OF SCREEN MODEL RESULTS ***
      ****************************************

 CALCULATION       MAX CONC    DIST TO   TERRAIN
  PROCEDURE       (UG/M**3)    MAX (M)    HT (M)
--------------  -----------  -------  -------
SIMPLE TERRAIN     10.87          133.       0.


**************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
**************************************************
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*** SCREEN3 MODEL RUN ***
*** VERSION DATED 95250 ***

SECTION B OPERATIONS

777-00126 WALTERS READY MIX,CRUSHER P-060515-DETROIT DIESEL 650 hp GENERATOR

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT	
EMISSION RATE (G/S)	=	.126000	
STACK HEIGHT (M)	=	3.3528	(11 FEET)
STK INSIDE DIAM (M)	=	.1015	(0.333 FEET)
STK EXIT VELOCITY (M/S)	=	61.2436	(137 MPH)
STK GAS EXIT TEMP (K)	=	783.1500	(950 F)
AMBIENT AIR TEMP (K)	=	293.0000	
RECEPTOR HEIGHT (M)	=	.0000	
URBAN/RURAL OPTION	=	RURAL	
BUILDING HEIGHT (M)	=	.0000	
MIN HORIZ BLDG DIM (M)	=	.0000	
MAX HORIZ BLDG DIM (M)	=	.0000	

STACK EXIT VELOCITY WAS CALCULATED FROM
VOLUME FLOW RATE = 1050.0000 (ACFM)

BUOY. FLUX = .968 M**4/S**3; MOM. FLUX = 3.614 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
10.	.3651E-02	1	3.0	3.0	960.0	10.32	3.58	2.01	NO
100.	58.86	4	5.0	5.0	1600.0	7.53	8.29	4.80	NO
200.	48.51	4	3.0	3.0	960.0	10.32	15.69	8.73	NO
300.	38.19	4	2.0	2.0	640.0	13.81	22.81	12.46	NO
400.	31.27	4	1.5	1.5	480.0	17.29	29.72	15.78	NO
500.	25.70	4	1.0	1.0	320.0	24.26	36.64	19.25	NO
600.	23.02	4	1.0	1.0	320.0	24.26	43.13	22.04	NO
700.	20.23	4	1.0	1.0	320.0	24.26	49.55	24.77	NO
800.	17.69	4	1.0	1.0	320.0	24.26	55.89	27.44	NO
900.	15.49	4	1.0	1.0	320.0	24.26	62.17	30.07	NO
1000.	15.27	6	1.0	1.0	10000.0	27.75	34.59	15.60	NO
MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 10. M:									
55.	**62.71**	**3**	**8.0**	**8.0**	**2560.0**	**5.97**	**7.32**	**4.44**	**NO**

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

```
      ****************************************
      *** SUMMARY OF SCREEN MODEL RESULTS ***
      ****************************************

 CALCULATION       MAX CONC    DIST TO   TERRAIN
  PROCEDURE       (UG/M**3)    MAX (M)    HT (M)
--------------  -----------  -------  -------
SIMPLE TERRAIN     62.71          55.       0.


**************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
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MEMORANDUM

DATE: October 27, 2006

TO: Cheryl Robinson, Air Quality Permitting Engineer, Air Program

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

PROJECT NUMBERS: P-060514, P-060515, P-060505, and P-060506

SUBJECT: Modeling Review for Permit to Construct Applications for Portable Truck Mix Concrete Batch Plants and Portable Rock Crusher to be Collocated in Idaho Falls, Idaho:
Valley Ready Mix, Inc., Facility ID 777-00177, P-060514 (concrete batch)
Walters Ready Mix, Inc., Facility ID 777-00126, P-060515 (crusher)
Walters Ready Mix, Inc., Facility ID 777-00290, P-060505 (concrete batch)
Walters Ready Mix, Inc., Facility ID 777-00291, P-060506 (concrete batch)

1.0 Summary

Walters Ready Mix, Inc. (Walters) and Valley Ready Mix, Inc. (Valley Ready Mix) submitted Permit to Construct (PTC) applications for their portable truck mix concrete batch plants to collocate at the Valley Ready Mix facility at 2500 West 65th South in Idaho Falls, Idaho. Air quality analyses involving atmospheric dispersion modeling of emissions associated with collocated operations of these plants—in addition to the operations of a Walters rock crushing plant (Facility ID 777-00126) located approximately 1/2-mile to the north—were conducted by DEQ to demonstrate that collocating these facilities would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02).

