

October 13, 2000

MEMORANDUM

TO: Stephen West, Regional Administrator
Boise Regional Office

FROM: Allan Johnson, Air Quality Engineer 
Technical Services Office

SUBJECT: **PERMIT TO CONSTRUCT TECHNICAL ANALYSIS**
P-000099, Mountain Home Redi-Mix, Portable
(Standard Rock Crusher Permit to Construct No. 777-00273; Including
Aggregate, Asphalt, and Concrete Production when Collocated in Attainment
Areas)

PURPOSE

The purpose of 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 (PTC).

PROJECT DESCRIPTION

Mountain Home Redi-Mix has commenced construction of a portable rock crushing facility. The rock crushing facility has been operating since 1978 without a PTC. A PTC is now being issued to the facility. Mountain Home Redi-Mix is requesting a PTC be issued to cover the operations of the rock crushing facility in both attainment and nonattainment areas throughout the state of Idaho. Note that the Standard PTC for a portable rock crusher also includes provisions for collocated operations in attainment areas with one (1) other portable source (i.e., rock crusher, hot-mix asphalt, or concrete batch plant). The rock crushing facility's maximum hourly production rate is sixty tons per hour (60 T/hr). Electricity is supplied to the facility by the local utility.

SUMMARY OF EVENTS

On August 31, 2000, the Idaho Department of Environmental Quality (DEQ) received a PTC application.

DISCUSSION

1. **Process Description**

The majority of rock crushing facilities in Idaho mine rock deposits from pits using front-end loaders. However, rock may also be mined from quarries by drilling and blasting or dredged from stream beds. Rock crushing facilities generally produce three to four sizes of aggregate by employing a series of crushers and screens.

The rock is transferred to a vibrating grizzly to segregate large from small material. The large material is conveyed to the primary crusher (usually a jaw or gyratory crusher)

where it is reduced to 3 to 12 inches in diameter. The crushed material is transferred to the primary screen where it is separated into two or three size ranges. The oversized material is conveyed to a secondary crusher, and the smaller material is transferred to a tertiary crusher or is stockpiled. The secondary crusher (usually a gyratory or cone crusher) reduces the material to roughly 1 to 4 inches in diameter. The material is re-screened. The oversized material is crushed in a tertiary crusher and re-screened, and the small aggregate is stockpiled.

Particulate matter (PM) emissions are generated at all points of crushing, screening, and material transfer. The use of water spray is the most common method used to control particulate emissions. If an electrical generation unit is used, the combustion of fuel also results in PM emissions, as well as, oxides of nitrogen (NO_x), oxides of sulfur (SO_x), carbon monoxide (CO), and volatile organic compounds (VOCs). Fugitive PM emissions are generated by the mining activities, the aggregate storage piles, and front-end loader and truck traffic.

The Standard PTC requested will allow this rock crushing facility to collocate and simultaneously operate with one (1) other portable plant (i.e., rock crusher, hot-mix asphalt, or concrete batch plant) in attainment areas. It is important to note that during collocated operations, this crusher is then part of a single, larger source engaged in the production of either hot-mix asphalt, concrete, and/or aggregate; depending upon which type of portable plant the crusher is collocated with. While collocated, the two portable plants are now considered to be one source, and the emissions of this single source is the sum of the emissions from the two portable plants. This single, larger source must comply with all applicable federal, state, and local requirements. To maintain compliance, specific requirements and limitations have been included in the Standard PTC for this rock crusher for collocated operations. As described in the following sections of this technical memorandum, specific conservative assumptions and calculations were made to determine these Standard PTC collocation requirements. For this reason, the permit for the other portable plant with which this rock crusher will collocate must also contain specific collocation requirements based on the same conservative assumptions and calculations used in this Standard PTC.

2. Equipment Listing

The analysis upon which this permit was based assumed that the following equipment would be used:

2.1 Primary Crusher

Manufacturer/Type:	Pioneer/Jaw 10x36
Date of Manufacture:	1979
Maximum Capacity:	100 Tons/hour

2.2 Secondary Crusher

Manufacturer/Type:	ElJay/36 inch Cone
Date of Manufacture:	1978
Maximum Capacity:	65

When collocated, this crusher is then part of a single, larger source that produces either hot-mix asphalt, concrete, and/or aggregate; depending upon which type of portable plant the crusher is collocated with. The equipment used by this single, larger source would include the crusher equipment listed above plus the equipment of the other portable plant. To see an equipment description for the other portable plant, see the corresponding permitting files for that plant.

