Air Quality Permitting
Statement of Basis

October 30, 2006

Permit to Construct No. P-060505

Walters Ready Mix, Inc.
Portable Concrete Batch Plant

Facility ID No. 777-00290

Prepared by:

Cheryl A. Robinson, P.E., Permit Writer
AIR QUALITY DIVISION

FINAL

Table of Contents

Acronyms, Units, and Chemical Nomenclatures

acfm	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
CO	carbon monoxide
cy/hr	cubic yards per hour
cy/day	cubic yards per day
cy/yr	cubic yards per consecutive 12-month period
DEQ	Department of Environmental Quality
EI	emissions inventory
EL	emission level
EPA	U.S. Environmental Protection Agency
HAPs	Hazardous Air Pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
IFRO	Idaho Falls Regional Office
lb/hr	pounds per hour
$\mu g/m^3$	micrograms per cubic meter
MACT	Maximum Achievable Control Technology
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	sulfur dioxide
T/yr	tons per year
TAP	toxic air pollutant
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 permit replaces PTC No. 777-00290, issued December 10, 2001, the terms and conditions of which no longer apply.

2. FACILITY DESCRIPTION

Walters Ready Mix, Inc. (Walters) operates a portable Vince Hagan truck mix concrete plant. The plant's maximum capacity is 60 cubic yards of concrete per hour (cy/hr), with a normal maximum production of 120,000 cubic yards of concrete per year.

Concrete is produced by combining water, cement, sand (fine aggregate) and gravel (coarse aggregate). Supplementary cementing materials, also called mineral admixtures or pozzolan minerals may be added to make the concrete mixtures more economical, reduce permeability, increase strength, or influence other concrete properties. Typical examples are natural pozzolans, fly ash, ground granulated blast-furnace slag, and silica fume, which can be used individually with Portland or blended cement or in different combinations. Chemical admixtures are usually liquid ingredients that are added to concrete to entrain air, reduce the water required to reach a required slump, retard or accelerate the setting rate, to make the concrete more flowable or other more specialized functions.[1]

A portable concrete batch plant consists of storage bins or stockpiles for the sand and gravel, storage silos for the cement and cement supplement, weigh bins that weigh each component, conveyors, a water supply, and a control panel. Sand and gravel are either produced on site or purchased elsewhere. Typically, three or four different sizes of gravel and one or two different sizes of sand are stockpiled for varying job specifications. Cement and supplementary cementing materials are delivered by truck and pneumatically transferred to the appropriate storage silo. A baghouse or dust collector is mounted above each silo to capture cement or cement supplement as air is displaced in the silo. For this source category, the baghouse is considered primarily as process equipment, with a secondary function as air pollution control equipment. Power to run the facility is provided by the local utility or by a small diesel generator.

After all the storage bins are filled, the production process begins when sand and gravel are drop-fed into their respective weigh bins. When a pre-determined amount of each is weighed, the aggregate is heavily wetted for better mixing and to minimize fugitive dust prior to being dropped onto a conveyor, which transfers the mixture into either a truck for in-transit mixing or a truck mix drum for mixing onsite. A predetermined amount of cement and cement supplement is also weighed and drop-fed through a chute into the mixer. The chute provides a measure of dust control. Sometimes a separate baghouse is used to capture dust from the weigh bins. Water is then added to the truck mix or central mix drum.

3. FACILITY / AREA CLASSIFICATION

This Walters portable concrete batch plant is not a major facility as defined in IDAPA 58.01.01.205, nor is it a designated facility as defined in IDAPA 58.01.01.006. The primary Standard Industrial Classification (SIC) code for this facility is 3273.

Table 3.1 shows the estimated emissions of particulate matter (PM), criteria air pollutants and hazardous air pollutant (HAP) emissions from the concrete batch plant for Aerometric Information Retrieval System (AIRS) facility classification purposes. This portable concrete batch plant is classified as a

[1] AP-42 Section 11.12, November 29, 2005 draft.

minor facility because, as shown in the table, the estimated emissions are less than major source thresholds without imposing limits on the facility operations. The AIRS classification is therefore "B."

The facility is a portable facility and may locate anywhere in the state of Idaho except in the Sandpoint PM_{10} nonattainment area. A relocation form must be completed and submitted to DEQ prior to any relocation.

The AIRS information provided in Appendix A defines the classification for each regulated air pollutant for this portable concrete batch facility. This required information is entered into the EPA AIRS database.

Table 3.1 FACILITY CLASSIFICATION EMISSION ESTIMATES

Emission Source	PM (total) (T/yr)	PM_{10} (T/yr)	HAPs (total) (T/yr)	Any HAP (T/yr)
Major Source Thresholds	250 (PSD)	100 (Tier I)	25 (Tier I)	10 (Tier I)
Truck Mix Concrete Batch Plant Emissions, point sources only, and Cummins 50 kW generator	1.04	1.04	0.054	0.042 (POM: 7-PAH group)

[a] Facility Classification emissions are based on operation at 60 cy/hr for the batch plant and at 50 kW for the generator for 8,760 hrs/year.

4. APPLICATION SCOPE

Walters Ready Mix, Inc. has requested authorization to operate this portable concrete batch plant, along with one other similarly-sized portable concrete batch plant and the Valley Ready Mix concrete batch plant at 2500 West 65th South in Idaho Falls. When collocated at the Valley Ready Mix location, Walters has requested that this portable plant be allowed to operate at 60 cy/hr for an 8-hour day (480 cy/day), with the maximum annual production of concrete from this plant limited to 10,000 cy per year.

4.1 Application Chronology

March 23, 2006	Receipt of PTC application and $1,000 application fee.
April 21, 2006	Application determined to be incomplete.
June 30, 2006	Receipt of supplemental information.
July 27, 2006	Application determined to be complete.
August 3 through September 5, 2006	Opportunity for public comment period. No comments received.
September 25, 2006	Draft permit sent to facility and to the Idaho Falls Regional Office (IFRO) for review and comment.
October 16, 2006	Receipt of processing fee. No comments were received from the IFRO or the facility.

