

**AIR QUALITY DIVISION**  
**CHAPTER 6, SECTION 3**  
**OPERATING PERMIT**

**WYOMING DEPARTMENT OF**  
**ENVIRONMENTAL QUALITY**  
**AIR QUALITY DIVISION**  
122 West 25th Street  
Cheyenne, Wyoming 82002



**PERMIT NO. 3-1-123-2**

Issue Date: **February 22, 2013**  
Expiration Date: **June 10, 2013**  
Effective Date: **February 22, 2013**  
Replaces Permit No.: **3-1-123-1**

In accordance with the provisions of W.S. §35-11-203 through W.S. §35-11-212 and Chapter 6, Section 3 of the Wyoming Air Quality Standards and Regulations,

*TATA Chemicals (Soda Ash) Partners (amended 9/14/11)*  
**Green River Works**  
**Section 30, Township 19 North, Range 109 West**  
**Sweetwater County, Wyoming**

is authorized to operate a stationary source of air contaminants consisting of emission units described in this permit. The units described are subject to the terms and conditions specified in this permit. All terms and conditions of the permit are enforceable by the State of Wyoming. All terms and conditions of the permit, except those designated as not federally enforceable, are enforceable by EPA and citizens under the Act. A copy of this permit shall be kept on-site at the above named facility.

Steven A. Dietrich  
Steven A. Dietrich, Administrator  
Air Quality Division

2-22-13  
Date

Todd Parfitt  
Todd Parfitt, Director  
Department of Environmental Quality

2/27/13  
Date

**WAQSR CHAPTER 6, SECTION 3 OPERATING PERMIT**  
**WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY**  
**AIR QUALITY DIVISION**

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**GENERAL INFORMATION**

Company Name: *TATA Chemicals (Soda Ash) Partners (amended 9/14/11)*

Mailing Address: **P.O. Box 551**

City: **Green River**

State: **Wyoming**

Zip: **82935**

Plant Name: **Green River Works**

Plant Location: **Section 30, Township 19 North, Range 109 West, Sweetwater County, Wyoming (20 miles west of Green River on County Rd 4-40).**

Plant Mailing Address: **P.O. Box 551**

City: **Green River**

State: **Wyoming**

Zip: **82935**

Name of Owner: **General Chemical (Soda Ash) Partners**

Phone: **(307) 872-3393**

Responsible Official: *Randy Pitts*

Phone: **(307) 872-3393**

*(Amended March 6, 2009)*

Plant Manager/Contact: *Randy Pitts*

Phone: **(307) 872-3393**

*(Amended March 6, 2009)*

DEQ Air Quality Contact: **District 5 Air Quality Engineer**

Phone: **(307) 332-6755**

**510 Meadowview Drive**

**Lander, WY 82520**

SIC Code: **1474**

Description of Process: **Underground mining operations. Aboveground processes include crushing, calcining, dissolving, filtering, clarification, crystallization, evaporation and drying of trona ore into refined soda ash. Soda ash is loaded in trucks and railcars and shipped to customers. The plant is divided into two processing trains, designated as the GR-1/GR-2 and the GR-3 process lines, with a combined production of 2.8 MMTPY of soda ash.**

### SOURCE EMISSION POINTS

This table may not include any or all insignificant activities at this facility.

**(modified February 22, 2013)**

<b>SOURCE ID#</b>	<b>SOURCE DESCRIPTION</b>	<b>SIZE</b>	<b>CH. 6, SEC. 2 PERMITS</b>
A-305	GR-2 Screen/Elevator/305 Belt w/ baghouse control	400 TPH	MD-129A
A-309	309 Reclaim Tunnel w/ baghouse control	750 TPH	<u>MD-129,</u> <u>MD-129A</u>
CH-1	Coal Truck/Railcar Unloading w/ baghouse control	100 TPH	MD-129A
CH-2	Tripper Deck/Coal Bunkers w/ baghouse control	100 TPH	MD-129A
<u>EM-1</u>	<u>#2 Hoist Emergency Generator *</u>	<u>1,750 hp</u>	<u>wv-13859</u>
<u>EM-2</u>	<u>Powerhouse Emergency Generator *</u>	<u>355 hp</u>	<u>wv-13859</u>
<u>EM-3</u>	<u>#3 Hoist Emergency Generator *</u>	<u>47 hp</u>	<u>wv-13859</u>
<u>EM-4</u>	<u>#6 Hoist Emergency Generator *</u>	<u>546 hp</u>	<u>wv-13859</u>
<u>EM-5</u>	<u>Fuel Station Engine *</u>	<u>207 hp</u>	<u>wv-13859</u>
FA01	Trona Stockpile	8 Acres	MD-129A
FA02	Coal Stockpile	10,000 Tons	AP-JD0, <u>AP-7835</u>
FA03	Cell A – Soda Ash	10 Acres	None
FA04	Cell B – Soda Ash	23.6 Acres	None
FA05	Cell C – Soda Ash	17.6 Acres	None
FA06	Cell D – Soda Ash	25.6 Acres	None
FA07	Cell F – Soda Ash	22.2 Acres	<u>wv-13858</u>
FA08	Cell J – Soda Ash	18.8 Acres	None
FA09	Topsoil Stockpile Access Road	1.2 Acres	None
FA010	#5 Shaft Access Road	1.2 Acres	None
FA011	Top of Hill Area 6	16.2 Acres	None
FA12	Sanitary Landfill	7.8 Acres	None
FA13	South Diversion Ditch	5.4 Acres	None
FA14	Interceptor Trench	3.7 Acres	None
FA15	C and D soil Storage	8.2 Acres	None
FA16	Grit Disposal Area	14.5 Acres	None
FA17	Pond 4 South	44.9 Acres	None
FD-120	Crusher w/ baghouse control	540 TPH	MD-129A
FD-612	#5 Product Storage Silo w/ baghouse control	700 TPH	MD-129A
FD-613	Top of #4 Product Storage Silo w/ baghouse control	700 TPH	<u>MD-567A</u>
FD-614	Bottom of #4 Product Storage Silo w/ baghouse control	700 TPH	<u>MD-567A</u>
FD-615	Bottom of #5 Product Storage Silo w/ baghouse control	700 TPH	MD-129A
FD-616	Product Storage (Transfer Tower) w/ baghouse control	700 TPH (1,200 TPH Max)	<u>MD-567A</u>
FD-617	Truck Loading w/ baghouse control	120 TPH	MD-129A
FR01	Unpaved Roads	NA	None

SOURCE ID#	SOURCE DESCRIPTION	SIZE	CH. 6, SEC. 2 PERMITS
GR-1-A	GR-2 Impactor (Crusher) w/ baghouse control	400 TPH	MD-129A
GR-1-B(1)	Railcar Loading w/ baghouse control	900 TPH (1,100 TPH Max)	<u>MD-567A</u>
GR-1-B(2)	Product Loading (Screen/Transfer Point) w/baghouse control	900 TPH (1,100 TPH Max)	<u>MD-567A</u>
GR-1-C	GR-1 #1 Calciner w/ ESP control	50 MMBtu/hr and 65 TPH	MD-369, MD-129A, MD-129
GR-1-D	GR-1 #2 Calciner w/ ESP control	50 MMBtu/hr and 65 TPH	MD-369, MD-129A, MD-129
GR-1-E	GR-1 #3 Calciner w/ ESP control	50 MMBtu/hr and 65 TPH	MD-369, MD-129A, MD-129
GR-1-F	GR-1 #1 Dryer w/ wet scrubber control	33.5 TPH	MD-369, MD-129A
GR-1-G	GR-1 #2 Dryer w/ wet scrubber control	33.5 TPH	MD-369, MD-129A
GR-1-H	GR-1 #3 Dryer w/ wet scrubber control	33.5 TPH	MD-369, MD-129A
GR-1-J(1)	GR-2 North Housekeeping Scrubber	100.5 TPH	MD-129A, MD-129
GR-1-J(2)	GR-2 South Housekeeping Scrubber	100.5 TPH	MD-129A, MD-129
GR-2-A	GR-I/II w/ baghouse control	400 TPH	MD-129A
GR-2-B	Product Storage with baghouse control	700 TPH	MD-129A
GR-2-C	GR-2 #4 Calciner w/ ESP control	50 MMBtu/hr and 65 TPH	MD-369, MD-129A, MD-129
GR-2-CT	Cooling Tower	18,000 GPM	None
GR-2-D	GR-2 #5 Calciner w/ ESP control	50 MMBtu/hr and 65 TPH	MD-369, MD-129A, MD-129
GR-2-E(1)	GR-2 #1 Dissolver w/ wet scrubber control	162.5 TPH	MD-129A
GR-2-E(2)	GR-2 #2 Dissolver w/ wet scrubber control	162.5 TPH	MD-129A
GR-2-F	GR-2 #4 Dryer w/ wet scrubber control	33.5 TPH	MD-369, MD-129A
GR-2-G	GR-2 #5 Dryer w/ wet scrubber control	33.5 TPH	MD-369, MD-129A
GR-2-H	GR-2 #6 Dryer w/ wet scrubber control	33.5 TPH	MD-369, MD-129A
GR-2-J	GR-2 West Housekeeping Scrubber	201.0 TPH	MD-129A, MD-129