3. Area Classification

The rock crushing facility is a portable source and may operate in both attainment and nonattainment areas throughout Idaho.

4. Emission Estimates

Emission estimates to determine the potential to emit (PTE) for aggregate processing and handling are conservatively determined using a spreadsheet specifically developed for rock crushing facilities. The spreadsheet has been developed using emission factors from AP-42, Table 11.19.2-2, 1/95 Edition, to estimate the facility's emissions from crushers, screens, and transfer points. Fugitive emissions from sources that are not affected facilities, pursuant to 40 CFR 60.670, are not included in determining PTE. Likewise for collocated operations; fugitive emissions from hot-mix asphalt plant sources that are not affected facilities, pursuant to 40 CFR 60.90, are not included in determining PTE. PTE is used to determine if prevention of significant deterioration (PSD) or Title V Operating Permit requirements apply to the facility. Emissions from generators are also determined by the spreadsheet using emission factors from AP-42, Tables 3.3-2 and 3.4-2, 1/95 Edition. These emissions are included in the determination of PTE. Crusher, screen, and transfer point emissions are not limited to specific pound-per-hour or ton-per-year emission rates because of the margin of error inherent in the emission estimates, which are not source-specific, but rather are applicable to the broader source category of crushed stone processing. Generator emissions are not limited to specific emission rates either.

For collocated operations, a conservative approach is taken by limiting the emissions of each of the collocated units to half of the levels allowed when operating alone. Then the combined emissions of the two collocated sources will be within the allowable levels. See the information below for a more detailed description. This approach is designed to result in acceptable throughput limits for most collocation situations. In cases where the throughput limits are too restrictive, a site-specific analysis and permit amendment may be completed.

This facility's uncontrolled and controlled PTE is 36 tons per any consecutive 12-month period (T/yr) and 11 T/yr, respectively. The emission estimates are included as

Appendix A. The following narrative briefly explains the methods and assumptions used in the development of the source-specific spreadsheet.

ATTAINMENT AREA OPERATIONS

The spreadsheet inherently limits emissions below certain triggering levels (i.e., PSD and Title V thresholds) by limiting maximum throughput. If a generator is not used, throughput is solely limited to limit a facility's PTE to 99 T/yr of PM emissions. If a generator is used, throughput is limited based on the most limiting pollutant or pollutants (i.e., the pollutant whose emission rate is closest to 99 T/yr). The spreadsheet calculations incorporate the following to determine the throughput limit: the maximum hourly throughput of the primary crusher, the total number of crushers, the capacity of the generator (if used), the ambient impact from the generator, and the generator's fuel type and fuel consumption rate.

In the standard permit, two throughput limit options are available for attainment area operations. One is for an annual limit (annual is any consecutive 12-month period), and the other is for a daily and annual limit. The annual limit option is chosen only to limit emissions to 99 T/yr or less. The daily and annual limit option is chosen to protect a 24-hour ambient standard, an annual ambient standard, and to limit emissions to 99 T/yr. Depending on the circumstances, one or both options may be required.

NONATTAINMENT AREA OPERATIONS

For facilities that operate in a nonattainment area, throughput is limited to protect the standard(s) for which the area is designated as nonattainment. For example, when these facilities operate in a particulate matter with an aerodynamic diameter of less than or equal to a nominal ten (10) microns (PM-10) nonattainment area, throughput is, or may have to be, limited on a daily basis to protect the 24-hour standard of $5 \mu\text{g}/\text{m}^3$, or annually to protect the annual standard of $1 \mu\text{g}/\text{m}^3$. In either case, the spreadsheet automatically calculates the allowable throughput that protects these standards. When a generator is used, the spreadsheet takes into account its ambient impact and limits throughput accordingly. If the impacts are not significant, the spreadsheet limits throughput to keep emissions at or below 99 T/yr.

In the standard permit, two throughput options are available to choose from for operations in a nonattainment area. The first option states the rock crushing facility cannot operate in any PM-10 nonattainment area or proposed PM-10 nonattainment area without DEQ approval. The choice of this option is obvious. The second option is a daily and annual throughput limit. Imposing this limit not only protects the 24-hour limit and annual limit, but also ensures facility emissions will not exceed 99 T/yr.