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 contains the equipment listing and the emissions controls. The weigh batcher is not provided with any emissions controls.

Table 5.1 EQUIPMENT LISTING AND EMISSIONS CONTROLS

Source Description	Emissions Control(s)
Concrete Batch Plant – Truck Mix Manufacturer: Vince Hagan Model: HSM 10000 C, Serial # 79020 Maximum production capacity: 60 cubic yards of concrete per hour (cy/hr)	Cement Storage Silo Baghouse: Manufacturer: McNeilus Model: SFV170 Control Efficiency: 99.6% Stack Parameters: Height: 30 feet Exit Diameter: 4.12 feet Exit air flow rate: 650 acfm
Electrical Generator Manufacturer: Cummins Model: 4 BT 3.9-62, 4 cycle, in-line 4 cylinder Rating: 50 kW (67 hp) Fuel: Diesel (#2 fuel oil) Max Fuel Use Rate: 5.15 gallons per hour (gal/hr)	None Generator Stack: Stack height: 13 ft, 2 inches (13.17 ft) Stack diameter: 3 inches (0.25 ft) Exhaust gas flow rate: 460 acfm standby 420 acfm prime Exhaust gas temperature: 1,010 °F standby 950 °F prime

5.2 Emissions Inventory

The collocation request addressed in this PTC results in a decrease in emissions due to a substantial reduction in the allowable concrete production (e.g., dropping to 10,000 cy/year and 8 hours per day to collocate at the Valley Ready Mix location in Idaho Falls, compared to 239,592 cy/year and 24-hour daily operations allowed by the current permit for collocation with any other single facility). The actual decrease was not calculated.

To support facility-wide modeling for collocation of this portable concrete batch plant at the Valley Ready Mix plant location in Idaho Falls, however, DEQ estimated the emissions inventory (EI) for all point source emissions from this truck mix concrete batch plant (i.e., the storage silo baghouse and dust collector stacks) based on emission factors from AP-42 Section 11.12 (Rev. 10/01), and production data provided in the application.

The EI was based on operating the concrete batch plant for 16 hours per day (rather than the requested 8 hours per day) because the facility-wide modeling demonstrated compliance with air quality standards if none of the collocated facilities operate more than 16 hours per day. Annual emissions were based on the requested production rate of 10,000 cubic yards per year. Fugitive emissions are not included in the emission estimates (see Appendix C for fugitive emission estimates developed for the facility-wide modeling). Generator emissions were estimated based on AP-42 Section 1.3 factors for small generators. A summary of emissions from the proposed collocated concrete batch plants (Valley Ready Mix facility 777-00177 and Walters plants 777-00290 and 00291), and the detailed EI for this concrete batch plant can be found in Appendix B.

5.3 Modeling

A facility-wide modeling analysis conducted for collocated operations at the Valley Ready Mix location in Idaho Falls demonstrated compliance with the NAAQS. Compliance relies heavily on maintaining very good control of fugitive dust emissions from facility operations, however, especially for operations sited near the eastern boundary of the site. The modeling analysis report is included as Appendix C.

The proposed operations when collocated represent an increase in the daily facility-wide emissions of toxic air pollutants (TAPs). Uncontrolled emissions of noncarcinogenic TAPs estimated in the EI did not exceed the applicable screening emission level (EL). Modeling for these TAPs was therefore not required. The proposed operations when collocated represent a decrease in the annual facility-wide emissions of carcinogenic TAPs compared to the allowable operations at the Valley Ready Mix facility when not collocated. Facility-wide modeling of carcinogenic TAPs was also therefore not required.

5.4 Regulatory Review

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

IDAPA 58.01.01.201 ..... Permit to Construct Required

This Walters Ready Mix concrete batch plant is currently permitted to collocate with only one additional portable concrete batch plant, rock-crushing plant, or hot-mix asphalt facility in any attainment or unclassified area. A revision to the existing PTC is required to accommodate collocation with more than one other facility.

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

Compliance with the NAAQS standards was demonstrated for this project by the facility-wide modeling analysis conducted by DEQ.

IDAPA 58.01.01.209.05 ..... Permit to Construct Procedures for Tier I Sources

The estimated emissions of PM_{10}, NO_x, SO_2, CO, VOC, and HAPs from this facility do not exceed any major source threshold. Therefore, this is not a Tier I source.

IDAPA 58.01.01.203.3 ..... Toxic Air Pollutants
IDAPA 58.01.01.210 ..... Preconstruction Compliance with Toxics Standards

Preconstruction compliance with TAPs standards has been demonstrated to DEQ's satisfaction for the proposed change to facility operations when collocated at the Valley Ready Mix Idaho Falls location.

IDAPA 58.01.01.625 ..... Visible Emissions

This rule has been incorporated as a permit condition to require control of particulate emissions from concrete batch plant point sources.

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

This rule has been incorporated as a permit condition to require control of fugitive dust from the concrete batch plant.

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

The provisions of this subpart do not apply to stand-alone screening operations at plants without crushers or grinding mills. The facility is therefore not subject to NSPS.

5.5 Permit Conditions Review

This section describes only those permit conditions that have been revised, modified, or deleted as a result of this permit action. All other permit conditions remain unchanged. Permit condition related to the modified permit are referred to as Modified Permit Conditions. Permit conditions related to the existing permit are identified as Existing Permit Conditions.

5.5.1 Existing Permit Condition 1.1.1 (visible emissions, 20% opacity limit) is now Modified Permit Condition 2.3. Modified Permit Condition 2.9 has been added that requires monthly inspections of potential sources of visible emissions.

5.5.2 Existing Permit Condition 1.1.2 (Method 22 determination for fugitive emissions leaving the property boundary) has been deleted.