SOURCE ID#	SOURCE DESCRIPTION	SIZE	CH. 6, SEC. 2 PERMITS
GR-2-L	C Boiler w/ ESP control	534 MMBtu/hr	MD-129A, <b>MD-6046,</b> <b>MD-10837</b>
GR-3-A	GR-3 Impactor (Crusher) w/ baghouse control	400 TPH	MD-129A, MD-129
GR-3-B	GR-3 Ore Belt/Transfer Tower w/ baghouse control	375 TPH	MD-129A
GR-3-C	GR-3 Ore Gallery w/ baghouse control	375 TPH	<b>MD-129A</b>
GR-3-CT	Cooling Tower	18,000 GPM	None
GR-3-D	GR-3 #1 Calciner w/ ESP control	190 MMBtu/hr and 145 TPH	MD-369, MD-129A
GR-3-E	GR-3 #2 Calciner w/ ESP control	190 MMBtu/hr and 145 TPH	MD-369, MD-129A
GR-3-F	GR-3 #1 Dissolver w/ wet scrubber control	145 TPH	MD-129A
GR-3-G	GR-3 #2 Dissolver w/ wet scrubber control	145 TPH	MD-129A
GR-3-H	GR-3 Filter-Aid w/ bin vent control	10 TPH	Ch 8, Sec 2
GR-3-K	GR-3 #1 Dryer w/ wet scrubber control	40 TPH	MD-369, MD-129A
GR-3-L	GR-3 #2 Dryer w/ wet scrubber control	40 TPH	MD-369, MD-129A
GR-3-M	GR-3 #3 Dryer w/ wet scrubber control	40 TPH	MD-369, MD-129A
GR-3-N	GR-3 #4 Dryer w/ wet scrubber control	40 TPH	MD-369, MD-129A
GR-3-P	GR-3 #5 Dryer w/ wet scrubber control	40 TPH	MD-369, MD-129A
GR-3-Q	GR-3 #6 Dryer w/ wet scrubber control	40 TPH	MD-369, MD-129A
GR-3-R	GR-3 Dryer Vent with wet scrubber control	201.0 TPH	MD-129A
GR-3-U	GR-3 House Keeping Baghouse	120 TPH	MD-129A
GR-3-V	GR-3 Housekeeping Baghouse	120 TPH	MD-129A
GR-3-W	D Boiler w/ ESP control	880 MMBtu/hr	MD-129A, <b>MD-6046,</b> <b>MD-10837</b>
GR-3-X	E Boiler (Natural Gas)	490 MMBtu/hr	CT-1119 and <b>MD-567A</b>
MS-1	Mine Shaft Fan #1	NA	11-2-98 Letter
MS-4B	Mine Shaft Fan # 4B	NA	11-2-98 Letter
MS-5A	Mine Shaft Fan #5A	NA	11-2-98 Letter
MS-5B	Mine Shaft Fan #5B	NA	11-2-98 Letter
RO-1	Reclaim System Baghouse	800 TPH	MD-129A

\* **diesel-fired engines**

**TOTAL FACILITY ESTIMATED EMISSIONS**

For informational purposes only. These emissions are not to be assumed as permit limits.

<b>POLLUTANT</b>	<b>EMISSIONS (TPY)</b>
<b>CRITERIA POLLUTANT EMISSIONS</b>	
Particulate Matter	1977
PM <sub>10</sub> Particulate Matter	1977
Sulfur Dioxide (SO <sub>2</sub> )	7503
Nitrogen Oxides (NO <sub>x</sub> )	<b><u>5665</u></b>
Carbon Monoxide (CO)	<b><u>536</u></b>
Volatile Organic Compounds (VOCs)	1205
<b>HAZARDOUS AIR POLLUTANT (HAP) EMISSIONS</b>	136.0

The facility estimated emissions **are from waiver wv-13859.**

## FACILITY-SPECIFIC PERMIT CONDITIONS

### Facility-Wide Permit Conditions

- (F1) SODA ASH PRODUCTION LIMIT [WAQSR Ch 6, Sec 2 Permit MD-567A]  
(modified February 22, 2013)
- (a) The Green River Works facility is limited to a maximum soda ash production of 2.8 million tons per year (MMTPY).
  - (b) The permittee may increase the facility production limitation beyond that described in paragraph (a) upon receipt of a construction or modification permit issued under Chapter 6, Section 2 of WAQSR that authorizes such change. The permittee must, however, submit an application to modify this operating permit within 12 months of commencement of operation for any unit not already included in this permit.
- (F2) PAVED ROADS REQUIREMENT [WAQSR Ch 8, Sec 2(c)(i)]  
The permittee shall maintain all roads in the facility area that encounter frequent traffic in a clean condition through the use of a vacuum sweeper, or equivalent method.
- (F3) SULFUR DIOXIDE EMISSIONS INVENTORY [WAQSR Ch 14, Sec 3]  
The permittee shall report SO<sub>2</sub> emissions annually as required by WAQSR Chapter 14, Section 3. SO<sub>2</sub> emissions shall be estimated in accordance with Chapter 14, Section 3(b), and adjusted in accordance with Chapter 14, Section 3(c) if necessary.

### Source-Specific Permit Conditions

- (F4) FUGITIVE EMISSIONS AND DECA MELTING CONTROL REQUIREMENTS [WAQSR Ch 6, Sec 2 Waivers AP-DJ0 and wy-13858; and W.S. 35-11-110] (modified February 22, 2013)
- (a) Fugitive emissions from the trona stockpile and the coal stockpile (units FA01 & FA02) shall not exceed 20 percent opacity.
  - (b) The permittee shall use a dust surfactant to maintain the fugitive visible emissions from the coal stockpile (unit FA02) within the 20 percent opacity limitation required by paragraph (a) of this condition.
  - (c) The permittee shall load only hatch type trucks or trucks equipped with effective canvas coverings at the Bulk Truck Loading Station.
  - (d) Work areas and unpaved roads associated with the DECA melting operation shall be treated annually with a solution of 30% magnesium chloride (MgCl) solution or similar performing chemical dust suppressant. Water shall be applied at least monthly and on a schedule sufficient to control fugitive dust from vehicular traffic.
  - (e) The sodium carbonate decahydrate (DECA) shall be treated with water and/or chemical dust suppressant on a schedule sufficient to control fugitive dust from wind erosion of the work areas and/or stockpiled material.
  - (f) Approval to construct or modify the decahydrate melting operation under waiver wy-13858 shall become invalid if construction is not commenced by September 28, 2014 or if construction is discontinued for a period of 24 months or more. The Administrator may extend the period based on satisfactory justification of the requested extension. Written notification of the actual date of initial startup is required within 15 days after the permittee begins the decahydrate melting operation.
- (F5) VISIBLE AND PARTICULATE EMISSION LIMITATIONS AND ENGINE REQUIREMENTS  
[WAQSR Ch 3, Sec 2; WAQSR Ch 6, Sec 2 Permits/Waivers MD-129A, MD-6046, MD-567A, wy-13859; and 40 CFR Part 60, Subparts D, Y and OOO] (modified February 22, 2013)
- (a) Visible and particulate matter emissions from the sources listed in Table I of this permit shall not exceed the limits specified.
  - (b) Unless a lower limit is specified elsewhere in this permit, visible emissions of any contaminant discharged into the atmosphere from any other single emission source shall not exhibit greater than 20 percent opacity except for one period or periods aggregating not more than six minutes in any one hour of not more than 40 percent opacity.

- (c) In addition to the limits in Table 1, PM/PM<sub>10</sub> emissions shall also not exceed the following:
- (i) For the C boiler (GR-2-L), 0.09 lb/MMBtu and 219.0 TPY (filterable portion only).
  - (ii) For the D boiler (GR-3-W), 0.09 lb/MMBtu and 350.4 TPY (filterable portion only).
- (d) For the five emergency diesel generator engines (EM-1 through EM- 5), visible emissions shall not exceed 30 percent opacity except for periods not exceeding ten consecutive seconds. This limitation shall not apply during a reasonable period of warmup following a cold start or where undergoing repairs and adjustment following a malfunction. In addition:
- (i) The permittee shall operate and maintain the engines and monitoring equipment according to good air pollution control practices at all times, including startup, shutdown, and malfunction.
  - (ii) Each engine shall be operated as an emergency stationary engine as described by 40 CFR part 63, subpart ZZZZ, with limited hours of operation as allowed by the subpart.
  - (iii) The permittee shall install and maintain a non-resettable hours meter on each engine.

Source ID#	Source Description	Visible Emission Limit (% Opacity)	Particulate Matter Emission Limit	
			lb/hr	gr/dscf (g/dscm)
A-305	GR-2 Screen/Elevator/305 Belt w/ baghouse control	7	1.51	(0.05)
A-309	309 Reclaim Tunnel w/ baghouse control	7	1.28	(0.05)
CH-1	Coal Truck/Railcar Unloading w/ baghouse control	< 20	1.70	
CH-2	Tripper Deck/Coal Bunkers w/ baghouse control	< 20	1.00	
FD-120	Crusher w/ baghouse control	7	2.00	(0.05)
FD-612	#5 Product Storage Silo w/ baghouse control	7	1.50	(0.05)
FD-613	Top of #4 Product Storage Silo w/ baghouse control	7	0.5	0.01
FD-614	Bottom of #4 Product Storage Silo w/ baghouse control	7	0.6	0.01
FD-615	Bottom of #5 Product Storage Silo w/ baghouse control	7	1.00	(0.05)
FD-616	Product Storage (Transfer Tower) w/ baghouse control	7	0.4	0.01
FD-617	Truck Loading w/ baghouse control	7	0.23	(0.05)
GR-1-A	GR-2 Impactor (Crusher) w/ baghouse control	7	3.00	(0.05)
GR-1-B(1)	Railcar Loading w/ baghouse control	7	0.8	0.01
GR-1-B(2)	Product Loading (Screen/Transfer Point) w/ baghouse control	7	0.6	0.01
GR-1-C	GR-1 #1 Calciner w/ ESP control	20	15.00	
GR-1-D	GR-1 #2 Calciner w/ ESP control	20	15.00	
GR-1-E	GR-1 #3 Calciner w/ ESP control	20	15.00	
GR-1-F	GR-1 #1 Dryer w/ wet scrubber control	20	4.00	
GR-1-G	GR-1 #2 Dryer w/ wet scrubber control	20	4.00	
GR-1-H	GR-1 #3 Dryer w/ wet scrubber control	20	4.00	
GR-1-J(1)	GR-2 North Housekeeping Scrubber	20	2.00	(0.05)
GR-1-J(2)	GR-2 South Housekeeping Scrubber	20	2.00	(0.05)
GR-2-A	GR-1/II w/ baghouse control	7	2.95	(0.05)
GR-2-B	Product Storage with baghouse control	7	3.00	(0.05)
GR-2-C	GR-2 #4 Calciner w/ ESP control	20	15.00	
GR-2-D	GR-2 #5 Calciner w/ ESP control	20	15.00	
GR-2-E(1)	GR-2 #1 Dissolver w/ wet scrubber control	20	3.00	
GR-2-E(2)	GR-2 #2 Dissolver w/ wet scrubber control	20	3.00	
GR-2-F	GR-2 #4 Dryer w/ wet scrubber control	20	4.00	
GR-2-G	GR-2 #5 Dryer w/ wet scrubber control	20	4.00	
GR-2-H	GR-2 #6 Dryer w/ wet scrubber control	20	4.00	

