

May 17, 2000

MEMORANDUM

TO: Steve West, Administrator
Boise Regional Office

FROM: Eric Antrim, Engineer-In-Training
Technical Services Office

SUBJECT: **PERMIT TO CONSTRUCT TECHNICAL ANALYSIS**
P-000008, Western Construction, Inc., Boise
(Draft permit amendments to incorporate provisions for fugitive dust control and collocation)

PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 16.01.01.200 (*Rules for the Control of Air Pollution in Idaho*) for issuing Permits to Construct (PTC).

PROJECT DESCRIPTION

Western Construction, Inc., has requested amendments and modifications to five of their PTCs. First, they have requested the inclusion of a fugitive dust control plan and collocation terminology in two of them. Second, they have requested the inclusion of just the fugitive dust control plan in two more. Finally, they have asked that one of them be revoked. These requests have been satisfied. These permits will supersede previously issued permits of the same permit number, except in the case of the permit which was revoked.

It was noticed that PTC 777-00212 was missing annual NO_x numbers for non-attainment areas. These numbers were provided by a previous analysis and have been included in the table on page 10 of PTC 777-00212.

SUMMARY OF EVENTS

On January 31, 2000, DEQ's Boise Regional Office received a request from Western Construction to amend/modify PTCs numbered 777-00231, 777-00042, 777-00098, 777-00212, & 777-00035. Application materials were assigned to DEQ staff, Technical Services Office, on February 10, 2000. On March 14, 2000, it was noticed that PTC 777-00212 was missing annual NO_x numbers for non-attainment areas. These numbers were provided by a previous analysis and have been included in the table on page 10 of PTC 777-00212. This analysis is included with this memorandum.

DISCUSSION

1. Area Classification

These are portable sources. The intent of these permits is to allow the facilities to be located anywhere in the State of Idaho, provided they follow the conditions of the applicable permit. They may be located or collocated in attainment areas. Also, they may be located in nonattainment areas. Collocation in nonattainment areas is not allowed.

2. Facility Classification

Because of the imposition of federally enforceable limits, these facilities are not major facilities in accordance with IDAPA 16.01.01.006.55, nor are they designated facilities in accordance with IDAPA 16.01.01.006.27. None of these facilities are subject to any National Emission Standards for Hazardous Air Pollutants (NESHAP) in accordance with 40 CFR 61, or Maximum Achievable Control Technology (MACT) standards in accordance with 40 CFR 63. All facilities subject to this permitting action are classified A2. New Source Performance Standards in accordance with 40 CFR 60, Subpart I (Standards of Performance for Hot Mix Asphalt Plants) and Subpart OOO (Standards of Performance for Nonmetallic Mineral Processing Plants) apply. Only two of these will require a new performance test due to an increased potential to emit (PTE) with their new PTCs, because one was revoked and the other two have already completed performance tests.

2.1 PTC # 777-00231

This PTC is an amendment. This facility is a crusher for which the Standard Industrial Classification (SIC) code is 1442 (Construction Sand and Gravel). Because the new permit does not allow for an increase in emissions, it is not necessary for the source to be performance tested again. The previous performance test was completed September 14 and 15, 1999.

2.2 PTC # 777-00212

This PTC is an amendment. This facility is a hot-mix asphalt plant for which the Standard Industrial Classification (SIC) code is 2951. Because the new permit does not allow for an increase in emissions, it is not necessary for the source to be performance tested again. The previous performance test was completed July 26, 1999.

2.3 PTC # 777-00035

This crusher is no longer in use. This PTC is being revoked as part of this permitting action.

2.4 PTC # 777-00098

This PTC is a modification due to an increase in its PTE. This facility is a crusher for which the Standard Industrial Classification (SIC) code is 1442 (Construction Sand and Gravel). Because the new permit does allow for an increase in emissions, it is necessary for the source to be performance tested again.

2.5 PTC # 777-00042

This PTC is a modification due to an increase in its PTE. This facility is a crusher for which the Standard Industrial Classification (SIC) code is 1442 (Construction Sand and Gravel). Because the new permit does allow for an increase in emissions, it is necessary for the source to be performance tested again.

3. PTC Amendments

3.1 PTC # 777-00231

Amended to include a Fugitive Dust Control Plan to ensure compliance with National Ambient Air Quality Standards (NAAQS) beyond the facility's boundaries. All other requirements of this permit remain unchanged. This permit is for a crusher.

3.2 PTC # 777-00212

Amended to include a Fugitive Dust Control Plan to ensure compliance with National Ambient Air Quality Standards (NAAQS) beyond the facility's boundaries. All other requirements of this permit remain unchanged. This permit is for a hot-mix asphalt plant.

3.3 PTC # 777-00035

PTC # 777-00035 is hereby revoked. The applicant has indicated PTC # 777-00035 is no longer in use and should be removed. This permit was for a crusher.