COLLOCATED OPERATIONS IN ATTAINMENT AREAS

Standard PTCs will only allow collocation with one (1) other portable source (i.e., rock crusher, hot-mix asphalt, or concrete batch plant) which has also received a Standard PTC that specifically allows collocation. When a combination of one portable crusher unit and one other portable unit are operated at a single location, the emissions of both units must be added together when determining PTE. Consistent with the approach taken for attainment area operations, the spreadsheet inherently limits the combined emissions of the two portable units to below certain triggering levels (i.e., PSD and Title V thresholds) by limiting the maximum throughput of each. For collocated operations, half of the attainment area triggering levels are used as limits for calculating throughput for each source. The crusher throughput is then established based on the most limiting pollutant or pollutants (i.e., the pollutant whose emission rate is closest to 49.5 T/yr). The spreadsheet calculations incorporate the following to determine the throughput limit: the maximum hourly throughput of the primary crusher, the total number of crushers, the capacity of the generator (if used), the ambient impact from the generator, and the generator's fuel type and fuel consumption rate.

In the standard permit, two throughput limit options are available for collocated attainment area operations. One is for an annual limit (annual is any consecutive 12-month period), and the other is for a daily and annual limit. The annual limit option is chosen only to limit the combined emissions to 99 T/yr or less. The daily and annual limit option is chosen to protect a 24-hour ambient standard, an annual ambient standard, and to limit emissions to 99 T/yr. Depending on the circumstances, one or both options may be required.

FUGITIVE EMISSIONS AT THE PROPERTY BOUNDARY

In order to ensure the air quality at and beyond the facility boundary is not further degraded, the standard permit requires that no visible emissions cross the facility boundary. Visible emissions at the property boundary are to be measured by using EPA Reference Method 22 which may be found in 40 CFR 60 Appendix A. It is assumed if no emissions visibly cross the boundary, the air quality is protected and not further degraded. The permit requirement is offered in lieu of fugitive dust modeling.

5. Modeling

Estimated emissions due to aggregate crushing and handling are expected to vary considerably from the facility's actual emissions. Modeling results would reflect the emission estimates with an added level of conservatism built into the modeling. Because of the degree of uncertainty involved in the emissions estimate, modeling of fugitive dust emissions was not conducted. However, to ensure no ambient air quality standard will be violated due to emissions generated by crushing, screening, aggregate handling, and fugitive sources; the permit requires that emissions from these sources not be seen leaving the property boundary for more than three (3) minutes in any sixty (60) minute period. If visible emissions are not seen crossing the property boundary, no significant impact on ambient air quality nor a violation of National Ambient Air Quality Standards (NAAQS) will occur.

6. Facility Classification

Rock crushing plants (including collocated operations producing asphalt, concrete, and aggregate) are not designated facilities, as defined in IDAPA 58.01.01.006.27. This facility is not a major facility as defined in IDAPA 58.01.01.006.55 and IDAPA 58.01.01.008.10. The SIC code for this rock crushing facility is 1442, "Construction Sand and Gravel." The AIRS facility classification for this facility is "B" because the uncontrolled potential to emit is less than (100 T/yr). The spreadsheet included as Appendix A automatically determines the facility classification.

7. Regulatory Review

The following rules and/or regulations have been reviewed in this permit analysis:

<u>IDAPA 58.01.01.201</u>	Permit to Construct;
<u>IDAPA 58.01.01.202</u>	Application Procedures;
<u>IDAPA 58.01.01.203</u>	Permit Requirements for New and Modified Stationary Sources;
<u>IDAPA 58.01.01.209</u>	Procedures for Issuing Permits;
<u>IDAPA 58.01.01.211</u>	Conditions for Permits to Construct;
<u>IDAPA 58.01.01.212</u>	Obligation to Comply;
<u>IDAPA 58.01.01.577</u>	Ambient PM-10 Air Quality Standard;
<u>IDAPA 58.01.01.625</u>	Visible Emissions;
<u>IDAPA 58.01.01.650</u>	Rules for Control of Fugitive Dust; and
<u>40 CFR 60 Appendix A</u>	EPA Reference Method 22.