Table I: Visible and Particulate Matter Emissions				
Source ID#	Source Description	Visible Emission Limit (% Opacity)	Particulate Matter Emission Limit	
			lb/hr	gr/dscf (g/dsem)
GR-2-J	GR-2 West Housekeeping Scrubber	20	1.5	(0.05)
GR-2-L	C Boiler w/ ESP control	20	50.00 *	
GR-3-A	GR-3 Impactor (Crusher) w/ baghouse control	7	2.50	(0.05)
GR-3-B	GR-3 Ore Belt/Transfer Tower w/ baghouse control	20	1.00	
GR-3-C	GR-3 Ore Gallery w/ baghouse control	7	1.00	
GR-3-D	GR-3 #1 Calciner w/ ESP control	20	37.90	
GR-3-E	GR-3 #2 Calciner w/ ESP control	20	37.90	
GR-3-F	GR-3 #1 Dissolver w/ wet scrubber control	20	2.00	
GR-3-G	GR-3 #2 Dissolver w/ wet scrubber control	20	2.00	
GR-3-H	GR-3 Filter-Aid w/ bin vent control	20		
GR-3-K	GR-3 #1 Dryer w/ wet scrubber control	20	1.50	
GR-3-L	GR-3 #2 Dryer w/ wet scrubber control	20	1.50	
GR-3-M	GR-3 #3 Dryer w/ wet scrubber control	20	1.50	
GR-3-N	GR-3 #4 Dryer w/ wet scrubber control	20	1.50	
GR-3-P	GR-3 #5 Dryer w/ wet scrubber control	20	1.50	
GR-3-Q	GR-3 #6 Dryer w/ wet scrubber control	20	1.50	
GR-3-R	GR-3 Dryer Vent with wet scrubber control	20	2.00	
GR-3-U	GR-3 House Keeping Baghouse	20	3.00	
GR-3-V	GR-3 Housekeeping Baghouse	20	3.00	
GR-3-W	D Boiler w/ ESP control	20	80.00 *	
RO-1	Reclaim System Baghouse	7	1.40	(0.05)

\* Filterable portion only

(F6) SO<sub>2</sub>, NO<sub>x</sub> AND CO EMISSION LIMITATIONS [WAQSR Ch 6, Sec 2 Permits MD-129, MD-10837 and MD-567A; and 40 CFR Part 60, Subpart D] (modified February 22, 2013)

(a) The permittee shall comply with any applicable limits under 40 CFR 60, Subpart D for SO<sub>2</sub> emissions from the C & D boilers (units GR-2-L & GR-3-W).

(b) For NO<sub>x</sub> emissions from the C & D boilers (units GR-2-L & GR-3-W) the permittee shall comply with the following limits and requirements. The limits in (ii) and (iii) below shall apply during all operating periods.

(i) The permittee shall install separated overfire air or an equivalent performing technology on boilers C and D, and conduct the initial performance tests required in condition F10(a)(ii) no later than December 31, 2014 for boiler C, and December 31, 2015 for boiler D. Each time separated overfire air (or equivalent) is installed, the permittee shall furnish the Administrator written notification of:

(A) The date of commencement of construction for each installation of separated overfire air within 30 days of commencement.

(B) The anticipated date of initial startup not more than 60 days or less than 30 days prior to such date, and;

(C) The actual date of initial start-up within 15 days after such date in accordance with WAQSR Ch 6, Sec 2(i).

(ii) Prior to installation of separated overfire air, NO<sub>x</sub> emissions shall not exceed the following:

(A) For the C boiler: 0.53 lb/MMBtu and 283.0 lb/hr (30-day rolling averages), and 1,239.6 TPY.

(B) For the D boiler: 0.55 lb/MMBtu and 484.0 lb/hr (30-day rolling averages), and 2,119.9 TPY.

- (iii) After installation of separated overfire air and compliance with condition F10(a)(ii), NO<sub>x</sub> emissions shall not exceed the following:
    - (A) For the C boiler: 0.28 lb/MMBtu and 149.5 lb/hr (30-day rolling averages), and 654.9 TPY.
    - (B) For the D boiler: 0.28 lb/MMBtu and 246.4 lb/hr (30-day rolling averages), and 1,079.2 TPY.
  - (iv) The permittee shall comply with any additional applicable limits under 40 CFR 60, Subpart D.
  - (c) NO<sub>x</sub> emissions from each of the GR-1 and GR-2 calciners (units GR-1-C, GR-1-D, GR-1-E, GR-2-C & GR-2-D) shall not exceed 8.70 lb/hr.
  - (d) NO<sub>x</sub> emissions from the E boiler (unit GR-3-X) shall not exceed 0.08 lb/MMBtu, 39.2 lb/hr and 171.7 TPY.
  - (e) CO emissions from the E boiler (unit GR-3-X) shall not exceed 0.038 lb/MMBtu, 18.6 lb/hr and 81.6 TPY.
- (F7) COAL STOCKPILE SIZE LIMIT [WAQSR Ch 6, Sec 2 Waiver AP-7835] (modified February 22, 2013)  
The maximum size of the coal stockpile (unit FA02) shall not exceed 15,000 tons.
- (F8) EQUIPMENT PROCESS RATE LIMITATIONS [WAQSR Ch 6, Sec 2 Permit MD-369] (modified February 22, 2013)
- (a) Reserved
  - (b) Equipment process rates from the sources listed in Table II of this permit shall not exceed the limits specified.

Table II: Equipment Process Rate Limitations					
Source ID	Source Description	Trona Ore Feed Limit (TPH)	Source ID	Source Description	Soda Ash Production Limit (TPH)
GR-1-C	GR-1 #1 Calciner	65.0	GR-1-F	GR-1 #1 Dryer	33.5
GR-1-D	GR-1 #2 Calciner	65.0	GR-1-G	GR-1 #2 Dryer	33.5
GR-1-E	GR-1 #3 Calciner	65.0	GR-1-H	GR-1 #3 Dryer	33.5
GR-2-C	GR-2 #4 Calciner	65.0	GR-2-F	GR-2 #4 Dryer	33.5
GR-2-D	GR-2 #5 Calciner	65.0	GR-2-G	GR-2 #5 Dryer	33.5
GR-3-D	GR-3 #1 Calciner	145.0	GR-2-H	GR-2 #6 Dryer	33.5
GR-3-E	GR-3 #2 Calciner	145.0	GR-3-K	GR-3 #1 Dryer	40.0
			GR-3-L	GR-3 #2 Dryer	40.0
			GR-3-M	GR-3 #3 Dryer	40.0
			GR-3-N	GR-3 #4 Dryer	40.0
			GR-3-P	GR-3 #5 Dryer	40.0
			GR-3-Q	GR-3 #6 Dryer	40.0

Testing Requirements

- (F9) CALCINER EMISSIONS TESTING [WAQSR Ch 6, Sec 3(h)(i)(C)(I)] (*amended September 2, 2009*)
- (a) For particulate matter emissions the permittee shall:
    - (i) Test each of the GR-3 calciners (units GR-3-D and GR-3-E), at a minimum, annually to assess compliance with the particulate emission limits in Table I of this permit.
    - (ii) Test each of the GR-1 and GR-2 calciners (units GR-1-C, GR-1-D, GR-1-E, GR-2-C & GR-2-D), at minimum once *every five years* to assess compliance with the particulate emission limits in Table I of this permit.
    - (iii) For particulate matter emissions, a Method 5 sampling train shall be used with a back half impinger catch analyzed by the protocol defined in Method 202. The Division will compare

the sum of the Method 5 front half particulate catch and the inorganic (mineral) portion of the Method 202 back half of the Method 5/202 test against the particulate emission standards for each calciner.

- (b) The permittee shall test each of the GR-1 and GR-2 calciners (units GR-1-C, GR-1-D, GR-1-E, GR-2-C & GR-2-D), at minimum once *every five years* to assess compliance with the NO<sub>x</sub> limits in condition F6 of this permit, Methods 1-4, and 7 or 7E shall be used.
- (c) The permittee shall submit the test results to the Division within 45 days after the test date.
- (d) Testing shall be conducted in accordance with WAQSR Chapter 5, Section 2(h).

(F10) BOILER EMISSIONS TESTING

[WAQSR Ch 6, Sec 3(h)(i)(C)(I), **Ch 6, Sec 2 Permits MD-6046 and MD-10837**] (**modified February 22, 2013**)

- (a) The permittee shall test the C and D boilers (units GR-2-L and GR-3-W) **as follows:**
  - (i) **For particulate emissions**, at a minimum, annually to assess compliance with the particulate emission limits in **condition F5(c) and** Table I of this permit. Particulate emissions shall be measured as specified in 40 CFR Part 60, Subpart D §60.46, **and shall be determined in lb/MMBtu and lb/hr.**
    - (A) **The permittee shall measure the CAM indicators described in condition F15 during the tests. Following each test, the permittee shall evaluate the data from the test, together with data from previous testing, to determine if the indicator ranges in the CAM plan should be revised.**
  - (ii) **For NO<sub>x</sub> emissions, performance tests shall be conducted within 30 days of achieving maximum design rate after installation of separated overfire air or an equivalent performing technology, but not later than 90 days following initial start-up. If the maximum design production rate is not achieved within 90 days of start-up, the Administrator may require testing at the rate achieved and again when maximum rate is achieved. The NO<sub>x</sub> performance tests shall consist of determining the NO<sub>x</sub> 30-day rolling average using the continuous emissions monitoring system (CEMS) required by condition F16.**
- (b) **Prior to any testing required by this permit condition, a test protocol shall be submitted to the Division for approval, at least 30 days prior to testing. Notification of the test date shall be provided to the Division 15 days prior to testing.** The permittee shall submit the test results to the Division within 45 days after the test date.
- (c) Unless otherwise specified, testing shall be conducted in accordance with WAQSR Chapter 5, Section 2(h).