4. PTC Modifications

4.1 PTC # 777-00098

This modification resulted from updating an older format. Western Construction essentially reapplied for this permit making changes to their original permit application. They wanted the Fugitive Dust Control Plan to be included. Previously, this provision was not included in this permit. After the completion of the attached spreadsheet, the prepared permit incorporated the changes requested by Western

Construction. Permit 777-00098 was last updated on December 6, 1999. The generator size has increased from 750 kW to 1,220 kW, and the number of crushers allowed has increased from 3 to 4. When not collocated in an attainment or unclassifiable area, the permitted throughput decreased from 2,080,289 tons per year to 1,340,868 tons per year; and the permitted hours of generator operation decreased from 7,824 hours per year to 6,706 hours per year. When collocated, the permitted throughput decreased from 1,040,644 tons per year to 670,434 tons per year; and the permitted hours of generator operation decreased from 3,912 hours per year to 3,353 hours per year. The previous edition of this permit did not specify that collocation was not allowed in a nonattainment area; the current one does. The previous edition of this permit did not allow operation in a nonattainment area, even when not collocated; the current one allows 1,340,868 tons of throughput per year and 6,706 hours of generator operation per year when not collocated. Because the previously permitted emissions in a nonattainment area were zero, and they are now nonzero, the changes to this PTC constitute a modification of the previous permit.

Table 1. PTC # 777-00098 Modification Summary

PTC # 777-00098	Attainment Area		Collocation (Attainment A)		Nonattainment Area		generator size (kW)	number of crushers
	throughput tons per yr	generator hours per yr	throughput tons per yr	generator hours per yr	throughput tons per yr	generator hours per yr		
Pre-Modification:	2,080,289	7,824	1,040,644	3,912	0	0	750	3
Post-Modification:	1,340,868	6,706	670,434	3,353	1,340,868	6,706	1,220	4

4.2

PTC # 777-00042

This modification resulted from updating an older format. Western Construction essentially reapplied for this permit making changes to their original permit application. They wanted the Fugitive Dust Control Plan to be included. Previously, this provision was not included in this permit. After the completion of the attached spreadsheet, the prepared permit incorporated the changes requested by Western Construction.

Permit 777-00042 was last updated on November 24, 1995. The generator size and number of crushers were not previously specified; now they are 1,220 kW and 4 respectively. The previous permit specifies 800,000 tons of through-put per year and 2,000 hours of "crusher" operation per year. The previous permit does not discuss collocation. The current permit specifies through-put rates and hours of "generator" operation based on attainment/nonattainment and collocation status.

When not collocated and operating in an attainment or unclassifiable area, the permitted through-put is 1,340,868 tons per year; and the permitted hours of generator operation are 6,706 hours per year. When collocated, the permitted through-put is 670,434 tons per year; and the permitted hours of generator operation are 3,353 hours per year. The current permit allows 1,340,868 tons of through-put per year and 6,706 hours of generator operation per year in a nonattainment area. The permitted through-put under the previous permit is 129,566 tons per year greater than the most restrictive requirement of the new permit and 540,868 tons per year less than the least restrictive one. The permitted hours of "crusher" operation are 1,353 hours per year less than the most restrictive currently permitted hours of "generator" operation.

The limits on this crusher are identical to those in PTC # 777-00098 and are shown in Table 1.

5. Modeling

The EPA approved SCREEN3 model was used to predict the concentration of pollutants in the exhaust gas stream from both crusher generators where the changes made were classified as modifications. These were PTC # 777-00098 and PTC # 777-00042. Since these generators are identical, the model was only run one time for both cases. The results are attached and summarized in the "post-modification" row of Table 1.

6. Regulatory Review

IDAPA 16.01.01.201 Permit to Construct Required

Two of these facilities (PTC # 777-00098 & PTC # 777-00042) are allowed increased emissions in non-attainment areas and are, therefore, classified as modifications. This triggers permit to construct requirements. The remaining facilities are not increasing emissions. The changes to these remaining facilities are classified as amendments.

IDAPA 16.01.01.210 Demonstration of Preconstruction Compliance with Toxic Standards

This regulation does not apply.

IDAPA 16.01.01.577 Ambient Air Quality Standards for Specific Air Pollutants

Crusher throughput and generator hours of operation were limited to prevent the exceeding of ambient standards. The ambient air quality beyond the facilities' boundaries are further protected by requiring the reasonable control of fugitive dust emissions so that no visible emissions be seen crossing the facilities' boundaries. The facility must also develop a Fugitive Dust Control Plan.

40 CFR 52 Prevention of Significant Deterioration

Because of federally enforceable limits on throughput and hours of generator operation, this facility is not a PSD major facility.

40 CFR 60 New Source Performance Standards

New Source Performance Standards in accordance with 40 CFR 60, Subpart I (Standards of Performance for Hot Mix Asphalt Plants) and Subpart OOO (Standards of Performance for Nonmetallic Mineral Processing Plants) apply. Only the emission units regulated by PTCs # 777-00098 and # 777-00042 will require performance testing with their new permits due to an increase in allowable emissions under the new permits.

40 CFR 61 & 63 National Emission Standards for Hazardous Air Pollutants & MACT

NESHAP and MACT requirements do not apply to this facility.

7. Permit Requirements

7.1 PTC # 777-00231

Included Federal Dust Control Plan to insure compliance with NAAQS beyond facility boundaries.

7.2 PTC # 777-00212

Included Federal Dust Control Plan to insure compliance with NAAQS beyond facility boundaries.

7.3 PTC # 777-00035

This permit was revoked. The applicant indicated that the crusher was no longer in use and that the permit should be removed.

7.4 PTC # 777-00098

This is essentially a new permit using an old PTC number.

7.4.1 Statewide Requirements

These requirements are independent of attainment/nonattainment or unclassifiable area status.