With regard to 40 CFR 60, Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants, this is not an affected facility per the applicant's permit application. This facility is not affected by Subpart OOO because the crushing units were manufactured prior to August 31, 1983 which is the effective date of Subpart OOO.

8. Permit Coordination

This facility is not a major facility as defined by IDAPA 58.01.01.006.55 and IDAPA 58.01.01.008.10, and it is not an NSPS-affected facility. Therefore, coordination with the Operating Permit Section is not necessary.

9. AIRS Information

Since each of these facilities is considered a new facility for AIRS purposes, an update to the AIRS data base is required. The information necessary to update the data base is included as Appendix C of this technical analysis.

FEES

The facility is not a major facility as defined in IDAPA 58.01.01.008.10. Therefore, registration and registration fees, according to IDAPA 58.01.01.526, are not applicable.

RECOMMENDATION

Based on review of application materials and all applicable state and federal rules and regulations, staff recommend that Mountain Home Redi-Mix be issued a PTC for a portable rock crushing facility. No public comment period is recommended, no entity has requested a comment period, and the project does not involve PSD PTC requirements.

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cc: DEQ State Office
Boise Regional Office

Appendix A

Emission Estimate Calculations

P-000099

Mountain Home Redi-Mix, Mountain Home, ID

DATA ENTRY

Company Name: Mountain House Red-Mix
Project: Portable Crusher
PTC #: 777-00273
Engineers: Allan Johnson
Date: 03-Oct-00
Filename: 000099.xls

Crosstier Facility Information

Facility Production Capacity: 40 [t] tons/d
Applicant's Requested Hours of Operations: 24 [h] hrs/day
Estimated Throughput: 8,760 [t] tons/yr
Maximum Hours of Operations: 525,600 [h] hrs/yr
Maximum Throughput: 8,760 [t] tons/yr
Number of Crushers: 2
Annual Threshold Emission Limit: A (A = <100 Tons/yr; Below Title V Threshold)
Selected Emission Limitations: (B = <250 Tons/yr; PSD Threshold)
 100 Tons/yr

Generator Information

Generator? (Y/N): N
Generator: 1,000 1340.7 Conversion Factor
 B
 A
 72.4
 9 851106
 25.89

INPUTS TO PERMIT TO CONSTRUCT (PTC)

Section	Parameter	Value	Units
Section A.2.1	Number of Crushers	2	
Section A.2.1	Number of Generators	NA	
Section A.3.1	Size of Generator	NA	
Section B.1.1	Annual Throughput Limit	525,600	T/yr
Section B.1.3	Annual Hours of Operation	NA	hrs/yr
	Daily Hours of Operation	NA	hr/day
Section C.1.3	Annual Throughput Limit	262,800	T/yr
Section C.1.4	Annual Hours of Operation	NA	hrs/yr
	Daily Hours of Operation	NA	hr/day
Section D.1.1	Annual Throughput Limit	525,600	T/yr
Section D.1.3	Annual Hours of Operation	NA	hrs/yr
	Daily Hours of Operation	NA	hr/day

Plant Total Emission Factors

Mean Wind Speed (ft)	10 [ft] mph
Material Moisture Content (M)	2.5 [wt] %
Particle Size Multiplier (L)	0.35 [wt] dimensionless
PM₁₀ (<10 μm)	0.74 [wt] dimensionless
PM (<30 μm)	0.0020 [wt] lb/ton
Emission Factor ¹	0.0033 [wt] lb/ton
PM₁₀ (<10 μm)	0.0087 [wt] lb/ton
PM ¹	

Notes: 1. PM = (L * 0.0033) / (US * 3.34627) * 1.4904

Background Concentrations - Attainment/Non-Attainable Areas (µg/m ³)			
PM	1.40	3.16	14.16
PM-10			Annual
CO	11.400	3.130	86.0
SO ₂			40.0
TOC		543	144
			23.5

PERMIT LIMITS TABLE

Cruiser	Attainment Area		Non-Attainment Area		Collection Attainment Area	
	Time	MMT/yr	Time	MMT/yr	Time	MMT/yr
Operating Requirements	1,440	0.53	1,440	0.53	0	0
Generator	NA	NA	NA	NA	NA	NA
Operating Equipment	NA	NA	NA	NA	NA	NA
Production	NA	NA	NA	NA	NA	NA
Enables Limit	NA	NA	NA	NA	NA	NA
ABIS Facility Classification	B		B		B	