(F11) ADDITIONAL TESTING [W.S. 35-11-110] (**modified February 22, 2013**)

The Division reserves the right to require additional testing as provided under condition G1 of this permit. Should testing be required, test methods found at 40 CFR 60, Appendix A, shall be used as follows:

- (i) For particulate, visible, SO<sub>2</sub> and NO<sub>x</sub> emissions from the C and D boilers (units GR-2-L and GR-3-W), the methods described in 40 CFR Part 60, Subpart D §60.46, shall be used to measure emissions.
  - (ii) For NO<sub>x</sub> emissions from the E boiler (unit GR-3-X), the methods described in 40 CFR Part 60, Subpart Db §60.46b, shall be used to measure emissions.
  - (iii) For CO emission sources, Methods 1-4 and 10 shall be used.
  - (iv) For particulate and visible emissions from sources controlled by either baghouses or scrubbers listed in Table I of this permit, the methods described in 40 CFR Part 60, Subpart OOO §60.675 and paragraph (v) of this condition, shall be used to measure emissions.
  - (v) For particulate matter emissions from the trona processing sources, a Method 5 sampling train shall be used with a back half impinger catch analyzed by the protocol defined in Method 202. The Division will compare the sum of the Method 5 front half particulate catch and the inorganic (mineral) portion of the Method 202 back half of these Method 5/202 tests against the particulate emission standards for each unit.
  - (vi) For visible emissions from affected sources **subject to 40 CFR 60, Subpart Y**, the methods described in §60.254 shall be used to measure emissions.
  - (vii) For visible emissions from other point sources and the coal stockpile, Method 9 shall be used.
- (b) Unless otherwise specified, testing shall be conducted in accordance with WAQSR Ch 5, Sec 2(h).

Monitoring Requirements

(F12) SODA ASH PRODUCTION AND ORE PROCESSING RATE MONITORING

[WAQSR Ch 6, Sec 3(h)(i)(C)(I)] (modified February 22, 2013)

- (a) The permittee shall monitor the soda ash production and the trona ore processing rates for comparison to limitations in conditions F1 and F8 of this permit.
- (b) Reserved

(F13) FUGITIVE EMISSIONS AND COAL STOCKPILE MONITORING [WAQSR Ch 6, Sec 3(h)(i)(C)(I)] (modified February 22, 2013)

- (a) The permittee shall perform quarterly Method 9 visible emissions observations of fugitive emissions from the trona stockpile (unit FA01) while the stacking chute is in use.
- (b) The permittee shall estimate the coal stockpile (unit FA02) size for comparison with the stockpile size limitation in condition F7 of this permit. This shall include monitoring the quantity of coal added to and reclaimed from the coal stockpile.
- (c) The permittee shall monitor the quantity of dust suppressant applied to the coal stockpile (in gallons or barrels). The permittee shall also maintain a log of the dust suppressant application rate during use of the coal stockpile dust suppression system.
- (d) For the DECA melting operation, the permittee shall monitor dust suppression activities for the unpaved roads, work areas, and stockpiled material, including:
  - (i) Application date.
  - (ii) Product applied.
  - (iii) Application rate and amount.

(F14) VISIBLE EMISSIONS AND ENGINE MONITORING [WAQSR Ch 6, Sec 3(h)(i)(C)(I); Ch 6, Sec 2 Permit MD-129] (modified February 22, 2013)

- (a) Periodic monitoring of visible emissions from C and D boilers (units GR-2-L and GR-3-W) shall consist of the Continuous Opacity Monitoring systems (COMs) described in 40 CFR 60 Subpart D.
- (b) Periodic monitoring of visible emissions from the electrostatic precipitator controlled GR-1 and GR-2 calciner stacks (units GR-1-C, GR-1-D, GR-1-E, GR-2-C & GR-2-D) shall consist of a COMs. The GR-1 & GR-2 COMs shall be calibrated and operated as described in WAQSR Chapter 5, Section 2 (j).
- (c) Periodic monitoring of visible emissions from the electrostatic precipitator controlled GR-3 calciner stacks (units GR-3-D & GR-3-E) shall consist of a COMs. The GR-3 calciner COMs shall be calibrated and operated as described the QA plan attached as Appendix H.
- (d) Periodic monitoring of visible emissions from the baghouse and venturi scrubber controlled units with particulate emission limits in Table I of this permit shall consist of the Compliance Assurance Monitoring (CAM) outlined under condition F15 of this permit.
- (e) Periodic monitoring of visible emissions from the oriclone scrubber controlled dryers (units GR-1-F, GR-1-G & GR-1-H) shall consist of quarterly Method 9 observations (one 6-minute average) of each unit.
- (f) Periodic monitoring for visible emissions from the E boiler (unit GR-3-X) shall consist of monitoring the type of fuel used to ensure that natural gas is the sole fuel source for this unit.
- (g) The permittee shall conduct observations of visible emissions from the emergency diesel-fired engines (EM-1 through EM- 5) during periodic availability assurance tests of these sources, at least semi-annually, to assess compliance with the opacity limit under condition F5(d) and to identify maintenance needs.
- (h) The permittee shall monitor the hours of operation of each engine (EM-1 through EM- 5) using the hours meters required by condition F5(d). The permittee shall note which hours of operation are during emergency situations, which are during maintenance checks and readiness testing, and which are during other non-emergency situations.

(F15) CONTROLLED PARTICULATE EMISSIONS MONITORING [WAQSR Ch 6, Sec 3(h)(i)(C)(I) and Ch 7, Sec 3 (c)(ii)] (Modified November 30, 2010)

- (a) The permittee shall adhere to the CAM plans attached as Appendix A of this permit and shall conduct monitoring as follows:

- (i) For the ESP controlled GR-1 and GR-2 calciners (units GR-1-C, GR-1-D, GR-1-E, GR-2-C & GR-2-D) the permittee shall monitor the total power input to each ESP at minimum, once daily.
  - (ii) For the ESP controlled GR-3 calciners and C and D boilers (units GR-3-D, GR-3-E, GR-2-L & GR-3-W) the permittee shall monitor the total power input to each ESP at minimum, once every 15 minutes.
  - (iii) For the venturi scrubber controlled dissolvers, screens, dryers (units GR-2-E(1), GR-2-E(2), GR-1-J(1), GR-1-J(2), GR-2-F, GR-2-G, GR-2-H, GR-2-J, GR-3-F, GR-3-G, GR-3-K, GR-3-L, GR-3-M, GR-3-N, GR-3-P, GR-3-Q & GR-3-R) the permittee shall monitor the pressure drop across the scrubber and scrubber re-circulation rates at minimum, once daily. The permittee shall also monitor visible emissions as specified in the approved CAM plan.
  - (iv) For the oriclone scrubber controlled dryers (units GR-1-F, GR-1-G & GR-1-H), the permittee shall monitor the scrubber fan amps and re-circulation rates at minimum, once daily.
  - (v) For the baghouse controlled emission points (units A-305, A-309, CH-1, CH-2, FD-120, FD-612, FD-613, FD-614, FD-615, FD-616, FD-617, GR-1-A, GR-1-B(1), GR-1-B(2), GR-2-A, GR-2-B, GR-3-A, GR-3-B GR-3-C, GR-3-U, GR-3-V & RO-1), the permittee shall monitor the pressure drop across the baghouse and baghouse fan amps at minimum, once daily. The permittee shall also monitor visible emissions as specified in the approved CAM plan.
- (b) Operation outside of the ranges established in the approved CAM plans shall trigger immediate corrective action.
  - (c) The permittee shall follow all other applicable requirements under conditions CAM-1 through CAM-4 of this permit.
  - (d) The permittee shall measure particulate emissions as specified in conditions F9 and F10 or more frequently, to determine compliance with the emission limits specified in Table I, and to further refine the relationship between actual emissions and the selected indicator for the units.
- (F16) SO<sub>2</sub>, NO<sub>x</sub> AND CO EMISSIONS MONITORING [WAQSR Ch 6, Sec 3(h)(i)(C)(I); Ch 6, Sec 2 Permit MD-10837] (modified February 22, 2013)
- (a) The permittee shall measure NO<sub>x</sub> and SO<sub>2</sub> emissions from the C & D boilers (units GR-2-L & GR-3-W) using a CEM system certified in accordance with 40 CFR 60. The CEMs shall comply with the requirements of 40 CFR 60, Subpart D.
  - (b) Periodic monitoring of NO<sub>x</sub> emissions for the GR-1 and GR-2 calciners (units GR-1-C, GR-1-D, GR-1-E, GR-2-C & GR-2-D) shall consist of the once per permit term testing required under condition F9 of this permit.
  - (c) Periodic monitoring of NO<sub>x</sub> emissions for the E boiler (unit GR-3-X) is described in 40 CFR 60, Subpart Db and §60.48b.
  - (d) Based on the quantity of the CO emissions from E boiler (unit GR-3-X) and the potential impact on ambient standards, the Division will not require periodic monitoring of CO emissions.
- (F17) AMBIENT PARTICULATE AND METEOROLOGICAL MONITORING [W.S. 35-11-110 (EPA Permit 8A-EE (7/26/1973)) and WAQSR Ch 6, Sec 3(h)(i)(C)(I)]
- (a) The permittee shall continue to operate, in accordance with the requirements of 40 CFR Parts 50 and 58, an approved ambient particulate monitoring program acceptable to the Division. The permittee shall maintain a quality assurance plan for the monitoring network, as required by 40 CFR part 58, approved by the Division.
  - (b) The permittee shall continue to maintain a meteorological station acceptable to the Division.

Recordkeeping Requirements

- (F18) PRODUCTION AND PROCESSING RATE RECORDS [WAQSR Ch 6, Sec 3(h)(i)(C)(II)] (modified February 22, 2013)
- (a) The permittee shall record the soda ash production and trona ore processing rates such that compliance with the limits in F1 and F8 can be assessed.
  - (b) Reserved
  - (c) The permittee shall retain on-site at the facility all records kept in accordance with this condition for a period of at least five years from the year of record.

(F19) FUGITIVE EMISSIONS AND COAL STOCKPILE RECORDS [W.S. 35-11-110 (Division 12/27/91 Letter); WAQSR Ch 6, Sec 3 (h)(i)(C)(II); Ch 6, Sec 2 Waivers AP-JD0, wv-12409, wv-12621, wv-13858] (modified February 22, 2013)

- (a) The permittee shall maintain the following records such that compliance with condition F2 of this permit and the effectiveness of the facility fugitive dust control program can be assessed:
  - (i) Records of the date, location, and quantity of dust suppressant applied to roads and unpaved disturbed areas;
  - (ii) Records of the date, location, and quantity of any paving or revegetation completed;
  - (iii) Records of the date and quantity of water applied, in gallons; and
  - (iv) Records of street sweeper, vacuum truck, and/or water truck operating hours.
- (b) The permittee shall maintain records of:
  - (i) The quantity of dust surfactant applied by the coal stockpile dust suppression system (in gallons or barrels). Additionally, the permittee shall keep a log of the dust surfactant application rate during use of the coal stockpile dust suppression system, such that compliance with condition F4 may be determined.
  - (ii) For dust suppression for the DECA melting operation, the dust suppressant application date, product applied, and application rate and amount
  - (iii) The amount of calciner feed-size trona ore loaded into the over the road haul trucks and rail cars under wv-12409.
  - (iv) The amount of calciner feed sized trona ore loaded into a railcar under wv-12621.
- (c) The permittee shall record the quantity of coal added to and reclaimed from the Coal Stockpile (unit FA02), the dates of such activities, and the resulting coal inventory such that compliance with the limits of condition F7 can be assessed.
- (d) For the Method 9 observations required by condition F13, for the ore stockpile, the permittee shall keep field records in accordance with Section 2.2 of Method 9. The operational status of the stacking chute and any corrective actions taken shall also be recorded.
- (e) The permittee shall retain on-site at the facility all records kept in accordance with this condition for a period of at least five years from the date of record.