7.4.1.1 Emission Limits

This requirement is to assure that the Permittee inspects all potential sources to ensure compliance with IDAPA 16.01.01.625. The permittee is required to maintain a log of each inspection and include in the log the assessment of the conditions existing at the time visible emissions are observed and any correction taken in response to the visible emissions.

7.4.1.2 Operating Requirements

The facility is limited to four crushers and a 1,220 kW generator. The facility is required to take reasonable precautions to prevent particulate matter from becoming airborne and thereby ensure compliance with IDAPA 16.01.01.651. The permittee is required to develop a written plan detailing the methods and procedures that will be used to control fugitive dust emissions.

7.4.1.3 Monitoring and Recordkeeping Requirements

The facility is required to record location (nonattainment, attainment, or unclassifiable), throughput, and hours of generator operation on a daily basis and maintain these records on site, in a log, and make them available to DEQ representatives upon request. A performance test is required according to 40 CFR 60.675 and IDAPA 16.01.01.157 on all equipment affected by 40 CFR 60.670.

7.4.1.4 Reporting Requirements

The Permittee is encouraged to submit a written performance test protocol to DEQ thirty days in advance of the performance test in accordance with IDAPA 16.01.01.157.07.a. The Permittee is required to submit a written report of the performance test to DEQ within thirty days of the test in accordance with IDAPA 16.01.01.157.04. The Permittee is required to submit registration/relocation forms supplied by DEQ in accordance with IDAPA 16.01.01.500.

7.4.2 Attainment or Unclassifiable Area Requirements when Not Collocated

Throughput is limited to 1,340,868 tons per year and the hours of generator operation are limited to 6,706 hours per year. These limits are required to limit the facility's Potential To Emit (PTE) to retain its minor source status.

7.4.3 Attainment or Unclassifiable Area Requirements when Collocated

The Permittee shall not collocate without obtaining a permit which specifically allows for collocation. The facility may only collocate with one other source which has been permitted to specifically allow for collocation. Throughput is limited to 670,434 tons per year and the hours of generator operation are limited to 3,353 hours per year. These limits are required to limit the facility's Potential To Emit (PTE) to retain its minor source status.

7.4.4 Nonattainment Area Requirements

The facility shall not be collocated in a nonattainment or proposed nonattainment area. Throughput is limited to 1,340,868 tons per year and the hours of generator operation are limited to 6,706 hours per year. These limits are required to limit the facility's Potential To Emit

(PTE) to retain its minor source status.

7.5 PTC # 777-00042

The requirements for this permit are identical to those listed immediately above for # 777-00098. B

FEES

Registration fees do not apply to this facility in accordance with IDAPA 16.01.01.527. This is not a major facility as defined in IDAPA 16.01.01.008.10.

RECOMMENDATION

Based on review of application materials and all applicable state and federal rules and regulations, staff recommend that Western Construction be issued draft amended PTCs for their portable rock crushing and hot-mix asphalt equipment. No public comment period is recommended, no entity has requested a comment period, and the project does not involve PSD requirements.

EA/hs 84634 J:\XFER\AIR_PERMIBRO\PTC\WESTER-11000008.TM

cc: DEQ State Office
Boise Regional Office

INPUT SECTION - enter info in highlighted areas only

Company: **Western Construction, Inc.**
 Permit Engineer: **Zach Q. Klotzsch**
 Date: **06/07/99**
 Filename:

Enter the HMA Plant Type: **B**
 (A - Batch Mix Hot Air Asphalt Plant)
 (B - Drum Mix Hot Air Asphalt Plant)

Enter Fuel Type: **B**
 (A - Natural Gas Fired Dryer)
 (B - Oil Fired Dryer)

Enter Dryer Stack Flow Rate: **89,730 [-] actual cubic feet per minute (acfm)**
 Enter Dryer Stack Temperature: **225 [-] temperature (°F)**
 Enter Dryer Stack Moisture: **18.00 [-] moisture wt % (Percent in wt%)**
 Enter Dryer Stack Pressure: **20.92 [-] static pressure (Psf) (20.92 "Hg)**
 Calculated Corrected Flow Rate: **54,706 [-] dry standard cubic feet per minute (dscfm)**

Enter HMA Maximum Capacity: **400 [-] Ton/hr (Asphalt Throughput)**

Enter HMA Absorbed Concentration: **1.44 [-] pphm, (1 hr concentration @ 1 HMA)**

Is a PSI performance test required for this HMA plant? **Y**
 Y or R (based on 40 C.F.R. 61.20 requirements)

Does Plant Require a Control? **Y**
 Y or N

Enter Generator Size: **750 [-] KW**
 (A - Horsepower or B - Kilowatts)

Enter Type: **B**
 (A - Horsepower or B - Kilowatts)

Calculated Generator Size: **1068.53 [-] Horsepower**

Enter Generator Fuel Type: **A**
 (A - Diesel Fired Generator)
 (B - Coal/ Gas Fired or Dual Fuel Generator)

Enter Generator Fuel Usage: **62.7 [-] gal/hr**

Calculated Generator Heat Output: **921 [-] MBtu/hr**

Enter Ego model concentration: **10.12 [-] ug/m³, (1 hr concentration @ 1 HMA)**

SPREADSHEET DATA - information used by spreadsheet

State Wide Interpolated Concentration for Criteria Air Emissions	1 hr	3 hr	8 hr	24 hr	Annual
PM10	11.600	545	5100	66	31.7
CO					40
NOx				144	23.5
SOx					