OUTPUT

Potential to Exceed - Based on Applicant's Data

Cruiser, Screens & Transfer Points	Uncontrolled Emissions		Controlled Emissions	
	PM-10	MMT/yr	PM-10	MMT/yr
Generator	36	11	36	11
PM	14	4	14	4
PM-10	0.0	0.0	0.0	0.0
CO	0.0	0.0	0.0	0.0
NO _x	0.0	0.0	0.0	0.0
SO ₂	0.0	0.0	0.0	0.0
TOC	0.0	0.0	0.0	0.0
Total Cruiser + Generator	36	11	36	11
PM-10	14	4	14	4
PTE Summary	35.8 [±1]Tyr	10.7 [±1]Tyr	10.7 [±1]Tyr	3.5 [±1]Tyr
Enforceable Limits - Based on Requested Operations	35.8 [±1]Tyr	10.7 [±1]Tyr	10.7 [±1]Tyr	3.5 [±1]Tyr
Generator - Operation	34.0	10.7	34.0	10.7
Cruiser - Production	1.440	0.53	1.440	0.53
ABIS Facility Classification	B		B	

Potential to Exceed - Emissions Analysis Using Ambient Air Quality Standards
Emissions limited to less than:
Annual: 100 Tons/yr
Annual: Plant operations limited by NAAQS from generator reductions, and
Annual: 100 Tons/yr
Annual: 100 Tons/yr

Cruiser emissions back calculated to yield 99 Tons/yr of emissions

Attainment/Non-Attainable Area

Cruiser	Uncontrolled Emissions		Controlled Emissions		Non-Attainment Area	
	PM-10	MMT/yr	PM-10	MMT/yr	Uncontrolled Emissions	Controlled Emissions
Generator	36	11	36	11	36	11
PM	14	4	14	4	14	4
PM-10	0.0	0.0	0.0	0.0	0.0	0.0
CO	0.0	0.0	0.0	0.0	0.0	0.0
NO _x	0.0	0.0	0.0	0.0	0.0	0.0
SO ₂	0.0	0.0	0.0	0.0	0.0	0.0
TOC	0.0	0.0	0.0	0.0	0.0	0.0
Total Cruiser + Generator	36	11	36	11	36	11
PM-10	14	4	14	4	14	4
PTE Summary	35.8 [±1]Tyr	10.7 [±1]Tyr	10.7 [±1]Tyr	3.5 [±1]Tyr	35.8 [±1]Tyr	10.7 [±1]Tyr
Enforceable Limits - Attainment Area	35.8 [±1]Tyr	10.7 [±1]Tyr	10.7 [±1]Tyr	3.5 [±1]Tyr	35.8 [±1]Tyr	10.7 [±1]Tyr
Enforceable Limits - Non-Attainment Area	34.0	10.7	34.0	10.7	34.0	10.7
Cruiser - Production	1.440	0.53	1.440	0.53	1.440	0.53
ABIS Facility Classification	B		B		B	

EMISSION ANALYSIS BASED ON APPLICANT'S DATA

Pollutant	Generator Emission Factor [=] (lb/MMBtu)	Generator Emission Rate [=] (lb/hr)	Applicant's Data		Generator Emissions		Modeled Air Concentrations Based On ENTIRE GREEN DAY			
			Hours of Operation [=] (hr/day)	[=] (hr/year)	Hours of Operation [=] (hr/day)	TYr	Calculated Annual Impact [=] (µg/m ³)			
PM	NA	0.00	24.0	8,760	0.00	0.00	NS	NS	0	0
PM-10	NA	0.00	24.0	8,760	0.00	0.00	NS	NS	0	0
CO	NA	0.00	24.0	8,760	0.00	0.00	NS	NS	0	0
NOx	NA	0.00	24.0	8,760	0.00	0.00	NS	NS	0	0
SO ₂	NA	0.00	24.0	8,760	0.00	0.00	NS	NS	0	0
TOC	NA	0.00	24.0	8,760	0.00	0.00	NS	NS	0	0