DEQ performed refined dispersion modeling analyses to evaluate potential impacts of the facility. The DEQ modeling analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that predicted pollutant concentrations from emissions associated with the proposed facility were below significant contribution levels (SCLs); or b) that predicted pollutant concentrations from emissions associated with the facility, when appropriately combined with background concentrations, were below applicable air quality standards at all receptor locations. Table 1 presents key assumptions and results that should be considered in the development of the permit.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	**Explanation/Consideration**
Aggressive control of fugitive emissions associated with material handling were needed to enable facility-wide compliance with PM_{10} standards.	A 95% control of emissions associated with the handling of aggregate and sand for the Valley Ready Mix and Walters concrete batch plants was used to enable compliance with the 24-hour PM_{10} standard. Additional 70% control of emissions from the Walters crusher plant was also needed to enable compliance.
DEQ performed refined analyses based on estimated site-specific characteristics and equipment configurations.	Although the configuration of equipment may change, especially for potentially collocated batch plants, DEQ's analyses utilized the most-probable locations of equipment and operations.
Production by the Valley Ready Mix concrete plant, the Walters crusher and the two collocated Walters Ready-Mix plants, must be limited to 16 hours/day at maximum production (or corresponding daily production limit)	Compliance with the 24-hour PM_{10} standard could not be demonstrated with 24 hour/day collocated operations. "Collocated" in this case means that the Walters concrete batch plants are located at the Valley Ready Mix facility, and the Walters crusher is located no closer than about ½-mile to the north.
Restrictions on annual production are not necessary to comply with annual air quality standards	Maximum daily operations were modeled for 365 days per year. Results meet air quality standards.

2.0 Background Information

2.1 Applicable Air Quality Impact Limits and Modeling Requirements

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

2.1.1 Area Classification

These four facilities will only be collocated in areas designated as an attainment or unclassifiable for all criteria pollutants. The Idaho Falls area is an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), ozone (O_3), and particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}).

2.1.2 Significant and Full Impact Analyses

If estimated maximum pollutant impacts to ambient air from the emissions sources associated with the proposed new facility or modification exceed the significant contribution levels (SCLs) of IDAPA 58.01.01.006.90, then a full impact analysis is necessary to demonstrate compliance with IDAPA 58.01.01.203.02. A full impact analysis for attainment area pollutants involves adding ambient impacts from facility-wide emissions to DEQ-approved background concentration values that are appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact. The resulting maximum pollutant concentrations in ambient air are then compared to the National Ambient Air Quality Standards (NAAQS) listed in Table 2. Table 2 also lists SCLs and specifies the modeled value that must be used for comparison to the NAAQS.

Table 2. APPLICABLE REGULATORY LIMITS				
Pollutant	Averaging Period	Significant Contribution Levels[a] ($\mu g/m^3$)[b]	Regulatory Limit[c] ($\mu g/m^3$)	Modeled Value Used[d]
PM_{10}[e]	Annual	1.0	50[f]	Maximum 1st highest[g]
	24-hour	5.0	150[h]	Maximum 6th highest[i]
Carbon monoxide (CO)	8-hour	500	10,000[j]	Maximum 2nd highest[g]
	1-hour	2,000	40,000[j]	Maximum 2nd highest[g]
Sulfur Dioxide (SO_2)	Annual	1.0	80[f]	Maximum 1st highest[g]
	24-hour	5	365[j]	Maximum 2nd highest[g]
	3-hour	25	1,300[j]	Maximum 2nd highest[g]
Nitrogen Dioxide (NO_2)	Annual	1.0	100[f]	Maximum 1st highest[g]
Lead (Pb)	Quarterly	NA	1.5[h]	Maximum 1st highest[g]

[a] IDAPA 58.01.01.006.90
[b] Micrograms per cubic meter
[c] IDAPA 58.01.01.577 for criteria pollutants
[d] The maximum 1st highest modeled value is always used for significant impact analysis
[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] Not to be exceeded more than once per year

2.1.3 Toxic Air Pollutant Analyses

Toxic Air Pollutant (TAP) requirements for PTCs are specified in IDAPA 58.01.01.210. If the emissions increase associated with a new source or modification exceeds screening emission levels (ELs) of IDAPA 58.01.01.585 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 IDAPA 58.01.01.585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of IDAPA 58.01.01.586, then compliance with TAP requirements has been demonstrated.