(F20) SULFUR DIOXIDE EMISSIONS INVENTORY RECORDS [WAQSR Ch 14, Sec 3(b)]

- (a) The permittee shall maintain all records used in the calculation of SO<sub>2</sub> emissions, including but not limited to the following:
  - (i) Amount of fuel consumed;
  - (ii) Percent sulfur content of fuel and how the content was determined;
  - (iii) Quantity of product produced;
  - (iv) Emissions monitoring data;
  - (v) Operating data; and
  - (vi) How the emissions are calculated, including monitoring/estimation methodology with a demonstration that the selected methodology is acceptable under Chapter 14, Section 3.
- (b) The permittee shall maintain records of any physical changes to facility operations or equipment, or any other changes (e.g. raw material or feed) that may affect emissions projections of SO<sub>2</sub>.
- (c) The permittee shall retain all records and support information for compliance with this condition and with the reporting requirements of condition F27 at the facility, for a period of **at least ten (10) years** from the date of establishment, or if the record was the basis for an adjustment to the milestone, five years after the date of an implementation plan revision, whichever is longer.

(F21) VISIBLE EMISSION AND ENGINE MONITORING RECORDS [WAQSR Ch 6, Sec 3(h)(i)(C)(II) and Ch 6, Sec 2 waiver wv-13859] (modified February 22, 2013)

- (a) For the COM systems on the GR-1, GR-2, and GR-3 calciners (units GR-1-C, GR-1-D, GR-1-E, GR-2-C, GR-2-D, GR-3-D, and GR-3-E), records shall be maintained of all measurements from the COM systems, performance testing measurements, performance audits, calibration checks, and maintenance performed on the system in accordance with the requirements of WAQSR Chapter 5, Section 2 (g).
- (b) Recordkeeping for the COM systems on the C and D boilers (units GR-2-L and GR-3-W) is specified under 40 CFR 60, Subpart D.

- (c) For the Method 9 observations required by the Division under condition F14, of the oriclone scrubber controlled dryers (units GR-1-F, GR-1-G & GR-1-H) the permittee shall keep field records in accordance with Section 2.2 of Method 9. The permittee shall also record the concurrent scrubber fan amps of the individual scrubber and scrubber re-circulation rate once per calendar year.
  - (d) The permittee shall maintain records of any maintenance or corrective actions for the emergency diesel generator engines (EM-1 through EM-5) conducted under condition F5(d).
  - (e) The permittee shall maintain records of the hours of operation of each emergency diesel generator engine (EM-1 through EM-5) using the hours meters required by condition F5(d), and indicate the hours of operation during emergency situations, during maintenance checks and readiness testing, and during other non-emergency situations.
  - (f) The permittee shall retain on-site at the facility all records kept in accordance with this condition for a period of at least five years from the date of record.
- (F22) PARTICULATE EMISSION AND COMPLIANCE ASSURANCE MONITORING RECORDS [WAQSR Ch 6, Sec 3(h)(i)(C)(II) and Ch 7, Sec 3 (i)(ii)] (Modified November 30, 2010)
- (a) For the ESP controlled GR-2 calciners (units GR-1-C, GR-1-D, GR-1-E, GR-2-C & GR-2-D) the permittee shall record, at minimum once daily, the total power input to each ESP.
  - (b) For the ESP controlled GR-3 calciners and C and D Boilers (units GR-3-D, GR-3-E, GR-2-L & GR-3-W) the permittee shall record, at minimum once every 15 minutes, the total power input to each ESP.
  - (c) For the venturi scrubber controlled sources (units GR-2-E(1), GR-2-E(2), GR-1-J(1), GR-1-J(2), GR-2-F, GR-2-G, GR-2-H, GR-2-J, GR-3-F, GR-3-G, GR-3-K, GR-3-L, GR-3-M, GR-3-N, GR-3-P, GR-3-Q & GR-3-R) the permittee shall record, at minimum once daily, pressure drop across the scrubber and scrubber re-circulation rates.
  - (d) For the oriclone controlled sources (units GR-1-F, GR-1-G & GR-1-H) the permittee shall record, at minimum once daily, the scrubber fan amps and re-circulation rates.
  - (e) For the baghouse controlled sources (units A-305, A-309, CH-1, CH-2, FD-120, FD-612, FD-613, FD-614, FD-615, FD-616, FD-617, GR-1-A, GR-1-B(1), GR-1-B(2), GR-2-A, GR-2-B, GR-3-A, GR-3-B, GR-3-C, GR-3-U, GR-3-V & RO-1) the permittee shall record, at minimum once daily, the pressure drop across the baghouse and baghouse fan amps.
  - (f) **In the event monitoring for any of the units described in sections (a) through (e) of this condition is not conducted, the permittee shall record the date, time, and duration of such events, as well as the reason for cessation of monitoring.**
  - (g) The permittee shall also maintain records of monitoring data, monitor performance data, corrective actions taken, any written Quality Improvement Plan (QIP) required pursuant to WAQSR Chapter 7, Section 3(h), any activities undertaken to implement a QIP, and other supporting information required to be maintained under WAQSR Chapter 7, Section 3.
  - (h) The permittee shall retain on-site at the facility, the records of each test, measurement, observation, and support information for a period of at least five years from the date of the test, measurement, or observation.
- (F23) SO<sub>2</sub>, NO<sub>x</sub> AND CO EMISSION RECORDS [WAQSR Ch 6, Sec 3(h)(i)(C)(II)] (modified February 22, 2013)
- (a) For the SO<sub>2</sub> and NO<sub>x</sub> emissions monitoring of the C & D boilers (units GR-2-L & GR-3-W), the permittee shall keep records in accordance with **40 CFR 60, Subparts A and D.**
  - (b) For the NO<sub>x</sub> emissions monitoring of the E boiler (unit GR-3-X), the permittee shall keep records in accordance with **in 40 CFR 60, Subparts A and Db.**
  - (c) The records shall include emissions determined in both lb/MMBtu and lb/hr, and any data and assumptions used to calculate emissions in lb/hr.
- (F24) TESTING RECORDS [WAQSR Ch 6, Sec 3(h)(i)(C)(II)] (Modified November 30, 2010)
- (a) For any testing required under conditions F9, F10 and F11 of this permit, other than Method 9 observations, the permittee shall record, as applicable, the following:
    - (i) The date, place, and time of sampling or measurements;
    - (ii) The date(s) the analyses were performed;
    - (iii) The company or entity that performed the analyses;

- (iv) The analytical techniques or methods used;
  - (v) The results of such analyses; and
  - (vi) The operating conditions as they existed at the time of sampling or measurement. For particulate testing of any of the boilers or calciners (units GR-2-L, GR-3-W, GR-1-C, GR-1-D, GR-1-E, GR-2-C, GR-2-D, GR-3-D, and GR-3-E), the permittee shall record the CAM parameters specified by condition F15(a)(i) and (ii).
- (b) For any Method 9 observations required by the Division under condition F11, the permittee shall keep field records in accordance with Section 2.2 of Method 9. Any corrective measures taken shall also be recorded.
  - (c) The permittee shall retain on-site at the facility the records of each test or observation and support information for a period of at least five years from the date of the test or observation.

Reporting Requirements

(F25) SODA ASH PRODUCTION, EQUIPMENT PROCESS RATE REPORTS

[WAQSR Ch 6, Sec 3 (h)(i)(C)(III)] (modified February 22, 2013)

The permittee shall submit the following to the Division with the annual emission inventory required under condition G9 of this permit for the previous calendar year:

- (a) The annual soda ash production rate such that compliance with condition F1 of this permit can be assessed;
- (b) Any exceedances of the trona ore calciner feed or soda ash dryer production rates under condition F8 of this permit; and
- (c) Reserved
- (d) The annual reports shall be submitted in accordance with condition G4 of this permit.

(F26) FUGITIVE EMISSION AND COAL STOCKPILE REPORTS [WAQSR Ch 6, Sec 3 (h)(i)(C)(III); and W.S. 35-11-110] (modified February 22, 2013)

- (a) The permittee shall submit to the Division by March 1 each year the following:
  - (i) An annual fugitive dust control report for the previous calendar year including the following:
    - (A) A map of all trafficked roads and/or unpaved areas associated with the plant indicating which areas received treatments, what type of treatments, including revegetation, paving, chemical dust suppressant and washing were applicable, to those areas;
    - (B) A quantification of how much dust suppressant, in gallons or tons, was applied to the roads and unpaved disturbed areas, when and where it was applied, including the dates and acreage treated.
    - (C) A quantification of how much paving or revegetation was accomplished, when and where it was completed;
    - (D) The total amount of water applied, in gallons and water truck operating hours;
    - (E) The operating hours of street sweepers, and/or vacuum trucks; and
    - (F) The quantity of dust surfactant applied by the coal stockpile (unit FA02) dust suppression system (in gallons or barrels) and the dust surfactant application rate during use of the coal stockpile dust suppression system.
  - (ii) An annual fugitive dust control plan for the current calendar year:
    - (A) A map of all trafficked roads and/or unpaved areas associated with the plant indicating which areas will receive treatments;
    - (B) For planned chemical dust suppressant activities, a description of what dust suppressants will be used, and how they will be applied, including application rate, application frequency, dilution rate and any special application procedures;
    - (C) A list of equipment that will be dedicated to either full time for part time fugitive dust control activities, including the number and capacity of water trucks, the number of street sweepers and the number of vacuum trucks;
    - (D) A watering plan, including a description of what watering techniques and frequencies will be used to control fugitive dust on all roads; and
    - (E) A plan for minimizing ore stockpile fugitive emissions using target inventories, minimized bulldozer use, and effective operation of the telescoping ore stacker.