Generator Emissions Regulatory Analysis

Pollutant	BRC Evaluation	Significant Contributions		Ambient Air Concentration		Ambient Air Concentrations w/ Background Values (µg/m ³)				
		Extension Rates	Extension Rates	24-hr	Annual	1-hr	3-hr	8-hr	24-hr	Annual
PM	BRC	(3.3 Tpy)	No	(3.3 Tpy)	Annual					
PM-10	BRC	(1.3 Tpy)	No	(1.3 Tpy)	Annual					
CO	BRC	(10 Tpy)	No	(100 Tpy)	No	2000 µg/m ³ (1-hour)	500 µg/m ³ (8-hour)	5,130	86.0	32.7
NO _x	BRC	(4 Tpy)	No	(40 Tpy)	No			543		44.0
SO ₂	BRC	(4 Tpy)	No	(40 Tpy)	No				144.0	23.5

For information purposes:

Crusher Hours of Operation w/ Yield 99.0 Tpy Emissions	Concentration	
	Concentration	Concentration
	8760	8760
	8760	8760

Pollutant	Crushers		Screens ¹		Transfer Point ²		Total Emissions
	Num. 1 & 2	Num. 3	Num. 1 & 2	Num. 3	Num. 1-7	Num. 8-14	
PM	40	45	60	45	60	30	7
PM-10	24	0.39	0.53	0.39	0.53	0.26	7
CO	8,760	709	709	709	709	709	7
NO _x	0.0001	0.0024	0.0150	0.0710	0.0020	0.0020	7
SO ₂	0.01	0.00	1.40	0.00	0.85	0.41	7
TOC	0.01	0.00	0.54	0.00	0.23	0.13	7
Uncontrolled Emissions (µg/hr)	0.1	0.0	7.9	0.0	3.7	1.9	13.6
Controlled Emissions (µg/hr)	0.0	0.0	2.4	0.0	1.1	0.5	4.1
Emission Factor ³	0.0007	0.0063	0.0394	0.1864	0.0053	0.0053	8.2
Uncontrolled Emissions (µg/m ³)	0.08	0.00	4.73	0.00	2.24	1.12	2.5
Controlled Emissions (µg/m ³)	0.03	0.00	1.42	0.00	0.67	0.34	1.5
Uncontrolled Emissions (µg/yr)	0.4	0.0	26.7	0.0	9.8	4.9	35.8
Controlled Emissions (µg/yr)	0.1	0.0	6.2	0.0	2.9	1.5	10.7

Notes:
 1 Number of Screens = Number of Crushers
 2 Number of Transfer Point = 7 * (Number of Crushers)
 3 Emission Factor from AP-42, Table 11.19.2.2. When factors were given for rate pollutant, the following conversion factors were used:
 TSP = PM-10 * 2.1; TSP = PM-10 * 0.8
 Hourly values are based on maximum daily production rate given above. Annual values are based on throughput values given above.

Pollutant	Generator Emissions		Cruiser Emissions (Controlled)		Total Emissions	
	lb/day	Type	lb/day	Type	lb/day	Type
PM-10	0.00	0.00	34.8	10.7	45.6	10.7
CO	0.00	0.00	21.3	4.1	25.4	4.1
NOx	0.00	0.00	0.0	0.0	0.0	0.0
SO2	0.00	0.00	0.0	0.0	0.0	0.0
TDC	0.00	0.00	0.0	0.0	0.0	0.0

Generator - Emission Rate	24.0	lb/day	8,760	lb/yr
Cruiser - Production	1,440	lb/yr	0.33	MMBTU/yr

EMISSION ANALYSIS - BASED ON AMBIENT AIR QUALITY STANDARDS
100 Tons/yr

Allowable Air

Pollutant	Generator Emission Factor [=] lb/MMBtu	Generator Emission Rate [=] lb/yr	AAQS		Calculated Impacts		Allowable Impacts		Maximum Throughput
			Hours of Operation [=] hr/day	Hours of Operation [=] hr/yr	Hours of Operation [=] hr/day	Hours of Operation [=] hr/yr	Hours of Operation [=] hr/day	Hours of Operation [=] hr/yr	
PM-10	N/A	0.00	N/S	N/S	8,760	8,760	24.0	8,760	10.73
CO	N/A	0.00	N/S	N/S	8,760	8,760	24.0	8,760	4.08
NOx	N/A	0.00	N/S	N/S	8,760	8,760	24.0	8,760	0.00
SO2	N/A	0.00	N/S	N/S	8,760	8,760	24.0	8,760	0.00
TDC	N/A	0.00	N/S	N/S	8,760	8,760	24.0	8,760	0.00