Planning used in the fugitive Emission Calculations

Minimum Wind Speed (ft) **10 [-] mph**

Minimum Ashtray Control (ft) **2.5 [-] %**

Particle Size Multiplier (ft) **0.25 [-] Above 10 mic**

PM10 (-10 mic) **0.0020 [-] lb/CT**

Emission Factor **0.0050 [-] lb/CT**

PM10 (-10 mic) **0.0050 [-] lb/CT**

Notes: **1. X_F = X₀ * 0.0033 * (U/20) * 1.348 * X₀^{0.14}**
Drop Point Equation: Reading % = AT 41, 50, Rd. @ 13.3 A.A.
 Assumptions: Wind Speed = 10 mph, Ashtray = 2.5%, and
 Aggregate = 95% of product

PM10 ONLY CLASSIFICATION INPUT

Enter Annual Emission Limit: **100 [-] lb/yr**

Note: Use 100 T/yr for Title V Installation
 Use 250 T/yr for PSD Installation
 For the standard HMA permit, use 100 T/yr.

PERMIT REQUIREMENTS SECTION - enforceable permit limits
 AHS Facility Classification: A2

Non-attainment Area		Attainment Area										
Allowable Emission Limits		Allowable Emission Limits										
HMA Dryer Stack: 19.4 lb/hr of PM	NA T/yr	HMA Dryer Stack: 19.4 lb/hr of PM	50.7 T/yr of NOX									
Generator: 9.0 hr/day 3,281.90 hr/year	NA T/yr	Generator: 24.0 hr/day 3,381.38 hr/year	48.3 T/yr of NOX									
HMA Plant Throughput Limits:	3,597 T/day	HMA Plant Throughput Limits:	1,312,762 T/yr									
Collocated Attainment Areas												
HMA Dryer Stack: 19.4 lb/hr of PM		Allowable Emission Limits 25.4 T/yr of NOX										
Generator: 24.0 hr/day 1,690.69 hr/year	NA T/day	24.1 T/yr of NOX										
HMA Plant Throughput Limits:	NA T/day	676,276 T/yr										
INPUTS TO PERMIT TO CONSTRUCT (PTC)												
Section B. Management Area When Not Collocated		Value	Units									
Section B.1.1 Facility Throughput Limits:	Annual Throughput Limit <<OR>>	1,352,552	T/yr									
	Daily Throughput Limit	NA	T/day									
	Annual Hours of Operation	1,352,552	T/yr									
	<<ANND/OR>>	3,381	hr/year									
	Daily Hours of Operation	24	hr/day									
Section C. Attainment Area When Collocated												
Section C.1.3 Facility Throughput Limits:	Annual Throughput Limit <<OR>>	676,276	T/yr									
	Daily Throughput Limit	NA	T/day									
	Annual Hours of Operation	676,276	T/yr									
	<<ANND/OR>>	1,691	hr/year									
	Daily Hours of Operation	24.0	hr/day									
Section D. Nonattainment Area												
Section D.1.1 Facility Throughput Limits:	Annual Throughput Limit <<OR>>	1,312,762	T/yr									
	Daily Throughput Limit	3,597	T/day									
	Annual Hours of Operation	1,312,762	T/yr									
	<<ANND/OR>>	3,282	hr/year									
	Daily Hours of Operation	9.0	hr/day									
Section D.1.3 Generator Hours of Operation:												
	Annual Throughput Limit	1,312,762	T/yr									
	Daily Throughput Limit	3,597	T/day									
	Annual Hours of Operation	1,312,762	T/yr									
	<<ANND/OR>>	3,282	hr/year									
	Daily Hours of Operation	9.0	hr/day									
<table border="1"> <thead> <tr> <th>CO 1-hr Standard</th> <th>SO2 3-hr standard</th> <th>CO 8-hr Standard</th> </tr> </thead> <tbody> <tr> <td>minutes/lb</td> <td>hr/3-hr</td> <td>hr/8-hr</td> </tr> <tr> <td>60.0</td> <td>3.0</td> <td>8.0</td> </tr> </tbody> </table>				CO 1-hr Standard	SO2 3-hr standard	CO 8-hr Standard	minutes/lb	hr/3-hr	hr/8-hr	60.0	3.0	8.0
CO 1-hr Standard	SO2 3-hr standard	CO 8-hr Standard										
minutes/lb	hr/3-hr	hr/8-hr										
60.0	3.0	8.0										

DRYER EMISSION RATE CALCULATIONS

Emission Factor	DRYER STACK	
	Emission Rate (lb/hr)	Annual Emissions (lb/yr)
PM-10	19.00	7,600.00
Total PM-10	19.00	7,600.00
CO	14.40	5,760.00
NO _x	30.00	12,000.00
SO ₂	22.40	8,960.00

HMA emission factors for CO, NO_x, SO₂ and unregulated PM & PM-10 are from AP-42 Section 3.1.1. Calculated PM & PM-10 is from the RFSI 0.04 g/gal of binder.

GENERATOR EMISSION RATE CALCULATIONS

Emission Factor	GENERATOR STACK	
	Emission Rate (lb/hr)	Annual Emissions (lb/yr)
PM-10	0.07	27.26
Total PM-10	0.07	27.26
CO	0.81	295.56
NO _x	3.10	1,116.60
SO ₂	0.51	183.06

Generator emission factors are from AP-42 Section 3.3 and 3.4.