5.5.3 Existing Permit Condition 1.2.1 regarding reasonable control of fugitive emissions is now Modified Permit Condition 2.7. Fugitive dust control strategies have been added as Modified Permit Condition 2.6

5.5.4 Existing Permit Condition 1.2.2 requiring an O & M manual has been expanded and is now Modified Permit Condition 2.5.

5.5.5 Existing Permit Conditions 1.2.3, 1.2.4, and 1.3.1.1 requiring pressure drop equipment, monitoring, and recording for the pressure drop across the cement silo baghouse have been deleted.

5.5.6 Existing Permit Condition 1.3.1.2 requiring monitoring and recording of concrete production in cy/day and cy/month has been replaced by Modified Permit Condition 2.8.

5.5.7 Existing Permit Conditions 2.1.1, 2.1.3, 3.1.3, 3.1.4, 4.1.1, and 4.1.3 limiting concrete production and generator hours remain unchanged, but have been renumbered and placed in Modified Permit Conditions 2.4.1, 2.4.2, and 2.4.3.

5.5.8 Modified Permit Condition 2.4.4 was added to limit concrete production and generator hours when collocated at the Valley Ready Mix Idaho Falls location. Facility-wide modeling conducted by DEQ demonstrated that each of the concrete batch plants could be operated for 16 hours per day without causing a violation of any ambient air standard. The daily limit for concrete production and for the generator operation was therefore based on a 16-hour operational day rather than the 8-hour day requested in the permit application (16 hr/day x 60 cy/hr = 960 cy/day). The annual concrete production and generator operations limits are based on the levels requested in the application.

5.5.9 Existing Permit Condition 1.3.2 requiring monitoring and recording of methods used to reasonably control emissions has been expanded to require at least monthly inspections, and is now Modified Permit Condition 2.10.

5.5.10 Relocation and certification requirements contained in Existing Permit Condition 1.4.1 and 1.4.2 are now contained in Modified Permit Condition 2.13 and General Provision No. 9.

5.5.11 Existing Permit Conditions 3.1.1 (Collocation Areas) and 3.1.2 (Number of Portable Sources) remain unchanged, but have been renumbered to Modified Permit Conditions 2.12.1 and 2.12.2.

5.5.12 Existing Permit Condition No. 4, which did not restrict non-collocated operations in PM_{10} nonattainment areas, has been replace by Modified Permit Condition 2.11, which allows operation in all PM_{10} nonattainment areas except for the Sandpoint PM_{10} nonattainment area.

5.5.13 Requirement contained in Existing Permit Conditions to maintain two years of data has been replaced with the requirement contained in new General Provision No. 7 to retain records for at least five years.

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 March 23, 2006. A permit processing fee of $1,000 is required in accordance with IDAPA 58.01.01.225, because the permit revision required engineering analysis, and the increase in emissions is less than one ton per year (the proposed change is represents a substantial reduction in emissions compared to the other operating scenarios currently permitted). DEQ received the processing fee on October 16, 2006. This facility is not a major facility and is not subject to Tier I registration fees.

7. PERMIT REVIEW

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 (IFRO) for review. No comments were received.

7.2 *Facility Review of Draft Permit*

On September 25, 2006, a draft of the permit and statement of basis was issued to the facility for 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. During this time, there were no comments on the application and no requests for a public comment period on DEQ's proposed action.

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-060505 for the portable concrete ready-mix plant. 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-060505

G:\Air Quality\Stationary Source\SS Ltd\PTC\Walters Ready Mix\P-060505 & P-060506\P-060505\Final\Walters P-060505 777-00290 IDF Pit Final SB.doc

APPENDIX A

AIRS Information

P-060505

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

Facility Name: Walters Ready Mix, Inc., Vince Hagan Concrete Batch Plant
Facility Location: Portable
AIRS Number: 777-00290

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							U
PT (Particulate)	B							U
VOC	B							U
THAP (Total HAPs)	B							
			APPLICABLE SUBPART					

[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-060505

Facility: Valley Ready Mix plus Two Walters Ready Mix Portable Concrete Batch Plants
Facility ID/Permit: 777-00177 P-060514 | 777-00290 P-060505 | 777-00291 P-060506 |
Source Type: Truck Mix Portable Concrete Batch Plants at 2500 West 65th South, Idaho Falls

Electrical Generators			Truck Mix Concrete Batch Plants			
Generator Make/Model	Cummins Onan	Detroit Diesel	Walters Plants	W & E Collocated		EMISSIONS FROM ALL UNITS - 16 hr/day
	230 kW (308.4 hp)	650 kW (871.7 hp)				& REQUESTED ANNUAL HRS & PRODUCTION
FUEL OPTIONS: #2 Fuel Oil (Diesel)						
Max Sulfur weight percent (w/o)	0.5	0.5	60 * 2	60	Concrete Batch Rate (cy/hr each for West & East)	
Max Fuel Use Rate, gal/hr	15.60	8.7				
Fuel Heating Value, Btu/gal	137,030	137,030				
Calculated MMBtu/hr	2.14	1.19				
Max Operational Hours per Day	16	16	16 *2	16	Daily Hrs of Operation (Hrs/Day each for West & East)	
Max Operational Hours per Year	1,120	2,244	10,000 *2	80,000	Concrete Batch Rate (cy/yr each for West & East)	
Max Hrs (facility classification)						