As described in the statement of basis for the concrete batch plant permits, the total estimated emissions of noncarcinogenic TAPs (subject to a 24-hour standard) from collocated operations at 16 hours/day for each plant do not exceed the screening ELs. Modeling of noncarcinogenic TAPs was therefore not required.

The annual production rates requested in the applications for collocated operations of the three concrete batch plants (160,000 cy/yr for the Valley Ready Mix plant, and 10,000 cy/yr for each of the two Walters plants, for a total of 180,000 cy/yr) is less than the annual production rate currently permitted at the Valley Ready Mix facility when not collocated (90,000 cy per month, or 1.08 million cy/yr). This results in a decrease of the allowable emissions of carcinogenic TAPs (subject to an annual standard) compared to non-collocated operations. Modeling of carcinogenic TAPs was therefore not required.

2.2 Background Concentrations

Background concentrations were revised for all areas of Idaho by DEQ in March 2003[1]. Background concentrations in areas where no monitoring data are available were based on

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

monitoring data from areas with similar population density, meteorology, and emissions sources.

Background concentration values used in the modeling analyses are shown in Table 3. Default rural/agricultural background concentrations were used because concrete batch plants are typically located outside of urban areas. The area in Idaho Falls where the plant is currently located is more representative of rural/agricultural areas than urban areas for the purpose of determining background concentrations.

Table 3. BACKGROUND CONCENTRATIONS		
Pollutant	**Averaging Period**	**Background Concentration ($\mu g/m^3$)[a]**
PM_{10}[b]	24-hour	73
	annual	26
Sulfur Dioxide (SO_2)	3-hour	34
	24-hour	26
	annual	8
Carbon Monoxide (CO)	1-hour	3,600
	8-hour	2,300
Nitrogen Dioxide (NO_2)	annual	17

[a] Micrograms per cubic meter

[b] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers

3.0 Modeling Impact Assessment

3.1 Modeling Methodology

The Valley Ready Mix concrete batch plant consists of a West Side and East Side truck loadout plant, two aggregate bin/scales units, and two generators. A rock crushing plant, operated by Walters Ready Mix, operates to the north of the Valley Ready Mix batch plant. Valley Ready Mix also requested to operate along with two Walters Ready Mix concrete batch plants that may collocate at the site. The air quality modeling analyses assess impacts for the following operational scenario:

- Valley Ready Mix: two sides at 60 yd^3/hour and 80,000 yd^3/year for a combined daily throughput of 120 yd^3/hour and 160,000 yd^3/year; Cummins 230 kW diesel generator, and Detroit Diesel 650 kW generator.

- Walters Ready Mix Crusher: Side A: 500 ton/hour primary vertical impact crusher and screen; 350 ton/hour secondary cone crusher and screen; 100 ton/hour tertiary jaw crusher and screen; Cummins 500 kW diesel generator. Side B: 100 ton/hour primary vertical impact crusher and screen; Detroit Diesel 485 kW generator.

- Walters Truck Mix Concrete Batch Plants: two 60 yd^3/hour plants, each with an annual production of 10,000yd^3/year, and each with a 50kW Cummins diesel generator.

Table 4 provides a description of input parameters used in the modeling analyses.

Table 4. REFINED MODELING PARAMETERS		
Parameter	**Description/Values**	**Documentation/Addition Description**
Model	ISCST3-PRIME	ISCST3 with the PRIME downwash algorithm, version 04269
Meteorological data	2000-2004	Roberts surface data and Boise upper air data
Terrain	Flat	Flat terrain used since maximum impacts are very near the facility
Building downwash	Considered	The building profile input program (BPIP) was used
Receptor Grid	Grid 1	25-meter out to 100 meters
	Grid 2	50-meter out to 500 meters
	Grid 3	100 meter out to 1,000 meters

3.1.1 General Modeling Methods

Modeling was conducted using methods and data presented in the *State of Idaho Air Quality Modeling Guideline.*

3.1.2 Model Selection

ISCST3 with the PRIME downwash algorithm was used for DEQ's refined modeling analyses. ISCST3 uses actual monitored meteorological data and uses actual locations of emissions units in the evaluation of air pollutant impacts.

3.1.3 Meteorological Data

Five years of surface meteorological data collected in Roberts, Idaho, combined with upper air data from Boise, Idaho, were used in the modeling analyses.