- (b) The permittee shall submit the following to the Division by January 31 and July 31 each year:
    - (i) A summary of the quarterly Method 9 observations of the trona stockpile. If no visible emissions were observed, the stacking chute was correctly operated and no corrective actions were taken, this shall be stated in the report.
    - (ii) **The maximum size of the coal stockpile during the previous six month calendar half period.**
    - (iii) Certification indicating adherence or non-adherence to the bulk truck loadout requirements of condition F4(c).
  - (c) The reports shall be submitted in accordance with condition G4 of this permit.
- (F27) SULFUR DIOXIDE EMISSIONS INVENTORY REPORTS [WAQSR Ch 14, Sec 3(b) and (c)]
- (a) The permittee shall report calendar year SO<sub>2</sub> emissions by April 15<sup>th</sup> of the following year. The inventory shall be submitted in the format specified by the Division.
  - (b) Emissions from startup, shutdown, and upset conditions shall be included in the inventory.
  - (c) If the permittee uses a different emission monitoring or calculation method than was used to report SO<sub>2</sub> emissions in 1998, the permittee shall adjust reported SO<sub>2</sub> emissions to be comparable to the emission monitoring or calculation method that was used in 1998. The calculations that are used to make this adjustment shall be included with the annual emission report.
  - (d) The annual reports shall be submitted in accordance with condition G4 of this permit.
- (F28) VISIBLE EMISSION REPORTS [WAQSR Ch 6, Sec 3 (h)(i)(C)(III)] **(modified February 22, 2013)**
- (a) Excess emissions reporting for the COM systems on the GR-1, GR-2, and GR-3 calciners (units GR-1-C, GR-1-D, GR-1-E, GR-2-C, GR-2-D, GR-3-D, and GR-3-E), shall be in accordance with the requirements of WAQSR Chapter 5, Section 2 (g).
    - (i) The permittee shall submit an excess emissions and monitoring systems performance report (excess emissions are defined in paragraph (F) of this condition) and/or a summary report form (see paragraph (E)(I) of this condition) to the Administrator on a quarterly basis. All reports shall be postmarked by the 30<sup>th</sup> day following the end of each calendar quarter. Written reports of excess emissions shall include the following:
      - (A) The magnitude of the excess emission computed in accordance with WAQSR Chapter 5, Section 2 (j)(viii), any conversion factor(s) used, the date and time of commencement and completion of each time period of excess emissions, and the process operating time during the reporting period.
      - (B) Specific identification of each period of excess emissions that occur during start-ups, shutdowns, malfunctions of the GR-1, GR-2 and GR-3 calciners. The nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted.
      - (C) The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments.
      - (D) When no excess emissions have occurred or the continuous monitoring system(s) have not been inoperative, repaired, or adjusted, such information shall be stated in the report.
      - (E) One summary report form for each pollutant monitored at each affected facility in a format approved by the Division.
        - (I) If the total duration of excess emissions for the reporting period is less than one percent of the total operating time for the reporting period and continuous monitoring system downtime for the reporting period is less than five percent of the total operating time for the reporting period, only the summary report form shall be submitted and the excess emission report described in paragraph (i) of this condition need not be submitted unless requested by the Administrator.
        - (II) If the total duration of excess emissions for the reporting period is one percent or greater of the total operating time for the reporting period or the total continuous monitoring system downtime for the reporting period is five percent or greater of the total operating time for the reporting period, the summary report form and

the excess emission report described in paragraph (i) of this condition shall both be submitted.

- (F) For the purposes of reporting under this condition, excess emissions are defined as any six-minute period during which the average opacity from any of the units listed in paragraph (a) of this condition exceeds the applicable limit in Table I of this permit.
  - (G) Notwithstanding the frequency of the reporting requirements specified in paragraph (i) of this condition, a permittee who is required to submit excess emission and monitoring system performance reports (and summary reports) on a quarterly (or more frequent) basis may reduce the frequency of reporting for that standard to semiannual as described in WAQSR Chapter 5, Section 2(g)(iv). Any reduction in reporting frequency requires a significant modification to this operating permit pursuant to WAQSR Chapter 6, Section 3 (d)(vi)(C).
- (b) Reporting for the COM systems on the C and D boilers (units GR-2-L and GR-3-W) is specified under **under 40 CFR 60, Subparts A and D**.
  - (c) The permittee shall report to the Division by January 31 and July 31 each year, the results of the Method 9 observations of the oriclone scrubber controlled dryers (units GR-1-F, GR-1-G & GR-1-H). The permittee shall also report the concurrent scrubber fan amps of the individual scrubber and scrubber re-circulation rate.
  - (d) Documentation that the E boiler (unit GR-3-X) is firing natural gas as specified in condition F14(e) of this permit.
  - (e) The reports shall be submitted in accordance with condition G4 of this permit.
- (F29) PARTICULATE EMISSION AND COMPLIANCE ASSURANCE MONITORING REPORTS [WAQSR Ch 6, Sec 3 (h)(i)(C)(III) and Ch 7, Sec 3 (i)(ii)] (Modified November 30, 2010)
- (a) The permittee shall report to the Division by January 31 and July 31 each year, the summary results of CAM required under condition F15 of this permit for the particulate matter emission controlled units (units GR-1-C, GR-1-D, GR-1-E, GR-2-C, GR-2-D, GR-2-E(1), GR-2-E(2), GR-1-J(1), GR-1-J(2), GR-2-F, GR-2-G, GR-2-H, GR-2-J, GR-3-F, GR-3-G, GR-3-K, GR-3-L, GR-3-M, GR-3-N, GR-3-P, GR-3-Q, GR-3-R, GR-1-F, GR-1-G, GR-1-H, A-305, A-309, CH-1, CH-2, FD-120, FD-612, FD-613, FD-614, FD-615, FD-616, FD-617, GR-1-A, GR-1-B(1), GR-1-B(2), GR-2-A, GR-2-B, GR-3-A, GR-3-B, GR-3-C, GR-3-U, GR-3-V, RO-1, GR-3-D, GR-3-E, GR-2-L & GR-3-W) and shall include the following:
    - (i) Summary information on the number, duration, and cause of excursions, as applicable, and the corrective actions taken;
    - (ii) Summary information on the number, duration, and cause for monitor downtime incidents or periods when CAM monitoring was not conducted; and
    - (iii) A description of the action taken to implement a QIP (if required) during the reporting period as specified in Chapter 7, Section 3 (h). Upon completion of a QIP, the permittee shall include in the next summary report, documentation that the implementation of the QIP has reduced the likelihood of similar excursions.
    - (iv) If no exceedances or excursions occurred and if the monitors had no downtime during the reporting period, this shall be stated in the report.
  - (b) All instances of deviations from the conditions of this permit must be clearly identified in each report.
  - (c) The semiannual reports shall be submitted in accordance with condition G4 of this permit.
- (F30) EMISSION TESTING AND MONITORING REPORTS (PARTICULATE, SO<sub>2</sub>, AND NO<sub>x</sub>) [WAQSR Ch 5, Sec 2; Ch 6, Sec 3(h)(i)(C)(III); Ch 6, Sec 2 Permits CT-1199, MD-6046, MD-10837, and MD-567A] (modified February 22, 2013)
- (a) The permittee shall submit a test report for the testing required under conditions F9 and F10 and any additional testing required under condition F11 of this permit within 45 days of completing the testing.
  - (b) For SO<sub>2</sub> and NO<sub>x</sub> emissions from the C & D boilers (units GR-2-L & GR-3-W), and for NO<sub>x</sub> emissions from the E boiler (unit GR-3-X), the permittee shall submit an excess emissions and monitoring systems performance report (excess emissions are defined in paragraph (vi) of this condition) and/or a summary report form (see paragraph (v) of this condition) to the

Administrator quarterly. All reports shall be postmarked by the 30th day following the end of each calendar quarter, and shall include the following information:

- (i) The magnitude of excess emissions computed in accordance with WAQSR Ch 5, Sec 2(j)(viii), any conversion factor(s) used, and the date and time of commencement and completion, of each time period of excess emissions, and the process operating time during the reporting period.
- (ii) Specific identification of each period of excess emissions that occurs during startups, shutdowns, malfunctions of the boilers. The nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted.
- (iii) The date and time identifying each period during which the continuous monitoring system (CMS) was inoperative except for zero and span checks and the nature of the system repairs or adjustments.
- (iv) When no excess emissions have occurred or the CMS have not been inoperative, repaired, or adjusted, such information shall be stated in the report.
- (v) For the C & D boilers, any additional information required 40 CFR Part 60, Subpart D.
- (vi) For the E boiler, any additional information required 40 CFR Part 60, Subpart Db.
- (vii) One summary report form for each pollutant monitored at each boiler, in a format approved by the Division.
  - (A) If the total duration of excess emissions for the reporting period is less than one percent of the total operating time for the reporting period and CMS downtime for the reporting period is less than five percent of the total operating time for the reporting period, only the summary report form shall be submitted and the excess emission report described in paragraph (c) need not be submitted unless requested by the Administrator.
  - (B) If the total duration of excess emissions for the reporting period is one percent or greater of the total operating time for the reporting period or the total CMS downtime for the reporting period is five percent or greater of the total operating time for the reporting period, the summary report form and the excess emission report described in paragraph (c) shall both be submitted.
- (vi) For the purpose of reporting under this condition, excess emissions are defined as:
  - (A) For the C & D boilers:
    - (1) For SO<sub>2</sub>, excess emissions are defined under §60.45(g)(2).
    - (2) For NO<sub>x</sub>, excess emissions under 40 CFR Part 60 Subpart D are defined under §60.45(g)(3). Additionally, excess emissions of NO<sub>x</sub> are defined in (3) through (5) below.
    - (3) Any 30-day rolling average of NO<sub>x</sub> emissions which exceeds the lb/MMBtu limits in condition F6(b), calculated in accordance with 40 CFR Part 60, Subpart D, 60.45.
    - (4) Any 30-day rolling average of NO<sub>x</sub> emissions, calculated using valid data (output concentration and average hourly volumetric flowrate) from the CEM equipment, which exceeds the lb/hr NO<sub>x</sub> limits in condition F6(b). The 30-day average emission rate shall be calculated as the arithmetic average of hourly emissions with valid data during the previous 30-day period.
    - (5) Any annual ton per year NO<sub>x</sub> emissions, calculated using valid data (output concentration and average hourly volumetric flowrate) from the CEM equipment, which exceeds the tpy limits for NO<sub>x</sub> in condition F6(b). Tons per year of NO<sub>x</sub> shall be calculated as the average of all hourly data for the respective boiler meeting the requirements of WAQSR Ch 5, Sec 2(j) for the year, multiplied by the number of operating hours (with valid emissions data meeting the requirements of Ch 5, Sec 2(j)) for the year, divided by 2,000.
    - (6) For (3) through (5) above, valid data shall meet the requirements of Ch 5, Sec 2(i) and follow the compliance provisions and monitoring requirements of §60.48Da and §60.49Da.