MODELING AREA IMPACTS FOR AMBIENT AIRS

Pollutant	Hours of Operation (-) / hrs/yr	Ambient Impact		Other SA	Hours of Operation (-) / hrs/yr	Hours of Operation (-) / hrs/yr	Hours of Operation (-) / hrs/yr	Based on: PM-10	Based on: PM-10	Fencible Impact		NAAQS		Other SA	Hours of Operation (-) / hrs/yr	Hours of Operation (-) / hrs/yr	Based on: PM-10	Based on: PM-10
		Calculated Annual Impact (-) / lb/yr	Calculated Annual Impact (-) / lb/yr							Calculated Annual Impact (-) / lb/yr	Calculated Annual Impact (-) / lb/yr							
PM-10	24.0	8,760	8,760	1.0	8,760	8,760	8,760	9.0	8,760	13.35	1.03	10.30	1.03	96.62	37.61	36.50	36.50	36.50
CO	N/A	8,760	8,760	8.0	8,760	8,760	8,760	N/A	8,760	38.65	2.98	2.98	2.98	67.63	36.96	35.87	35.87	35.87
NO _x	N/A	8,760	8,760	3.0	8,760	8,760	8,760	N/A	8,760	31.83	2.46	2.46	2.46	71.61	45.74	44.39	44.39	44.39
SO ₂	N/A	8,760	8,760	3.0	8,760	8,760	8,760	N/A	8,760	7.06	7.06	7.06	7.06	71.61	44.39	44.39	44.39	44.39

MODELING AREA IMPACTS FOR AMBIENT AIRS

Pollutant	Hours of Operation (-) / hrs/yr	Ambient Impact		Other SA	Hours of Operation (-) / hrs/yr	Hours of Operation (-) / hrs/yr	Hours of Operation (-) / hrs/yr	Based on: PM-10	Based on: PM-10	Fencible Impact		NAAQS		Other SA	Hours of Operation (-) / hrs/yr	Hours of Operation (-) / hrs/yr	Based on: PM-10	Based on: PM-10
		Calculated Annual Impact (-) / lb/yr	Calculated Annual Impact (-) / lb/yr							Calculated Annual Impact (-) / lb/yr	Calculated Annual Impact (-) / lb/yr							
PM-10	9.0	3,282	3,282	1.0	3,282	3,282	3,282	9.0	3,282	5.00	1.00	10.00	1.00	96.62	36.50	36.50	36.50	36.50
CO	N/A	3,282	3,282	8.0	3,282	3,282	3,282	N/A	3,282	14.48	2.90	2.90	2.90	67.63	35.87	35.87	35.87	35.87
NO _x	N/A	3,282	3,282	3.0	3,282	3,282	3,282	N/A	3,282	7.06	7.06	7.06	7.06	71.61	44.39	44.39	44.39	44.39
SO ₂	N/A	3,282	3,282	3.0	3,282	3,282	3,282	N/A	3,282	7.06	7.06	7.06	7.06	71.61	44.39	44.39	44.39	44.39

PULCELIVE EMISSION CALCULATIONS FOR AT LAMBERT AIRBAS

	PM	PM10
Hot Dryer Source Emissions (Q-1) (lb/hr)		
Loader > Cold Aggregate Bin	1.01	0.76
Cold Aggregate Bin > Conveyor	1.01	0.76
Conveyor > Drum Dryer	2.04	0.76
Total Hot Dryer Source Emissions	6.02	2.28
Pool Dryer Source Emissions		
Screening Process	NA	NA
Screen > Hot Bin	NA	NA
Hot Bin > Weigh Hopper	NA	NA
Weigh Hopper > Top Mill	NA	NA
Total Pool Dryer Source Emissions	NA	NA
Scavenger & other Emissions	NA	NA
Total Uncontrolled Emissions (Q-1) (lb/hr)	6.02	2.28
Total Uncontrolled Emissions (Q-1) (tpy)	10.17	3.85
Total Controlled Emissions (Q-1) (tpy)	6.02	2.28

Source: National Asphalt Pavement Association
 * CO 1 for Averaging Period
 * CO 2 for Averaging Period
 * SO 2 for Averaging Period

PULCELIVE EMISSION CALCULATIONS FOR RONALD LAMBERT AIRBAS

	PM	PM10
Hot Dryer Source Emissions (Q-1) (lb/hr)		
Loader > Cold Aggregate Bin	1.01	0.76
Cold Aggregate Bin > Conveyor	1.01	0.76
Conveyor > Drum Dryer	1.01	0.76
Total Hot Dryer Source Emissions	6.02	2.28
Pool Dryer Source Emissions		
Screening Process	NA	NA
Screen > Hot Bin	NA	NA
Hot Bin > Weigh Hopper	NA	NA
Weigh Hopper > Top Mill	NA	NA
Total Pool Dryer Source Emissions	NA	NA
Scavenger & other Emissions	NA	NA
Total Uncontrolled Emissions (Q-1) (lb/hr)	6.02	2.28
Total Uncontrolled Emissions (Q-1) (tpy)	9.87	3.73
Total Controlled Emissions (Q-1) (tpy)	6.02	2.28