	Emissions (lb/hr)							
Pollutant	Cummins Onan	Detroit Diesel	Two Walters Plants	W & E Collocated	TOTAL (lb/hr)	TAPs Screening Emission Limit (EL) Increment[b] (lb/hr)	TAPs Emissions Exceed EL Increment?	
PM (total) [b]	0.663	0.119	0.474	0.036	1.291			
PM-10 (total) [d]	0.663	0.068	0.474	0.036	1.241			
P.M.-2.5								
CO [b]	2.031	1.013	1.341		4.385			
NOx [b]	9.427	3.815	6.224		19.466			
SO_2 [b] (total SOx presumed SO2)	0.620	0.602	0.409		1.631			
VOC [b] (total TOC--> VOCs)	0.770	0.107	0.508		1.385			
Lead								
UNCONTROLLED TAPs EMISSIONS								
PAH HAPs								
Acenaphthene [c1]	3.04E-06	5.58E-06	2.00E-06		1.06E-05	not Idaho TAP	n/a	
Acenaphthylene [c1]	1.08E-05	1.10E-05	7.14E-06		2.90E-05	not Idaho TAP	n/a	
Anthracene [c1]	4.00E-06	1.47E-06	2.64E-06		8.10E-06	not Idaho TAP	n/a	
Benzo(a)anthracene [c1,e]	3.59E-06	7.42E-07	2.37E-06		6.70E-06	see POM	see POM	
Benzo(a)pyrene [c1,e]	4.02E-07	3.06E-07	2.65E-07		9.74E-07	see POM	see POM	
Benzo(b)fluoranthene [c1,e]	2.12E-07	1.32E-06	1.40E-07		1.68E-06	see POM	see POM	
Benzo(g,h,i)perylene [c1]	1.05E-06	6.63E-07	6.90E-07		2.40E-06	not Idaho TAP	n/a	
Benzo(k)fluoranthene [c1,e]	3.31E-07	2.60E-07	2.19E-07		8.10E-07	see POM	see POM	
Chrysene [c1,e]	7.55E-07	1.82E-06	4.98E-07		3.08E-06	see POM	see POM	
Dibenzo(a,h)anthracene [c1,e]	1.25E-06	4.12E-07	8.23E-07		2.48E-06	see POM	see POM	
Fluoranthene [c1]	1.63E-05	4.80E-06	1.07E-05		3.18E-05	not Idaho TAP	n/a	
Fluorene [c1]	6.24E-05	1.53E-05	4.12E-05		1.19E-04	not Idaho TAP	n/a	
Indeno(1,2,3-cd)pyrene [c1,e]	8.02E-06	4.94E-07	5.29E-06		1.38E-05	see POM	see POM	
Naphthalene [c1,e]	1.81E-04	1.55E-04	1.20E-04		4.56E-04	3.33	No	
Phenanthrene [c1]	6.28E-05	4.86E-05	4.15E-05		1.53E-04	not Idaho TAP	n/a	
Pyrene [c1]	1.02E-05	4.42E-06	6.75E-06		2.14E-05	not Idaho TAP	n/a	
PAH HAPs	3.66E-04	2.52E-04	2.42E-04		8.61E-04	9.10E-05	Exceeds, Modeling Required	Carcinogen, Annual Std
Polycyclic Organic Matter (POM)	1.46E-05	5.36E-06	9.61E-06		2.95E-05	2.00E-06	Exceeds, Modeling Required	Carcinogen, Annual Std.
Non-PAH HAPs								
Acetaldehyde [c,e]	1.64E-03	3.00E-05	1.08E-03		2.75E-03	3.00E-03	No	Carcinogen, Annual Std.
Acrolein [c,e]	1.98E-04	9.39E-06	1.31E-04		3.38E-04	0.017	No	
Benzene [c,e]	1.99E-03	9.25E-04	1.32E-03		4.24E-03	8.00E-04	Exceeds, Modeling Required	Carcinogen, Annual Std.
Formaldehyde [c,e]	2.52E-03	9.41E-05	1.67E-03		4.28E-03	5.10E-04	Exceeds, Modeling Required	Carcinogen, Annual Std.
Toluene [c,e]	8.74E-04	3.35E-04	5.77E-04		1.79E-03	25	No	
Xylene [c,e]	6.09E-04	2.30E-04	4.02E-04		1.24E-03	29	No	
1,3-Butadiene	8.36E-05		5.52E-05		1.39E-04	2.40E-05	Exceeds, Modeling Required	Carcinogen, Annual Std.
Metals								
Arsenic			2.96E-05	2.96E-05	5.92E-05	1.50E-05	Exceeds, Modeling Required	Carcinogen, Annual Std.
Nickel			6.82E-05	6.82E-05	1.36E-04	2.70E-05	Exceeds, Modeling Required	Carcinogen, Annual Std.
Total HAPs								
Total Criteria Pollutants								

e) IDAPA Toxic Air Pollutant

Toolkit_TOTAL ALL UNITS

Facility: Walters Ready Mix, Rexburg
Facility ID/Permit: 777-00290 & 291 P-060505 & P-060506
Source Type: Truck Mix Portable Concrete Batch Plant - collocate with Valley Ready Mix at 2500 W 65th S, Idaho Falls

Electrical Generators		Truck Mix Concrete Batch Plant	
Generator Make/Model	Cummins 50 kW (67.02 hp)	Collocated with Valley	
FUEL OPTIONS: #2 Fuel Oil (Diesel)			EMISSIONS AT 16 hr/day instead of 8 hr/day AND REQUESTED annual concrete cy/yr & Gen Hrs
Max Sulfur weight percent (w/o)	0.5	60	Concrete Batch Rate (cy/hr)
Max Fuel Use Rate, gal/hr	5.15		
Fuel Heating Value, Btu/gal	137,030		
Calculated MMBtu/hr	0.71		
Max Operational Hours per Day	16	16	Concrete Batch Plant Daily Hrs of Operation (Hrs/Day)
Max Operational Hours per Year	2,000	10,000	Concrete Batch Rate (cy/yr)
Max Hrs (facility classification)	8,760	8,760	