- (7) Exclusion of startup, shutdown, and malfunction emissions applies to (1) and (2) above as authorized in Part 60 Subpart D.
- (B) For NO<sub>x</sub> emissions from the E boiler:
- (1) Any one-hour period when the average NO<sub>x</sub> emission exceeds 39.2 lb/hr.
- (2) Any calculated 30-day rolling average NO<sub>x</sub> emission rate, as determined under §60.46b(e), which exceeds 0.08 lb/MMBtu heat input.
- (3) Any calendar year NO<sub>x</sub> emission which exceeds 171.7 tpy.
- (4) Emissions in excess of the applicable standard in 40 CFR 60 Subpart D.
- (vii) Notwithstanding the frequency of reporting requirements specified in paragraph (b) of this condition, the permittee may reduce the frequency of reporting for that standard to semiannual as described in WAQSR Chapter 5, Section 2(g)(iv). Any reduction in reporting frequency requires a significant modification to this operating permit pursuant to WAQSR Chapter 6, Section 3(d)(vi)(C).
- (c) All instances of deviations from the conditions of this permit must be clearly identified in each report.
- (d) The reports shall reference this permit condition F(30) and be submitted in accordance with condition G4 of this permit.
- (F31) **REPORTING EXCESS EMISSIONS & DEVIATIONS FROM PERMIT REQUIREMENTS**  
 [WAQSR Ch 6, Sec 3(h)(i)(C)(II)] (Modified November 30, 2010)
- (a) General reporting requirements are described under the General Conditions of this permit. The Division reserves the right to require reports as provided under condition G1 of this permit.
- (b) Emissions which exceed the limits specified in this permit and that are not reported to the Division under a different condition of this permit, shall be reported annually with the emission inventory unless specifically superseded by condition G17, condition G19, or other condition(s) of this permit. The probable cause of such exceedance, the duration of the exceedance, the magnitude of the exceedance, and any corrective actions or preventative measures taken shall be included in this annual report. For sources and pollutants which are not continuously monitored, if at any time emissions exceed the limits specified in this permit by 100 percent, or if a single episode of emission limit exceedance spans a period of 24 hours or more, such exceedance shall be reported to the Division within one working day of the exceedance. (Excess emissions due to an emergency shall be reported as specified in condition G17. Excess emissions due to unavoidable equipment malfunction shall be reported as specified in condition G19.)
- (c) Any other deviation from the conditions of this permit shall be reported to the Division in writing within 30 days of the deviation or discovery of the deviation.
- (F32) **GREENHOUSE GAS REPORTS** [W.S. 35-11-110] (Modified November 30, 2010)  
 The permittee shall submit to the Division, a copy of any report(s) required to be submitted to the EPA under 40 CFR Part 98, including Subpart CC, "Soda Ash Manufacturing Greenhouse Gas Reporting".
- (a) The report(s) shall be submitted on or before the date due to EPA as indicated in 40 CFR Part 98, in an electronic format as specified by the Division.
- (b) The report(s) shall be submitted in accordance with condition G4(a)(i) of this permit, to the attention of the Division's Emission Inventory Program. A copy need not be sent to the DEQ Air Quality contact.

**PSD (Prevention of Significant Deterioration) Applicability Demonstration and Project Recordkeeping Requirements (modified February 22, 2013)**

- (F33) **PROJECT EMISSION LIMITS** [WAQSR Ch 6, Sec 2 Waivers AP-8737 and wy-11773]
- (a) The permittee shall track actual emissions from the D boiler (GR-3-W), to demonstrate that the steam tube replacement project described in wy-11773 does not result in a major modification under Ch 6, Sec 4 of the WAQSR.
- (b) The sum of the actual emissions, on a calendar year basis, from the D boiler shall not exceed the following emission levels shown below. The emission limits set forth for the D boiler elsewhere in this permit shall remain in effect.

<u>Emission Levels for the Tube Project</u>	
<u>Pollutant</u>	<u>TPY</u>
<u>NO<sub>x</sub></u>	<u>1748</u>
<u>SO<sub>2</sub></u>	<u>3388</u>
<u>PM (filterable + condensable)</u>	<u>243.1</u>
<u>Fluorides</u>	<u>34.5</u>

**(F34) PROJECT EMISSIONS MONITORING [WAQSR Ch 6, Sec 2 Waiver wv-11773]**

Actual emissions from the D boiler (GR-3-W) shall be determined using the following methodologies, unless an alternate method is approved by the Division:

- (a) For NO<sub>x</sub> actual emissions shall be determined using the daily average pound per hour emission rate determined using the monitor required by condition F16, which shall meet the requirements of Ch 5, Sec 2(j). Calendar year NO<sub>x</sub> emissions shall be determined by multiplying the daily average NO<sub>x</sub> pound per hour emission rate by 24, and summing the daily NO<sub>x</sub> emissions for the calendar year.
- (b) For SO<sub>2</sub> actual emissions shall be determined using the daily average pound per hour emission rate determined using the monitor required by condition F16, which shall meet the requirements of Ch 5, Sec 2(j). Calendar year SO<sub>2</sub> emissions shall be determined by multiplying the daily average SO<sub>2</sub> pound per hour emission rate by 24, and summing the daily SO<sub>2</sub> emissions for the calendar year.
- (c) For PM (filterable + condensable), actual emissions shall be determined by using the tested emission rate (lb/hr) and operating hours for the D boiler. The D boiler shall be tested within 90 days of startup after replacement of the steam tubes. Testing for particulate emissions shall consist of three 1-hour tests following EPA Reference Methods 1-5 and 202 or other Division approved methods. A test protocol shall be submitted for review and approval prior to testing. The operator shall provide 15 days prior notice of the test date. Results shall be submitted to the Division within forty-five (45) days of completion.
  - (i) Annually, the D boiler shall be tested for particulate emissions (filterable + condensable). The first annual test is required the calendar year following the performance testing required after replacement of the steam tubes.
- (d) For fluoride actual emissions shall be determined by the fluoride (F) content of the coal and amount of coal combusted.

**(F35) PROJECT RECORDKEEPING REQUIREMENTS**

[WAQSR Ch 6, Sec 2 Waivers AP-8737 and wv-11773]

- (a) The permittee shall maintain records of the amount of trona ore loaded into rail cars under Waiver AP-8737 for a period of at least 5 years.
- (b) For the D boiler (unit GR-3-W), the permittee shall calculate and maintain a record of the annual emissions in tons per year on a calendar year basis, for a period of 5 years starting in calendar year 2012.
- (c) The permittee shall retain on-site at the facility the records generated by this condition for a period of at least five years from the date of such records, and make them available to the Division upon request.

**(F36) REPORTING REQUIREMENTS [WAQSR Ch 6, Sec 2 Waiver wv-11773]**

The permittee shall submit a report to the Division, within 60 days after the end of each calendar year, showing the calendar year total actual emissions for each pollutant listed in condition F33(b) for the D boiler. The annual reports shall reference this permit condition (F36) and be submitted to the Division in accordance with condition G4.

**(F37) PROJECT COMPLETION CONDITIONS [WAQSR Ch 6, Sec 2 Waiver wv-11773]**

Upon submission of the reports required by condition F36 for calendar year 2016, the requirements of conditions F33, F34, and F36 shall expire. The records required by condition F35 shall be maintained for a period of at least five years from the date such records are generated and the records shall be made available to the Division upon request.

**WAQSR CHAPTER 5, SECTION 2 NEW SOURCE PERFORMANCE STANDARDS (NSPS) & 40 CFR 60  
(modified February 22, 2013)**

**SUBPART D REQUIREMENTS FOR FOSSIL-FUEL-FIRED STEAM GENERATORS FOR WHICH  
CONSTRUCTION IS COMMENCED AFTER AUGUST 17, 1971**

**SUBPART D REQUIREMENTS [40 CFR 60 - Subparts A and D; and WAQSR Ch 5, Sec 2]**

The permittee shall meet all applicable requirements of 40 CFR 60 - Subparts A and D; and WAQSR Chapter 5 Section 2 as they apply to each fossil-fuel and wood-residue-fired steam generating unit defined under §60.40, including the C and D boilers (units GR-2-L and GR-3-W).

**SUBPART Db REQUIREMENTS FOR INDUSTRIAL-COMMERCIAL-INSTITUTIONAL  
STEAM GENERATING UNITS**

**SUBPART Db REQUIREMENTS [40 CFR 60 - Subparts A and Db; and WAQSR Ch 5, Sec 2]**

The permittee shall meet all applicable requirements of 40 CFR 60 - Subparts A and Db; and WAQSR Ch 5, Sec 2 as they apply to each steam generating unit as defined under §60.40b, including the E boiler (unit GR-3-X).

**SUBPART Y REQUIREMENTS FOR COAL PREPARATION & PROCESSING PLANTS**

**SUBPART Y REQUIREMENTS [40 CFR Part 60 - Subparts A and Y; and WAQSR Ch 5, Sec 2]**

The permittee shall meet all applicable requirements of 40 CFR Part 60 - Subparts A and Y; and WAQSR Ch 5, Sec 2 as they apply to the affected facilities as defined under §60.250 in coal preparation plants which process more than 181 Mg (200 tons) of coal per day, including: Thermal dryers, pneumatic coal-cleaning equipment (air tables), coal processing and conveying equipment (including breakers and crushers), coal storage systems, coal transfer and loading systems, and open storage piles, including the coal truck/railcar unloading and the tripper deck/coal bunkers (unit CH-1 and CH-2).