SPREADSHEET SUMMARY - results of emission and modeling calcs for all pollutants

ATTAINMENT & UNCLASSIFIABLE AREAS

	Uncontrolled		Controlled		Dryer PM PM-10 CO NOx SO ₂	NONATTAINMENT AREAS	
	Uncontrolled	Controlled	Uncontrolled	Controlled			
	12849.2 T/yr	32.9 T/yr	12471.2 T/yr	41.9 T/yr			
	2908.0 T/yr	32.9 T/yr	2822.4 T/yr	31.9 T/yr			
	24.3 T/yr	24.3 T/yr	21.6 T/yr	21.6 T/yr			
	50.7 T/yr	50.7 T/yr	49.2 T/yr	49.2 T/yr			
	37.9 T/yr	37.9 T/yr	36.8 T/yr	36.8 T/yr			
	1.1 T/yr	1.1 T/yr	1.1 T/yr	1.1 T/yr	Generator PM		
	0.9 T/yr	0.9 T/yr	0.9 T/yr	0.9 T/yr	PM-10		
	12.6 T/yr	12.6 T/yr	12.2 T/yr	12.2 T/yr	CO		
	48.3 T/yr	48.1 T/yr	46.9 T/yr	46.9 T/yr	NOx		
	7.9 T/yr	7.9 T/yr	7.6 T/yr	7.6 T/yr	SO ₂		
	10.2 T/yr	10.2 T/yr	9.9 T/yr	9.9 T/yr	Exhausts PM		
	3.8 T/yr	3.8 T/yr	3.7 T/yr	3.7 T/yr	PM-10		
	12860.5 T/yr	44.1 T/yr	12482.2 T/yr	42.8 T/yr	Total		
	2912.7 T/yr	37.6 T/yr	2827.0 T/yr	36.5 T/yr	PM-10		
	37.0 T/yr	37.0 T/yr	35.9 T/yr	35.9 T/yr	CO		
	99.0 T/yr	99.0 T/yr	96.1 T/yr	96.1 T/yr	NOx		
	45.7 T/yr	45.7 T/yr	44.4 T/yr	44.4 T/yr	SO ₂		
	2912.7 [-] T/yr of PM-10	99.0 [-] T/yr of NO _x	2827.0 [-] T/yr of PM-10	96.1 [-] T/yr of NO _x	Title V PTE Summary 1 Facility PTE Summary		
	12860.5 [-] T/yr of PM	99.0 [-] T/yr of NO _x	12482.2 [-] T/yr of PM	96.1 [-] T/yr of NO _x	Enforceable Limits - Non-Attainment Areas		
	24.0 lbs/day	3.381 lbs/yr	9.0 lbs/day	3.282 lbs/yr			
Dryer Controlled Emission Rates							
	19.4 lb/hr	31.9 T/yr	19.4 lb/hr	31.9 T/yr	Dryer Controlled Emission Rates		
	14.4 lb/hr	24.3 T/yr	14.4 lb/hr	23.6 T/yr	PM-10		
	30.0 lb/hr	50.7 T/yr	30.0 lb/hr	49.2 T/yr	CO		
	22.4 lb/hr	37.9 T/yr	22.4 lb/hr	36.8 T/yr	NOx		
					SO ₂		
Generator Controlled Emission Rates							
	0.5 lb/hr	0.9 T/yr	0.5 lb/hr	0.9 T/yr	Generator Controlled Emission Rates		
	7.5 lb/hr	12.6 T/yr	7.5 lb/hr	12.2 T/yr	PM-10		
	28.6 lb/hr	48.3 T/yr	28.6 lb/hr	46.9 T/yr	CO		
	4.7 lb/hr	7.9 T/yr	4.7 lb/hr	7.6 T/yr	NOx		
					SO ₂		

1 Total is the dryer, generator and fugitive added together for total T/yr.
 2 Title V PTE Summary does not account for PM only PM-10.

Management Area 1 - Collocated Units - Calculations		Collection Analysis Air Quality Standards - Calculations				
Unit	1 hr	3 hr	8 hr	24 hr	Annual (Spec. Allowance Hours)	
PM10	14203.281599	2867.967319	18.655091031	8.1339417564		
SO2	306.8911114183		78.673810629	27.021802717	24.81996627	
Pack ground Concentrations - Ambient/Spec. (Exceedable Area (up/in))						
PM10	3 hr	8 hr	24 hr	Ambient		
PM10	11680		5120	86	32.7	
SO2		543		144	40	
NOx					23.5	

DATA ENTRY

Cracker Plant Emission Calculations and Report Generator

Company Name: Western Construction
 Project: Potable Cracker
 PTC #: 777-000012 & 777-000098
 Engineers: Eric Annum
 Date: 02/24/00
 Filename: 000008.WK4

Cracker Facility Information
 Facility Production Capacity: 1000 [-] bbl/hr

Applicant's Requested Hours of Operation: 24 [-] hrs/day
 Estimated Throughput: 8,760 [-] bbl/yr
 Maximum Hours of Operation: 8,760 [-] hrs/yr
 Maximum Throughput: 8,760,000 [-] kwh/yr

Number of Crackers: 4
 Limitations:
 Annual Threshold Emission: A (A = <100 Tons/yr, Below Title V Threshold)
 B (B = <250 Tons/yr, PSD Threshold)
 Selected Emission Limitation: 100 Tons/yr

Generator Information
 Generator Size: X 1,220 [-] kW 1635 634 Conversion Factor

Units: B (A = Horsepower)
 (B = Kilowatts)
 Fuel Type: A (A = Diesel Fuel Generator)
 (B = Gasoline-Fueled/Dual Fuel Generator)