Pollutant	Cummins	Conc Batch Plant, collocated	TOTAL (lb/hr)	TAPs Screening Emission Limit (EL) Increment[b] (lb/hr)	TAPs Emissions Exceed EL Increment?	Collocated Emissions at Proposed Maximums (T/yr)	Emissions for Facility Classification (T/yr)	
PM (total) [b]	0.219	0.018	0.237				1.04	
PM-10 (total) [d]	0.219	0.018	0.237			0.22	1.04	
P.M.-2.5								
CO [b]	0.670		0.670			0.67	2.94	
NOx [b]	3.112		3.112			3.11	13.63	
SO_2 [b] (total SOx presumed SO2)	0.205		0.205			0.20	0.90	
VOC [b] (total TOC--> VOCs)	0.254		0.254			0.25	1.11	
Lead								
UNCONTROLLED HAPs/TAPs EMISSIONS			TOTAL lb/hr, uncontrolled					
PAH HAPs								
Acenaphthene [c1]	1.00E-06		1.00E-06	see PAH	see PAH	1.00E-06	4.39E-06	
Acenaphthylene [c1]	3.57E-06		3.57E-06	see PAH	see PAH	3.57E-06	1.56E-05	
Anthracene [c1]	1.32E-06		1.32E-06	see PAH	see PAH	1.32E-06	5.78E-06	
Benzo(a)anthracene [c1,e]	1.19E-06		1.19E-06	see POM	see POM	1.19E-06	5.19E-06	
Benzo(a)pyrene [c1,e]	1.33E-07		1.33E-07	see POM	see POM	1.33E-07	5.81E-07	
Benzo(b)fluoranthene [c1,e]	6.99E-08		6.99E-08	see POM	see POM	6.99E-08	3.06E-07	
Benzo(g,h,i)perylene [c1]	3.45E-07		3.45E-07	see PAH	see PAH	3.45E-07	1.51E-06	
Benzo(k)fluoranthene [c1,e]	1.09E-07		1.09E-07	see POM	see POM	1.09E-07	4.79E-07	
Chrysene [c1,e]	2.49E-07		2.49E-07	see POM	see POM	2.49E-07	1.09E-06	
Dibenzo(a,h)anthracene [c1,e]	4.11E-07		4.11E-07	see POM	see POM	4.11E-07	1.80E-06	
Fluoranthene [c1]	5.37E-06		5.37E-06	see PAH	see PAH	5.37E-06	2.35E-05	
Fluorene [c1]	2.06E-05		2.06E-05	see PAH	see PAH	2.06E-05	9.03E-05	
Indeno(1,2,3-cd)pyrene [c1,e]	2.65E-06		2.65E-06	see POM	see POM	2.65E-06	1.16E-05	
Naphthalene [c1,e]	5.98E-05		5.98E-05	3.33	No	5.98E-05	2.62E-04	
Phenanthrene [c1]	2.07E-05		2.07E-05	see PAH	see PAH	2.07E-05	9.09E-05	
Pyrene [c1]	3.37E-06		3.37E-06	see PAH	see PAH	3.37E-06	1.48E-05	
PAH HAPs			1.21E-04	9.10E-05	Exceeds, Modeling Required	1.21E-04	5.30E-04	Carcinogen, Annual Std.
POM (7-PAH group)			4.80E-06	2.00E-06	Exceeds, Modeling Required	4.80E-06	4.21E-02	Carcinogen, Annual Std.
Non-PAH HAPs								
Acetaldehyde [c,e]	5.41E-04		5.41E-04	3.00E-03	No	5.41E-04	2.37E-03	Carcinogen, Annual Std.
Acrolein [c,e]	6.53E-05		6.53E-05	0.017	No	6.53E-05	2.86E-04	
Benzene [c,e]	6.58E-04		6.58E-04	8.00E-04	No	6.58E-04	2.88E-03	Carcinogen, Annual Std.
Formaldehyde [c,e]	8.33E-04		8.33E-04	5.10E-04	Exceeds, Modeling Required	8.33E-04	3.65E-03	Carcinogen, Annual Std.
Toluene [c,e]	2.89E-04		2.89E-04	25	No	2.89E-04	1.26E-03	
Xylene [c,e]	2.01E-04		2.01E-04	29	No	2.01E-04	8.81E-04	
1,3-Butadiene [e]	2.76E-05		2.76E-05	2.40E-05	Exceeds, Modeling Required	2.76E-05	1.21E-04	Carcinogen, Annual Std.
Metals (Concrete Batch Plant TAPs EI - Metals with uncontrolled emissions > EL)								
Arsenic [e]		1.48E-05	1.48E-05	1.50E-06	Exceeds, Modeling Required	7.40E-05	6.48E-05	Carcinogen, Annual Std.
Nickel [e]		3.41E-05	3.41E-05	2.70E-05	Exceeds, Modeling Required	1.71E-04	1.49E-04	Carcinogen, Annual Std.
Total HAPS						**2.99E-03**	**5.43E-02**	tons/year
Total Criteria Pollutants						**4.46**	**19.61**	tons/year

e) IDAPA Toxic Air Pollutant

! Toolkit_**TOTAL Emissions**

Facility: Walters Ready Mix, Rexburg
Facility ID/Permit: 777-00290 & 291 P-060505 & P-060506
Initial Location: Truck Mix Portable Concrete Batch Plant - collocate with Valley Ready Mix at 2500 W 65th S, Idaho Falls

Electrical Generator < 600 hp (447 kW) AP-42 Section 3.3 (diesel fueled, uncontrolled)

Electrical Generator > 600 hp (447 kW) AP-42 Section 3.4 (diesel-fueled)				
Generator Make/Model	Cummins	$BT 3.9-62		**EMISSIONS AT 16 hr/day instead of 8 hr/day AND REQUESTED ANNUAL GENERATOR HOURS**
	50 kW (67.02 hp)			
FUEL OPTIONS: #2 Fuel Oil (Diesel)				
Max Sulfur weight percent (w/o)	0.5	Stack Height, ft	13.17	=13' 2"
Max Fuel Use Rate, gal/hr	5.15	Stack ID, ft	0.250	=3"
Fuel Heating Value, Btu/gal	137,030	Exhaust Flow, acfm	420	Operating value. Standby = 460 acfm
Calculated MMBtu/hr	0.71	Exhaust Temp, F	950	Operating value. Standby = 1010 F
Max Operational Hours per Day	16			
Max Operational Hours per Year	2,000			
Max Hrs (facility classification)	8,760			