PCRAMMET, the meteorological data preprocessor for ISCST-3, occasionally generates unrealistically low mixing heights as a result of interpolation algorithms used with the twice daily measured mixing heights. The modeling analyses were conducted using meteorological data corrected for low mixing heights. All mixing height values below 50 meters were replaced with a value of 50 meters.

3.1.4 Terrain Effects

Terrain effects on dispersion were not considered in the analyses. Because maximum impacts from the near ground-level sources at the facility are within several hundred meters, terrain effects on maximum modeled impacts are minimal.

3.1.5 Facility Layout

The facility plot plan submitted to DEQ was used to establish the general location of the Valley Ready Mix plant, the Walters rock crusher, and the proposed collocated Walters Ready Mix concrete batch plants.

3.1.6 Building Downwash

Building locations and dimensions for the Valley Ready Mix plant were obtained from a submitted facility plot plan. Hypothetical locations for the potentially collocated Walters

Ready Mix concrete batch plants were based on estimates made through discussions with Valley Ready Mix personnel.

3.1.7 Ambient Air Boundary

The facility property boundary, as identified on a submitted plot plan, was used as the ambient air boundary for the DEQ refined analyses. DEQ assumed reasonable measures would be taken to ensure the general public is excluded from access to the property.

3.1.8 Receptor Network

Table 4 describes the receptor grid used in DEQ's refined analyses. The receptor grid met the minimum recommendations specified in the *State of Idaho Air Quality Modeling Guideline.* DEQ determined the receptor grid was adequate to reasonably resolve maximum modeled concentrations.

3.2 Emission Rates

Emissions rates used in the concrete batch plant dispersion modeling analyses were based on emissions factors from EPA's AP-42 Section 11.12 (June 2006), *Concrete Batching.* Emissions rates for the rock crusher were based on emissions factors from AP-42 Section 11.19.2 (August 2004) *Crushed Stone Processing and Pulverized Mineral Processing.*

3.2.1 Criteria Pollutant Emissions Rates

DEQ's facility-wide analyses of the Valley Ready Mix plant included impacts from the rock crushing facility that is typically located about ½-mile north of the Valley Ready Mix site and the two Walters Ready Mix concrete batch plants that may potentially collocate at the site. Emissions from the storage silos were based on permit allowable rates. Emissions from other fugitive sources at the plant were based on allowable throughput and emissions factors from EPA's AP-42. Emissions from rock crushing operations were based on processing 300 ton/hr and emissions factors from AP-42, Chapter 11.19.2.

Table 5 lists emissions rates used in the facility-wide modeling analyses. To enable compliance with the 24-hour PM_{10} standard, operations had to be restricted to an equivalent of 16 hours per day at maximum hourly rates. Emissions rates in the table are representative of these operational rates for all generators and equipment operations at the crusher, the Valley Ready Mix plant, and the proposed collocated Walters Ready Mix batch plants.

Emissions from the handling of aggregate and sand for the cement plant are a function of material moisture content. Typical moisture contents, as specified in AP-42, were used for initial modeling. Emissions from these sources also vary with wind speed. A base emissions rate was calculated for a 10 mile/hour (mph) wind, and adjustment factors were made for wind speed categories of 1.7 mph, 5.2 mph, 9.2 mph, 15.0 mph, 21.3 mph, and 27.7 mph. The adjustment factors were entered in the model to be used with the appropriate wind speed for the particular hour modeled.

Aggressive control of material handling fugitive emissions were necessary to demonstrate compliance with the PM_{10} 24-hour standard. Calculated emissions from the crusher plant, including crushers, screens, and conveyors, were reduced by 70 percent to account for

aggressive controls. Aggregate/sand handling emissions from the ready mix plants were reduced by 95 percent, beyond emissions associated with handling materials with default moisture contents, to enable compliance.