Fuel Usage: 70 [-] gal/hr
 Fuel Heating Value: 9.52155 [-] MMBtu/hr

Modeled Air Concentration: 12.26 [-] ug/m³, at emission rate of 1 lb/hr

Model Emission Factors
 Sulfur Hexafluoride Concentration: 10 [-] ppb
 Particle Size Multiplier (M): 2.5 [-] %
 Particle Size Multiplier (N): 0.35 [-] dimensionless
 Emission Factor: 0.74 [-] dimensionless
 Emission Factor: 0.0024 [-] lb/hr
 Emission Factor: 0.0027 [-] lb/hr

Notes: EN - R-0-0012-TUVY1 VMS771 4/00 A

Parameter	Value	Unit	Parameter	Value	Unit
PM10	1.14	ug/m ³	PM10	1.14	ug/m ³
CO	11,400	ppm	CO	11,400	ppm
SO2	5130	ppm	SO2	5130	ppm
NOx	344	ppm	NOx	344	ppm

INPUTS TO REPORT TO CONSTRUCT (PTC)

Section	Value	Unit
Section A.2 Operating Requirements		
Section A.2.1 Number of Generators	4	
Section A.2.1 Number of Generators Size of Generators	1,220	[-] kW
Section B.1.1 Facility Throughput Limit	1,340,868	T/yr
Section B.1.3 Generator Hours of Operation	6,706	hrs/yr
Section C.1.3 Facility Throughput Limit	670,434	T/yr
Section C.1.4 Generator Hours of Operation	3,353	hrs/yr
Section D.1.1 Facility Throughput Limit	1,340,868	T/yr
Section D.1.3 Generator Hours of Operation	6,706	hrs/yr

EMISSION ANALYSIS BASED ON ALL PLANT'S DATA
 Generating Emissions

Cracker Plant Process: Ethanol Production and Impact Parameters

Pollutant	Generator Emission Factor [L]/MWh	Generator Emission Rate [L]/hr	Apparent Data		Generator Emissions		Generator Emissions Regulatory Analysis		Modelled Air Concentrations	
			Hourly	Annual	Hourly	Annual	24 hr Operation	Annual	Based On Rural SCREEN1 Data	Based On Rural SCREEN1 Data
PM10	0.6697	0.22	11.0	8,760	13.93	7.91	1.6%	1.6%	1.6%	
CO	0.8533	0.55	33.0	8,760	11.12	2.39	0.5%	0.5%	0.5%	
SO2	0.8100	7.71	24.0	8,760	183.16	33.39	7.6%	7.6%	7.6%	
NOx	1.1000	39.33	11.0	8,760	708.61	129.32	29.0%	29.0%	29.0%	
SOx	0.5050	4.87	14.0	8,760	115.41	21.07	4.7%	4.7%	4.7%	
TOC	0.1000	0.95	24.0	8,760	32.88	4.17	1.1%	1.1%	1.1%	

Pollutant	BGC Evaluation	Significant Emission Rates	Generator Emissions Regulatory Analysis		Ambient Air Concentration		Annual		Ambient Air Concentration w/ Background Values (ug/m ³)	
			24 hr	Annual	24 hr	Annual	1 hr	3 hr	8 hr	24 hr
PM10	Above BGC (1.5 TSP)	180	3.0 ug/m ³	1,000	500	11.4%	5.9%	88.7	33.2	
CO	Above BGC (in TSP)	480	2,000 ug/m ³ (low)	8,760	1,000	11.4%	5.9%	107.6	69.0	
NOx	Above BGC (1 TSP)	Significant (40 TSP)	24 hr	2,000 ug/m ³ (low)	1,000	1,000	11.4%	5.9%	107.6	69.0
SO2	Above BGC (1 TSP)	Significant (40 TSP)	24 hr	2,000 ug/m ³ (low)	1,000	1,000	11.4%	5.9%	107.6	69.0

Pollutant	Crackers		Screens		Transfer Limits		Emissions		For information purposes	
	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Cracker	Generator
PM10	1400	730	1000	350	1000	500	181.0	481.2	1372	1311
CO	8,260	6,57	8,760	6,57	8,760	438	354.9	351.9		
NOx	20%	20%	20%	20%	20%	20%	18.6	18.6		
SO2	0.0031	0.0024	0.0350	0.0110	0.0020	0.0010	17.33	14.41		
SOx	0.51	3.60	106.50	166.50	14.12	54.9	144.1	144.1		
Uncontrolled Emissions (1/1/99)	0.16	1.08	9.00	11.95	4.21	801.6	2107.4	2107.4		
Controlled Emissions (1/1/99)	2.3	15.8	466.5	137.7	61.9	18.6	137.2	1311		
Control Efficiency	70%	70%	70%	70%	70%	70%	481.2	481.2		
Transfer Factor	0.0002	0.0063	0.0194	0.1864	0.0043	0.0053	17.33	14.41		
Uncontrolled Emissions (1/1/99)	1.50	9.45	28.25	279.56	27.40	11.20	144.1	144.1		
Controlled Emissions (1/1/99)	0.42	2.84	21.63	81.82	17.0	164.5	2107.4	2107.4		
Control Efficiency	6.1	344.9	103.5	362.3	98.1	49.1	612.2	612.2		

1 Number of Screens - Number of Cracker
 2 Number of Transfer Points - Transfer of (Crackers)
 3 Emission Factor from AP-12, Table 11.19.2.2. Where factors were given for one pollutant, the following conversion factors were used:
 TSP = PM10 x 2.1, TSP = PM10 x 2.5
 Heavy values are based on maximum daily production rates given above. Annual values are based on throughput values given above.