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 at Proposed Max Hours (lb/day)	PTE Emissions at Proposed Max Hours (T/yr)	Emissions for Facility Classification (T/yr)	
PM (presumed = PM10) [b]	0.31	0.219	3.50	0.22	0.96	
PM-10 (total) [d]	0.31	0.219	3.50	0.22	0.96	
P.M.-2.5						
CO [b]	0.95	0.670	10.73	0.67	2.94	
NOx [b]	4.41	3.112	49.79	3.11	13.63	
SO_2 [b] (total SOx presumed SO2)	0.29	0.205	3.27	0.20	0.90	
VOC [b] (total TOC--> VOCs)	0.36	0.254	4.06	0.25	1.11	
Lead						
PAH HAPs						
Acenaphthene [c1]	1.42E-06	1.00E-06		1.00E-06	4.39E-06	not specific Idaho TAP, see PAH
Acenaphthylene [c1]	5.06E-06	3.57E-06		3.57E-06	1.56E-05	not specific Idaho TAP, see PAH
Anthracene [c1]	1.87E-06	1.32E-06		1.32E-06	5.78E-06	not specific Idaho TAP, see PAH
Benzo(a)anthracene [c1,e]	1.68E-06	1.19E-06		1.19E-06	5.19E-06	see POM
Benzo(a)pyrene [c1,e]	1.88E-07	1.33E-07		1.33E-07	5.81E-07	see POM
Benzo(b)fluoranthene [c1,e]	9.91E-08	6.99E-08		6.99E-08	3.06E-07	see POM
Benzo(g,h,i)perylene [c1]	4.89E-07	3.45E-07		3.45E-07	1.51E-06	not specific Idaho TAP, see PAH
Benzo(k)fluoranthene [c1,e]	1.55E-07	1.09E-07		1.09E-07	4.79E-07	see POM
Chrysene [c1,e]	3.53E-07	2.49E-07		2.49E-07	1.09E-06	see POM
Dibenzo(a,h)anthracene [c1,e]	5.83E-07	4.11E-07		4.11E-07	1.80E-06	see POM
Fluoranthene [c1]	7.61E-06	5.37E-06		5.37E-06	2.35E-05	not specific Idaho TAP, see PAH
Fluorene [c1]	2.92E-05	2.06E-05		2.06E-05	9.03E-05	not specific Idaho TAP, see PAH
Indeno(1,2,3-cd)pyrene [c1,e]	3.75E-06	2.65E-06		2.65E-06	1.16E-05	see POM
Naphthalene [c1,e]	8.48E-05	5.98E-05		5.98E-05	2.62E-04	Specific Idaho TAP, plus see PAH
Phenanthrene [c1]	2.94E-05	2.07E-05		2.07E-05	9.09E-05	not specific Idaho TAP, see PAH
Pyrene [c1]	4.78E-06	3.37E-06		3.37E-06	1.48E-05	not specific Idaho TAP, see PAH
PAH HAPs		**1.21E-04**		**1.21E-04**	**5.30E-04**	Carcinogen, Annual Std
POM (7-PAH group)		**4.80E-06**		**4.80E-06**	**2.10E-05**	Carcinogen, Annual Std
Non-PAH HAPs						
Acetaldehyde [c,e]	7.67E-04	5.41E-04		5.41E-04	2.37E-03	Carcinogen, Annual Std
Acrolein [c,e]	9.25E-05	6.53E-05		6.53E-05	2.86E-04	
Benzene [c,e]	9.33E-04	6.58E-04		6.58E-04	2.88E-03	Carcinogen, Annual Std
Formaldehyde [c,e]	1.18E-03	8.33E-04		8.33E-04	3.65E-03	Carcinogen, Annual Std
Toluene [c,e]	4.09E-04	2.89E-04		2.89E-04	1.26E-03	
Xylene [c,e]	2.85E-04	2.01E-04		2.01E-04	8.81E-04	
1,3-Butadiene [e]	3.91E-05	2.76E-05		2.76E-05	1.21E-04	Carcinogen, Annual Std

a) Emission factors are from AP-42
b) AP-42, Table 3.3-1, Emission Factors for Uncontrolled Gasoline and Diesel Industrial Engines, 10/96
c) AP-42, Table 3.3-2, Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines, Emission Factor Rating E, 10/96
c1) AP-42, Table 3.3-2, Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines, Emission Factor Rating E, 10/96
d) AP-42, Table 3.3-1, Emission Factors for Uncontrolled Gasoline and Diesel Industrial Engines, 10/96
e) IDAPA Toxic Air Pollutant

B.1 PM10 EI and PM/PM10 Emissions: COLLOCATED OPERATIONS for Truck Mix Portable Concrete Batch Plant

Facility Information 9/22/06 0:00

Company:	Walters Ready Mix, Rexburg
Facility ID:	777-00290 & 291
Permit No.:	P-060505 & P-060506
Source Type:	Truck Mix Portable Concrete Batch Plant - collocate with Valley Ready Mix at 250C
Manufacturer:	Vince Hagan

NEW MAXIMUM PRODUCTION TOTALS

60 cy/hr
16 -hr operation day
10,000 cy/yr

NET INCREASE IN Production[1]

Maximum Hourly Production Rate:	60	cy/hr	
Proposed Daily Production Rate:	960	cy/day	
Proposed Maximum Annual Production Rate:	10,000	cy/year	
Cement Storage Silo Capacity:		ft^3 of aerated cement	
Cement Storage Silo Large Compartment Capacity for cement only:		of the silo capacity	
Cement Storage Silo small Compartment Capacity for cement or ash:		of the silo capacity	

[1] Information from the applicant's submittal received by DEQ on March 23, 2006

IDAHO FALLS PIT
COLLOCATED OPERATIONS

EMISSIONS AT 16hr/day & requested annual CONCRETE PRODUCTION

Assumptions Implied or Stated in Application:

Emissions inventory is based on 24 hr day to allow deleting permit daily production limits.