Table 5. EMISSIONS RATES USED FOR FULL IMPACT ANALYSIS MODELING					
Emissions Point	Description	Emissions Rates (lb/hr)			
		PM_{10}[a]	SO_2[b]	CO[c]	NOx[d]
CRGENA	Crusher side A – generator	0.127	1.12	1.88	7.07
CR1SCREE	Crusher side A – 1° screen	0.247	0.0	0.0	0.0
CR2SCREE	Crusher side A – 2° screen	0.173	0.0	0.0	0.0
CR3SCREE	Crusher side A – 3° screen + crusher	0.0853	0.0	0.0	0.0
CRCONVEY	Crusher side A – conveyors	0.092	0.0	0.0	0.0
CRGENB	Crusher side B – generator	0.121	1.06	1.79	6.75
CR1SCREB	Crusher side B – 1° screen	0.0493	0.0	0.0	0.0
CRCONVB	Crusher side B – conveyors	0.092	0.0	0.0	0.0
VGEN1	Valley – generator 1	0.442	0.414	1.36	6.29
VGEN2	Valley – generator 2	0.0794	0.402	0.676	2.55
ES1	Valley – east side cement silo #1	0.0068	0.0	0.0	0.0
ES2	Valley – east side cement silo #2	0.0068	0.0	0.0	0.0
WS1	Valley - west side cement silo #1	0.0068	0.0	0.0	0.0
WS2	Valley – west side cement silo #2	0.0613	0.0	0.0	0.0
AGGSANDS	Valley – aggregate/sand to storage	0.0286	0.0	0.0	0.0
AGGELEST	Valley – aggregate/sand to elevated storage + weigh hopper loading – west side	0.0151	0.0	0.0	0.0
AGSEAST	Valley – aggregate/sand to elevated storage + weigh hopper loading – east side	0.0151	0.0	0.0	0.0
TLOADE	Valley – truck loadout east side	0.157	0.0	0.0	0.0
TLOAD2	Valley – truck loadout west side	0.157	0.0	0.0	0.0
W1GEN	Walters 1 – generator	0.146	0.137	0.447	2.08
W1SILO	Walters 1 – cement silo	0.00167	0.0	0.0	0.0
W1AGSTOR	Walters 1 – aggregate/sand to storage	0.00954	0.0	0.0	0.0
W1AGGELS	Walters 1 – aggregate/sand to elevated storage	0.00477	0.0	0.0	0.0
W1WEIHOP	Walters 1 – weigh hopper loading	0.00527	0.0	0.0	0.0
W1TRKLD	Walters 1 – truck loadout	0.0524	0.0	0.0	0.0
W2GEN	Walters 2 – generator	0.146	0.137	0.447	2.08
W2SILO	Walters 3 – cement silo	0.00167	0.0	0.0	0.0
W2AGSTOR	Walters 4 – aggregate/sand to storage	0.00954	0.0	0.0	0.0
W2AGGELS	Walters 5 – aggregate/sand to elevated storage	0.00477	0.0	0.0	0.0
W2WEIHOP	Walters 6 – weigh hopper loading	0.00527	0.0	0.0	0.0
W2TRKLD	Walters 7 – truck loadout	0.0524	0.0	0.0	0.0

[a] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
[b] Sulfur dioxide
[c] Carbon monoxide
[d] Nitrogen dioxide
[e] Annualized emissions (annual emissions divided by 8760 hr/yr)

3.2.2 TAP Emissions Rates

Emissions of TAPs were not calculated because this project does not involve permitting of any new or modified sources. TAPs increments are only applicable to new sources or modifications of existing sources.

3.3 Emission Release Parameters

Table 6 provides emissions release parameters for the DEQ refined analyses including stack height, stack diameter, exhaust temperature, and exhaust velocity.

Table 6. EMISSIONS AND STACK PARAMETERS					
Release Point /Location	**Source Type**	**Stack Height (m)[a]**	**Modeled Diameter (m)**	**Stack Gas Temp. (K)[b]**	**Stack Gas Flow Velocity (m/sec)[c]**
CRGENA	Point	4.6	0.52	728	18.6
CRGENB	Point	3.4	0.10	783	61.2
VGEN1	Point	2.1	0.10	783	50.0
VGEN2	Point	4.0	0.10	783	61.2
ES1	Point	15.2	0.30	Ambient	9.7
ES2	Point	15.2	0.08	Ambient	50.6
WS1	Point	15.2	0.08	Ambient	50.6
WS2	Point	15.2	0.20	Ambient	9.9
W1GEN	Point	4.0	0.08	783	43.5
W1SILO	Point	10.0	1.0	Ambient	0.34
W2GEN	Point	4.0	0.08	783	43.5
W2SILO	Point	10.0	1.0	Ambient	0.34
Volume Sources					
Release Point /Location	**Source Type**	**Release Height (m)**	**Initial Horizontal Dispersion Coefficient σ_{y0} (m)**	**Initial Vertical Dispersion Coefficient σ_{z0} (m)**	
CR1SCREE	Volume	5.0	1.16	1.16	
CR2SCREE	Volume	5.0	1.16	1.16	
CR3SCREE	Volume	5.0	2.3	1.16	
CRCONVEY	Volume	5.0	7.0	1.16	
CRCONVB	Volume	5.0	7.0	1.16	
AGGSAMDS	Volume	3.0	11.6	1.4	
AGGELEST	Volume	5.0	4.9	4.5	
AGSEAST	Volume	6.3	2.3	5.8	
TLOADE	Volume	9.0	1.77	8.4	
TLOADW	Volume	9.0	1.67	8.4	
W1AGSTOR	Volume	3.0	11.6	1.4	
W1AGGELS	Volume	5.0	1.16	4.7	
W1WEIHOP	Volume	5.0	2.3	4.7	
W1TRKLD	Volume	5.0	2.3	4.7	
W2AGSTOR	Volume	3.0	11.6	1.4	
W2AGGELS	Volume	5.0	1.16	2.2	
W2WEIHOP	Volume	5.0	2.3	4.7	
W2TRKLD	Volume	5.0	2.3	4.7	

[a] Meters
[b] Kelvin
[c] Meters per second

3.4 Results for Significant and Full Impact Analyses

Table 7 shows results for the significant impact analyses. Full-impact analyses, combining facility-wide impacts with appropriate background concentrations, was required for all criteria pollutants except carbon monoxide.