Pollutant	Generator Emissions				Based On Energy RECEIVED				Ambient Air Concentrations at Background Values (µg/m ³)				
	Calculated Make Impact		Calculated Annual Impact		Calculated Make Impact		Calculated Annual Impact		1 hr	3 hr	8 hr	24 hr	Annual
	(=) [µg/hr]	(=) [µg/yr]	(=) [µg/hr]	(=) [µg/yr]	(=) [µg/hr]	(=) [µg/yr]	(=) [µg/hr]	(=) [µg/yr]					
SO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.400		5.130		40
CO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0					23.5
NO _x	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
SO _x	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
TDC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0					

No. Units	Cruisers				Transfer Point ²				Total Emissions				Allowable Hours of Operation w/ Emissions <100 T/y	
	No. 1 & 2		Screen ³		No. 1 - 7		No. 8 - 14		No. 1 - 7		No. 8 - 14			w/ Generator
	2	4	2	4	7	7	7	7	7	7	7			
Throughput (M T/Year)	46	45	0	0	0	0	0	0	60	30	7			
Throughput (M T/Year)	0.53	0.39	0.00	0.53	0.39	0.00	0.53	0.39	0.53	0.26				
Operator Schedule (M Hr/yr)	8760	709	709	709	709	709	709	709	709	709				
Plant Efficiency														
Emission Factor ¹	0.0003	0.0024	0.0150	0.0710	0.0070	0.0000	0.0000	0.0000	0.85	0.42	3.1			
Uncontrolled Emissions (M lb/yr)	0.03	0.00	1.80	0.60	0.45	0.00	0.00	0.00	0.35	0.13	0.9		8760	
Controlled Emissions (M lb/yr)	0.01	0.00	0.54	0.00	0.17	0.00	0.00	0.00	0.18	0.09	0.9			
Uncontrolled Emissions (M T/y)	0.1	0.0	7.9	2.7	1.7	0.0	0.0	0.0	1.1	0.5	11.6			
Controlled Emissions (M T/y)	0.0	0.0	2.4	0.0	0.6	0.0	0.0	0.0	0.6	0.4	4.1			
PM														
Emission Factor ¹	0.0007	0.0063	0.0394	0.1864	0.0053	0.0053	0.0053	0.0053	2.24	1.12	8.2			
Uncontrolled Emissions (M lb/yr)	0.08	0.00	4.73	0.00	2.24	0.00	0.00	0.00	0.87	0.34	2.5		8760	
Controlled Emissions (M lb/yr)	0.03	0.00	1.42	0.00	0.67	0.00	0.00	0.00	0.98	0.49	35.8			
Uncontrolled Emissions (M T/y)	0.4	0.0	20.7	0.0	9.8	0.0	0.0	0.0	2.9	1.5	10.7			
Controlled Emissions (M T/y)	0.1	0.0	6.2	0.0	2.9	0.0	0.0	0.0	2.9	1.5	10.7			

Notes:
 1 TYP calculations include cruiser, screen and transfer point stations
 2 CO 1-hr Averaging Period
 3 CO 8-hr Averaging Period
 4 SO₂ 3-hr Averaging Period
 5 Daily and annual operation values are based on background data less the modeled generator emissions (i.e. ambient air concentrations). That is, the generator hours of operation have been back-calculated from AQOS values. The cruiser particulate emissions (controlled) are then used to back-calculate cruiser operational times, assuming 90 Tons/yr less generator emissions.
 6 Maximum throughputs values are based on the maximum number of hours (cruisers) that will yield a total of 90 Tons/yr, multiplied by the maximum daily production rates.
 7 Hourly emission values are based on maximum daily production rates, given above.
 8 Annual emission values are based on the maximum throughputs values given above.