Max Annual is based on value given in March 22, 2006 application cover letter. Application forms specify 15,000 cy/yr, not 10,000 cy/yr

Change in PM_{10} Emissions due to this PTC

Emissions Point	PM_{10} Emission Factor[1] (lb/cy)		Emission Rate, Max.	Emission Rate, 24-hour average		Emission Rate, annual average	
	Controlled	Uncontrolled	lb/hr [2]	lb/hr[3]	lb/day[3]	lb/hr[4]	T/yr[4]
Aggregate delivery to ground storage		0.0031	0.19	0.124	2.976	0.004	0.02
Sand delivery to ground storage		0.0007	0.042	0.028	0.672	0.001	0.00
Aggregate transfer to conveyor		0.0031	0.19	0.124	2.976	0.004	0.02
Sand transfer to conveyor		0.0007	0.042	0.028	0.672	0.001	0.00
Aggregate transfer to elevated storage		0.0031	0.19	0.124	2.976	0.004	0.02
Sand transfer to elevated storage		0.0007	0.042	0.028	0.672	0.001	0.00
Cement delivery to silo WS#1 (McNeilus CJP360)	**0.0001**		**0.006**	**0.004**	0.096	**0.0001**	0.0005
Cement supplement delivery to Silo WS#2 (McNeilus SFV270)	**0.0002**		**0.012**	**0.008**	0.192	**0.0002**	0.0010
Weight hopper loading (batcher loading)		0.0038	0.23	0.152	3.648	0.004	0.02
Truck mix loading =0.140* [Table 11.12-2 Factor of 1.122]		0.1571	9.42	6.283	150.797	0.179	0.79
Point Sources Total Emissions	**0.0003**		**1.80E-02**	**1.20E-02**	**2.88E-01**	**3.42E-04**	**1.50E-03**
Process Fugitive Emissions		0.17228	10.34	6.89	165.39	0.20	0.86
Facility Wide Total: Point Sources + Process Fugitives (Except for Road Dust and Windblown Dust)		0.1726	10.35	6.90	165.68	0.20	0.86

[1] The EFs are taken from AP-42, Table 11.12-3 (version 10/01)

[2] Max. hourly rate = EF in lb/cy x Max. hourly production rate in cy/hr

[3] Hourly emissions rate, 24-hr average = Max.hourly emissions rate x proposed daily production / max. hour production rate / 24. Daily emissions rate =

[4] Annual average hourly emissions rate = Max hourly rate x proposed annual production rate/max. hourly production rate/8760 hr. Annual emissions rate =

[5] Controlled EFs for PM = 0.0002 (cement silo) + 0.0003 (cement supplement silo) for PM10 = 0.0001 (cement silo) + 0.0002 (supplement silo)

Toxic Air Pollutant (TAPs) EI: UNCONTROLLED, Truck Mix Portable Concrete Batch Plant - Collocated Operations at 60 cy/hr

9/22/2006 0:00

Facility Information

Company:	Walters Ready Mix, Rexburg
Facility ID:	777-00290 & 291
Permit No.:	P-060505 & P-060506
Source Type:	Truck Mix Portable Concrete Batch Plant - collocate with
Manufacturer:	

[a] Emissions estimates are based on EFs in AP-42, Table 11.12-3 (version 10/01) and the following composition of one yard of concrete:

Coarse aggregate		1865 pounds
Sand		1428 pounds
Cement		491 pounds
Cement supplement		73 pounds
Water		20 gallons
Concrete		4024 pounds

Increase in Production

rly Production Rate:			60	cy/hr	
ily Production Rate:			480	cy/day	
ual Production Rate:			10,000	cy/year	

Increased Uncontrolled Production Rate

	24 hrs/day,
1,440 cy/day	7 day/wk,
524,160 cy/year	52 wks/year

Lead emissions

Emissions Point	Lead Emission Factor[1] (lb/ton of material loaded)		Emission Rate, Max.	Emission Rate, quarterly average[5]		Emission Rate, Max.	Emission Rate, quarterly average[5]	
	Controlled with fabric filter	Uncontrolled				Controlled	Uncontrolled	
			lb/hr	lb/hr[5]	lb/month[5]	lb/hr	lb/hr[5]	lb/quarter[5]
Cement delivery to silo [2]	1.09E-08	7.35E-07	1.61E-07	5.35E-08	3.90E-05	1.08E-05	1.08E-05	2.37E-02
Cement supplement	5.20E-07	ND	1.14E-06	3.80E-07	2.76E-04	1.14E-06	1.14E-06	2.49E-03
Truck Load (Fugitive)	1.54E-06	3.62E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total			1.30E-06	4.33E-07	3.15E-04	1.20E-05	1.20E-05	2.62E-02
								Tons per year
Total Annual			9.46E-04	lb per Qtr.	1.89E-06	TPY		1.05E-01

[1] The emissions factors are from AP-42, Table 11.12-6 (version 10/01)
[2] Max. hourly rate = EF x pound of cement/yd^3 of concrete x max. hourly concrete production rate/(2000 lb/T)
[3] Max. hourly rate = EF x pound of cement supplement/yd^3 of concrete x max. hourly concrete production rate/(2000 lb/T)
[4] Max. hourly rate = EF x pound of (cement + cement supplement)/yd^3 of concrete x max. hourly concrete production rate/(2000 lb/T)
[5] Qtrly avg.hrly rate = Max.hrly rate x (daily rate/24 hr)/ max. hrly prod. rate;qrtrly emissions rate=qrtrly avg hrly rate x 24 hr/day x 91 days/qtr

TAP Emission Factors from AP-42, Table 11.12-6 (Version 10/01)