Table 7. SIGNIFICANT IMPACT ANALYSES				
Pollutant	Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)[a]	Significant Impact Level ($\mu g/m^3$)	Full Impact Analysis Required
PM_{10}[b]	24-hour	113.3	5.0	Yes
	Annual	11.2	1.0	Yes
Sulfur Dioxide (SO_2)	3-hour	92.7	25	Yes
	24-hour	66.9	5	Yes
	Annual	8.9	1.0	Yes
Carbon Monoxide (CO)	1-hour	247	2,000	No
	8-hour	215	500	No
Nitrogen Dioxide (NO_2)	Annual	78.8[c]	1.0	Yes

[a] Micrograms per cubic meter
[b] Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
[c] Assumes 75% of NOx is NO_2

Table 8 shows results for the full impact analyses. The maximum, 6th highest modeled 24-hour PM_{10} concentration, when combined with the default background concentration, was slightly above the 150 $\mu g/m^3$ standard. The location of this concentration was immediately east of weigh hopper loading operations, along the facility boundary. The next highest receptor concentration (using 6th high model results) was 129 $\mu g/m^3$, also at a location directly east of the weigh hopper.

Table 8. RESULTS FOR FULL IMPACT ANALYSES						
Pollutant	Averaging Period	Modeled Design Concentration ($\mu g/m^3$)[a]	Background Concentration ($\mu g/m^3$)	Total Ambient Impact ($\mu g/m^3$)	NAAQS[b] ($\mu g/m^3$)	Percent of NAAQS
PM_{10}[c]	24-hour	78.2[d] (55.6)[e]	73	151.2 (128.6)	150	101 (86)
	Annual	11.2[f]	26	37.2	50	74
Sulfur Dioxide (SO_2)	3-hour	92.3[g]	34	126.3	1,300	10
	24-hour	61.2[g]	26	87.2	365	24
	Annual	8.9[f]	8	16.9	80	21
Nitrogen Dioxide (NO_2)	Annual	78.8[f]	17	95.8	100	96

[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 10 micrometers
[d] Maximum 6th highest modeled concentration at all ambient air locations, obtained by modeling a five-year meteorological data set
[e] 2nd high 6th highest modeled concentration
[f] Maximum modeled concentration
[g] Maximum 2nd highest modeled concentration

The modeling analyses conducted assumed the following control of emissions, as specified in Section 3.2.1:

- 70% emissions control of fugitives beyond that accounted for in the emissions factors for screening and conveyors associated with the crushing plant.
- 95% emissions control of fugitives beyond that accounted for in the emissions factors for aggregate/sand handling for the ready-mix plants. The base emissions for aggregate/sand handling were based on default material moisture contents.

Because emissions associated with material handling operations are highly variable and very uncertain, refining emissions estimates with increasing control efficiencies to achieve a small reduction in estimated impacts offers no utility. To achieve compliance with the 24-hour PM_{10} standard, material handling operations must be aggressively controlled, especially from sources located near the eastern site boundary.

4.0 Conclusions

The ambient air impact analyses demonstrated to DEQ's satisfaction that emissions from the facility, with aggressive emissions controls used for material handling operations, will not cause or significantly contribute to a violation of any air quality standard.