Pollutant	Cracker Emissions		Transfer Emissions (Controlled)		Total Emissions	
	Hourly	Annual	Hourly	Annual	Hourly	Annual
PM10	1,110	2,330	1,117	2,403	2,227	4,733
CO	18,516	31,378	1,203	2,429	19,719	33,807
NOx	208.6	120.3	183.2	33.8	391.8	154.1
SO2	17.41	21.05	115.4	31.1	132.8	32.1
TOC	22.86	4.13	22.9	4.2	45.76	8.33

Pollutant	Cracker Emissions		Transfer Emissions (Controlled)		Total Emissions	
	Hourly	Annual	Hourly	Annual	Hourly	Annual
PM10	1,110	2,330	1,117	2,403	2,227	4,733
CO	18,516	31,378	1,203	2,429	19,719	33,807
NOx	208.6	120.3	183.2	33.8	391.8	154.1
SO2	17.41	21.05	115.4	31.1	132.8	32.1
TOC	22.86	4.13	22.9	4.2	45.76	8.33

EMISSION ANALYSIS BASED ON AMBIENT AIR QUALITY STANDARDS
Emissions limited to less than:
100 Ton/yr

Includes Total Emissions of Sulfur Dioxide and Impact Potential

Pollutant	Generator Emission Factor		Generator Emission Rate		Hours of Operation		AQS		Calculated Impacts		Allowable Impacts		Maximum Throughput
	[-] lb/yr	[-] lb/yr	[-] lb/yr	[-] lb/yr	[-] hr/yr	[-] hr/yr	[-] lb/yr	[-] lb/yr	< 100 Tpy	< 100 Tpy	< 100 Tpy	Calculated Emissions	
SO ₂	0.0027	0.66	0.0027	0.66	24.0	24.0	1.0	1.0	8.760	8.760	8.760	1.11	
NO _x	0.0104	7.71	0.0104	7.71	24.0	24.0	4.0	4.0	8.760	8.760	8.760	3.54	
CO	1.1000	29.53	1.1000	29.53	24.0	24.0	3.0	3.0	8.760	8.760	8.760	1.11	
PM ₁₀	0.5050	14.14	0.5050	14.14	24.0	24.0	3.0	3.0	8.760	8.760	8.760	1.11	
LOC	0.1000	0.93	0.1000	0.93	24.0	24.0	3.0	3.0	8.760	8.760	8.760	1.11	

Pollutant	Calculated 24 hr Impact		Calculated Annual Impact		Calculated Impact		Hourly Concentration by 100 ground Value (ppm)	
	[-] lbs/yr	[-] lbs/yr	[-] lbs/yr	[-] lbs/yr	[-] lbs/yr	[-] lbs/yr	[-] lbs/yr	[-] lbs/yr
SO ₂	8.760	8.760	8.760	8.760	8.760	8.760	8.760	8.760
NO _x	8.760	8.760	8.760	8.760	8.760	8.760	8.760	8.760
CO	8.760	8.760	8.760	8.760	8.760	8.760	8.760	8.760
PM ₁₀	8.760	8.760	8.760	8.760	8.760	8.760	8.760	8.760
LOC	8.760	8.760	8.760	8.760	8.760	8.760	8.760	8.760

Pollutant	Generator Emission Factor		Generator Emission Rate		Hours of Operation		AQS		Calculated Impacts		Allowable Impacts	
	[-] lb/yr	[-] lb/yr	[-] lb/yr	[-] lb/yr	[-] hr/yr	[-] hr/yr	[-] lb/yr	[-] lb/yr	< 100 Tpy	< 100 Tpy	< 100 Tpy	Calculated Emissions
SO ₂	0.0003	0.0024	0.0003	0.0024	10.00	10.00	0.030	0.030	0.0033	0.0033	0.0033	0.0033
NO _x	0.53	3.60	0.53	3.60	10.00	10.00	0.43	0.43	0.0033	0.0033	0.0033	0.0033
CO	0.16	1.08	0.16	1.08	10.00	10.00	0.43	0.43	0.0033	0.0033	0.0033	0.0033
PM ₁₀	0.4	2.4	0.4	2.4	10.00	10.00	0.43	0.43	0.0033	0.0033	0.0033	0.0033
LOC	0.1	0.7	0.1	0.7	10.00	10.00	0.43	0.43	0.0033	0.0033	0.0033	0.0033

Notes:
- TYP calculations include sulfur, nitrogen and particulate emissions
- CO 1.1lb Averaging Period
- SO₂ 3hr Averaging Period
- Daily and annual operation values are based on background data for the modeled generator emissions (i.e., ambient air concentration)
- The 24 hr Averaging Period for ambient air concentration is based on the maximum hourly concentration of the generator emissions
- Maximum background values are based on the maximum number of hours (100) that will yield a total of 90 Ton/yr, multiplied by the maximum daily production rate
- Hourly emission values are based on maximum daily production rate, given above
- Annual emission values are based on the maximum throughput values given above
- Non-attainment area based on ambient air quality standards. TYP emissions are non-attainment in PM₁₀ non-attainment area. Therefore, operation is limited by significant impact limit