Emissions Point	Arsenic EF (lb/ton of material loaded)		Beryllium EF (lb/ton of material loaded)		Cadmium EF (lb/ton of material loaded)		Chromium EF (lb/ton of material loaded)		Manganese EF (lb/ton of material loaded)		Nickel EF (lb/ton of material loaded)		Phosphorus EF (lb/ton of material loaded)		Selenium EF (lb/ton of material loaded)	
	Controlled with Fabric filter	Un-controlled	Controlled with Fabric filter	Un-controlled	Controlled with Fabric filter	Un-controlled	Controlled with Fabric filter	Un-controlled	Controlled with Fabric filter	Un-controlled	Controlled with Fabric filter	Un-controlled	Controlled with Fabric filter	Un-controlled	Controlled with Fabric filter	Un-controlled
Cement delivery to silo (McNeilus SFV-170)	4.24E-09	1.88E-08	4.86E-10	1.79E-08	4.86E-10	2.34E-07	2.90E-08	2.52E-07	1.17E-07	2.02E-04	4.18E-08	1.76E-06	ND	1.18E-05	ND	ND
Cement supplement delivery to Silo (McNeilus)	1.00E-06	ND	9.04E-06	ND	1.98E-06	ND	1.22E-05	ND	2.56E-07	ND	2.28E-06	ND	3.54E-06	ND	7.24E-08	ND

Uncontrolled TAP Emissions Note: Includes baghouses as process equipment.

Emissions Point	Arsenic		Beryllium		Cadmium		Chromium		Manganese		Nickel		Phosphorus		Selenium	
	lb/hr	T/yr[4]	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr[5]	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Cement delivery to silo (McNeilus SFV-170)[1]	6.23E-08	2.73E-07	7.14E-09	3.13E-08	7.14E-09	3.13E-08	4.27E-07	1.62E-05	1.72E-06	1.30E-02	6.14E-07	2.69E-06	1.74E-04	7.59E-04	ND	ND
Cement supplement delivery to Silo (McNeilus)[2]	1.47E-05	6.43E-05	1.33E-06	5.82E-06	4.32E-06	1.89E-07	1.80E-05	1.17E-05	3.77E-06	2.45E-06	3.35E-05	1.47E-04	5.21E-05	3.39E-05	1.59E-07	6.93E-07
Point Sources Total	1.48E-05	6.46E-05	1.34E-06	5.85E-06	5.04E-06	2.21E-07	1.84E-05	2.79E-05	5.49E-06	1.30E-02	3.41E-05	1.49E-04	2.26E-04	7.93E-04	1.59E-07	6.93E-07
IDAPA Screening EL (lb/hr)	1.50E-06		2.80E-05		3.70E-06		3.30E-02		3.33E-01		2.70E-05		7.00E-03		1.30E-02	
EXCEEDS EL?	Yes		No		No		No		No		Yes		No		No	

Total Annual HAPs Emissions

= 1.40E-02 Tons per year

Controlled TAP Emissions

Emissions Point	Arsenic		Beryllium		Cadmium		Chromium		Manganese		Nickel		Phosphorus		Selenium	
	lb/hr annual avg.	T/yr[4]	lb/hr annual avg.	T/yr	lb/hr annual avg.	T/yr	lb/hr 24-hr avg.	T/yr[5]	lb/hr 24-hr avg.	T/yr	lb/hr annual avg.	T/yr	lb/hr 24-hr avg.	T/yr	lb/hr 24-hr avg.	T/yr
Cement delivery to silo (McNeilus SFV-170)[1]	1.19E-09	5.20E-09	1.36E-10	5.97E-10	1.36E-10	5.97E-10	1.42E-07	3.56E-08	5.74E-07	1.44E-07	1.17E-06	5.13E-06	ND	ND	ND	ND
Cement supplement delivery to Silo (Stephens SO6-1020)[2]	4.17E-08	1.83E-07	3.77E-09	1.65E-08	8.25E-10	3.61E-09	5.99E-06	2.23E-07	1.26E-06	4.67E-06	9.50E-06	4.16E-07	1.74E-05	6.48E-07	5.29E-06	1.32E-06
Point Sources Total	4.29E-08	1.88E-07	3.90E-09	1.71E-08	9.61E-10	4.21E-09	6.13E-06	2.58E-07	1.83E-06	1.90E-07	1.07E-07	4.67E-07	1.74E-05	6.46E-07	5.29E-06	1.32E-06
IDAPA Screening EL (lb/hr)	1.50E-06															
Percent of EL	2.86%		0.01%		0.03%		0.02%		0.0005%		0.40%		0.25%		0.0004%	
EXCEEDS EL?	No		No		No		No		No		No		No		No	

[1] lb/hr, annual average = EF x pound of cement / Yd^3 of concrete x annual concrete production rate / 2000lb/Ton / 8760 hr/yr; lb/hr, 24-hr = EF x pound of cement / Yd3 of concrete x daily concrete production rate / 2000lb/Ton / 24 hr/day
[2] lb/hr, annual average = EF x pound of cement supplement / Yd^3 of concrete x annual concrete production rate / 2000lb/Ton / 8760 hr/yr; lb/hr, 24-hr average = EF x pound of cement supplement / Yd3 of concrete x daily concrete production rate / 2000lb/Ton
[3] lb/hr, annual average = EF x pound of (cement + cement supplement) / Yd^3 of concrete x annual concrete production rate / 2000lb/Ton / 8760 hr/yr; lb/hr, 24-hr average = EF x pound of (cement + cement supplement) / Yd3 of concrete x daily concrete production - NOT INCLUDED - FUGITIVES
[4] T/yr = lb/hr, annual avg x 8760 hr/yr x (1T/2000 lb)
[5] T/yr = EF x pound of cement, or cement supplement, or cement + cement supplement x annual concrete production rate /2000 lb/ton / 2000 lb/ton

APPENDIX C

Modeling Review

P-060505

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]	NO_x[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.