Crawler Wheel Emission Calculations and Impact Estimates

EMISSION ANALYSIS - BASED ON AMBIENT AIR QUALITY STANDARDS
Emissions limited to less than:

100 Tons/yr

Non-Attainment Area

Pollutant	Generator Emission Factor [=] lb/yr-hr	Generator Emission Rate [=] lb/hr	Calculated Impacts		Allowable Impacts		Maximum Throughput
			Hours of Operation [=] hr/year	AAQS Hours of Operation [=] hr/year	Generator Hours of Operation [=] hr/year	Generator Hours of Operation [=] hr/year	
PM-10	N/A	0.00	NS	NS	8,760	8,760	0.53
CO	N/A	0.00	NS	NS	8,760	8,760	0.53
NO _x	N/A	0.00	NS	1.6 ¹	8,760	8,760	0.00
SO ₂	N/A	0.00	NS	8.0 ²	8,760	8,760	0.00
TOC	N/A	0.00	NS	3.0 ³	8,760	8,760	0.00

Pollutant	Generator Emissions		Based On Entered SCREEN Data		Annual
	Calculated 24-hr Impact [=] µg/m ³	Calculated Impact [=] µg/m ³	Hours of Operation [=] hr/year	AAQS Hours of Operation [=] hr/year	
PM-10	0.0	0.0	0	NS	0
CO	0.0	0.0	0	NS	0
NO _x	0.0	0.0	0	NS	0
SO ₂	0.0	0.0	0	NS	0
TOC	0.0	0.0	0	NS	0

No. Units Throughput (=) T (Tons/yr)	Generator Emission Factor (=) lb/yr-hr	Generator Emission Rate (=) lb/hr	Calculated Impacts		Based On Entered SCREEN Data		Annual
			Hours of Operation (=) hr/year	AAQS Hours of Operation (=) hr/year	Generator Hours of Operation (=) hr/year	Generator Hours of Operation (=) hr/year	
2	45	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
60	0.33	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
8,760	70%	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
PM-10	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
Uncontrolled Emissions (=) lb/yr	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
Controlled Emissions (=) lb/yr	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
PM	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007
Uncontrolled Emissions (=) lb/yr	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007
Controlled Emissions (=) lb/yr	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007

Notes:

- 1 TYP calculations include crawler, screen and transfer point emissions.
- 2 CO 1-hr Averaging Period
- 3 CO 8-hr Averaging Period
- 4 SO₂ 3-hr Averaging Period
- Daily and annual operation values are based on background data in the modelled generator emissions (i.e. ambient air concentrations). That is, the generator hours of operation have been scaled from AAQS values. The crawler particulate emissions (controlled) are then used to back-calculate crawler operational time, assuming 99 Tons/yr less generator emissions.
- Maximum throughput values are based on the minimum number of hours (crawler) that will yield a load of 99 Tons/yr, multiplied by the maximum daily production rate.
- Hourly emission values are based on maximum daily production rates, given above.
- Annual emission values are based on the maximum throughput values given above.
- Non-Attainment Area base of operation calculation assumes TSP emissions are non-attainment in PM-10 non-attainment areas. The value, operation is limited by significant impact limits.

Attainment Area - Collocated Units - Calculations

Pollutant	Collocated Attainment Area Concentrations - Attainment Area Calculations (1-Hr 8-hr, 8-24-hr standards are on a half-hour basis)				Annual (Exc. Hours in Attainment Area) (8,577hr)
	1-hr	2-hr	8-hr	24-hr	
PM	11.000	14.000	14.000	32.0	276,867
PM-10			5,439	32.0	108,067
CO				32.0	276,867
NOx				32.0	276,867
SO2				32.0	276,867
TOC				32.0	276,867

Background Concentrations - Attainment Area (µg/m³)

Pollutant	Background Concentrations - Attainment Area (µg/m ³)				Annual
	1-hr	2-hr	8-hr	24-hr	
PM					32.7
PM-10			5,130		40.0
CO	11,400				23.1
NOx					
SO2		543			
TOC					

Appendix B

AIRS Information

P-000099

Mountain Home Redi-Mix, Mountain Home, ID

ABBREVIATED AIRS DATA ENTRY SHEET - ROCK CRUSHERS

Name of Facility: Mountain Home Redi-Mix
 AIRS/Permit #: 777-00273
 Permit Issue Date: October 2000

<u>Source/Emissions Unit Name</u> (25 spaces) (Please use name as indicated in permit)	<u>SCC #</u> (8 digit #)	<u>Air Program</u> (SIP/NESHAP/NSPS/PSD)
Rock Crushers	30502510	SIP
Transfer/Screen/Convey	30502503	SIP
Fugitives	30588801	SIP
Property Boundary	30588801	SIP

RETURN TO PAT RAYNE
 AIRS-PT.LST (9/95)