**SUBPART OOO REQUIREMENTS FOR NONMETALLIC MINERAL PROCESSING PLANTS**

**SUBPART OOO REQUIREMENTS [40 CFR 60 Subparts A and OOO; and WAQSR Ch 5, Sec 2; WAQSR Ch 6, Sec 2 Permits MD-129 and MD-567A]**

The permittee shall meet all applicable requirements of 40 CFR 60 Subparts A and OOO and WAQSR Ch 5, Sec 2 as they apply to affected facilities in fixed or portable nonmetallic mineral processing plants (each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, and enclosed truck or railcar loading station that commenced construction, modification, or reconstruction after August 31, 1983), as defined under §60.670, including the sources listed in Table III of this permit.

<b>Table III: 40 CFR Part 60, Subpart OOO Sources</b>			
A-305	GR-2 Screen/Elevator/305 Belt	GR-1-B(1)	Railcar Loading
A-309	309 Reclaim Tunnel	GR-1-B(2)	Product Loading (Screen/Transfer Point)
FD-120	Crusher	GR-1-J(1)	GR-2 North Housekeeping
FD-612	#5 Product Storage Silo	GR-1-J(2)	GR-2 South Housekeeping
FD-613	Top of #4 Product Storage Silo	GR-2-A	GR-I/II
FD-614	Bottom of #4 Product Storage Silo	GR-2-B	Product Storage
FD-615	Bottom of #5 Product Storage Silo	GR-2-J	GR-2 West Housekeeping
FD-616	Product Storage (Transfer Tower)	GR-3-A	GR-3 Impactor (Crusher)
FD-617	Truck Loading	RO-1	Reclaim System
GR-1-A	GR-2 Impactor (Crusher)		

WAQSR CHAPTER 5, SECTION 2 NEW SOURCE PERFORMANCE STANDARDS (NSPS) & 40 CFR 60

SUBPART III REQUIREMENTS FOR STATIONARY  
COMPRESSION IGNITION INTERNAL COMBUSTION ENGINES

SUBPART III REQUIREMENTS

[40 CFR 60 Subparts A and III; WAQSR Ch 5, Sec 2 and Ch 6, Sec 2 Waiver wv-13859]

As applicable, the permittee shall meet the requirements of 40 CFR 60 Subparts A and III and WAQSR Ch 5, Sec 2, as they apply to stationary compression ignition (CI) internal combustion engines. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator. An affected source is defined at §60.4200. On October 14, 2012, engine EM-3 was the only engine subject to the requirements of this subpart. (If an engine is replaced or reconstructed, subpart applicability will need to be re-evaluated and a statement regarding applicability submitted to the Division.)

Subparts are available at <http://www.gpoaccess.gov/cfr/retrieve.html>, or from the Division upon request.

WAQSR CHAPTER 5, SECTION 3 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR  
POLLUTANTS (NESHAPS) AND 40 CFR PART 63  
(modified February 22, 2013)

SUBPART ZZZZ REQUIREMENTS FOR STATIONARY  
RECIPROCATING INTERNAL COMBUSTION ENGINES

SUBPART ZZZZ REQUIREMENTS

[40 CFR 63 Subparts A and ZZZZ; WAQSR Ch 5, Sec 3 and Ch 6, Sec 2 Waiver wy-13859]

The permittee shall meet all requirements of 40 CFR 63 Subparts A and ZZZZ and WAQSR Ch 5, Sec 3 as they apply to each affected source as indicated in §63.6590(a). An affected source is any existing, new, or reconstructed stationary RICE located at a major or area source of HAP emissions, excluding stationary RICE being tested at a stationary RICE test cell/stand. (If an engine is replaced or reconstructed, subpart applicability will need to be re-evaluated and a statement regarding applicability submitted to the Division.) This facility is currently identified as an area/major source of HAP emissions. Affected sources at this facility include the five emergency diesel generators engines (EM-1 through EM- 5).

SUBPART DDDDD REQUIREMENTS FOR  
INDUSTRIAL, COMMERCIAL, AND INSTITUTIONAL BOILERS AND PROCESS HEATERS

SUBPART DDDDD REQUIREMENTS [40 CFR 63 Subparts A and DDDDD; and WAQSR Ch 5, Sec 3]

The permittee shall meet all requirements of 40 CFR 63 Subparts A and DDDDD and WAQSR Ch 5, Sec 3, as they apply to owners or operators of industrial, commercial, or institutional boilers or process heaters as defined in §63.7575 that are located at, or are part of, a major source of HAPs as defined in §63.2, except that for oil and natural gas production facilities, a major source of HAPS is as defined in §63.761 (40 CFR Part 63 Subpart HH). The types of boilers and process heaters listed in §63.7491 are not subject to Subpart DDDDD.

This subpart applies to:

- (a) The collection of existing industrial, commercial, and institutional boilers and process heaters within a subcategory.
- (b) New or reconstructed industrial, commercial, or institutional boilers or process heaters, including the C, D and E boilers (units GR-2-L, GR-2-W and GR-3-X).

The subparts are available at <http://www.gpoaccess.gov/cfr/retrieve.html>, or from the Division upon request.

**WAQSR CHAPTER 7, SECTION 3**  
**COMPLIANCE ASSURANCE MONITORING (CAM) REQUIREMENTS**

WAQSR Ch 7, Sec 3 is available at <http://deq.state.wy.us/aqd/standards.asp>, or from the Division upon request.  
(modified February 22, 2013)

- (CAM-1) COMPLIANCE ASSURANCE MONITORING REQUIREMENTS [WAQSR Ch 7, Sec 3(b) and (c)]  
The permittee shall follow the CAM plans attached as Appendix A of this permit and meet all CAM requirements of WAQSR Chapter 7, Section 3 as they apply to the baghouse, scrubber and ESP controlled sources (units A-305, A-309, CH-1, CH-2, FD-120, FD-612, FD-613, FD-614, FD-615, FD-616, FD-617, GR-1-A, GR-1-B(1), GR-1-B(2), GR-2-A, GR-2-B, GR-3-A, GR-3-B, GR-3-C, GR-3-U, GR-3-V, RO-1, GR-1-F, GR-1-G, GR-1-H, GR-2-E(1), GR-2-E(2), GR-1-J(1), GR-1-J(2), GR-2-F, GR-2-G, GR-2-H, GR-2-J, GR-3-F, GR-3-G, GR-3-K, GR-3-L, GR-3-M, GR-3-N, GR-3-P, GR-3-Q, GR-3-R, GR-3-W, GR-2-L, GR-3-D, GR-3-E, GR-1-C, GR-1-D, GR-1-E, GR-2-C and GR-2-D). Compliance with the source specific monitoring, recordkeeping, and reporting requirements of this permit meets the monitoring, recordkeeping, and reporting requirements of WAQSR Ch 7, Sec 3, except for additional requirements specified under conditions CAM-2 through CAM-4.
- (CAM-2) OPERATION OF APPROVED MONITORING [WAQSR Ch 7, Sec 3 (g)]
- (a) At all times, the permittee shall maintain the monitoring under this section, including but not limited to, maintaining necessary parts for routine repairs of the monitoring equipment.
  - (b) Except for monitoring malfunctions, associated repairs, and required quality assurance or control activities, the permittee shall conduct all monitoring in continuous operation (or at all required intervals) at all times that the pollutant specific emissions unit is operating.
  - (c) Upon detecting an excursion, the permittee shall restore operation of the pollutant-specific emission unit to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices. The response shall include minimizing the period of any start-up, shutdown or malfunction and taking any corrective actions to restore normal operation and prevent the likely recurrence of the cause of an excursion.
  - (d) If the permittee identifies a failure to achieve compliance with an emission limit for which the monitoring did not provide an indication of an excursion while providing valid data, or the results of compliance or performance testing documents a need to modify the existing indicator ranges, the permittee shall promptly notify the Division and, if necessary, submit a proposed modification to this permit to address the necessary monitoring changes.
- (CAM-3) QUALITY IMPROVEMENT PLAN (QIP) REQUIREMENTS [WAQSR Ch 7, Sec 3 (h)]
- (a) If the Division or the EPA Administrator determines, based on available information, that the permittee has used unacceptable procedures in response to an excursion or exceedance, the permittee may be required to develop and implement a Quality Improvement Plan (QIP).
  - (b) If required, the permittee shall maintain a written QIP and have it available for inspection.
  - (c) The plan shall include procedures for conducting one or more of the following:
    - (i) Improved preventative maintenance practices.
    - (ii) Process operation changes.
    - (iii) Appropriate improvements to control methods.
    - (iv) Other steps appropriate to correct control.
    - (v) More frequent or improved monitoring (in conjunction with (i) - (iv) above).
  - (d) If a QIP is required, the permittee shall develop and implement a QIP as expeditiously as practicable and shall notify the Division if the period for completing the QIP exceeds 180 days from the date on which the need to implement the QIP was determined.
  - (e) Following implementation of a QIP, upon any subsequent determination under paragraph (a) above, the Division may require the permittee to make reasonable changes to the QIP if the QIP failed to address the cause of control device problems, or failed to provide adequate procedures for correcting control device problems as expeditiously as practicable.
  - (f) Implementation of a QIP shall not excuse the permittee from compliance with any existing emission limit(s) or any existing monitoring, testing, reporting, or recordkeeping requirements that may be applicable to the facility.

(CAM-4) SAVINGS PROVISIONS [WAQSR Ch 7, Sec 3 (j)]

Nothing in the CAM regulations shall excuse the permittee from compliance with any existing emission limit or standard, or any existing monitoring, testing, reporting, or recordkeeping requirement that may be applicable to the facility.

## COMPLIANCE CERTIFICATION AND SCHEDULE

### Compliance Certification [WAQSR Ch 6, Sec 3 (h)(iii)(E)] (modified February 22, 2013)

- (C1) (a) The permittee shall submit by January 31 each year a certification addressing compliance with the requirements of this permit. The certification shall be submitted as a stand-alone document separate from any monitoring reports required under this permit.
- (b) (i) For the annual production limitation, the permittee shall assess compliance with condition F1 of this permit by conducting the monitoring required by condition F12 of this permit.
- (ii) For the paved roads requirement, the permittee shall assess compliance with condition F2 by reviewing the records kept in accordance with condition F19.
- (iii) For the annual sulfur dioxide emission inventory, the permittee shall assess compliance with condition F3 by reviewing records kept in accordance with condition F2, and verifying the report required by F27 was submitted on time.
- (iv) The permittee shall assess compliance with condition F4 by conducting the monitoring required by condition F13, reviewing the records maintained in accordance with condition F19, and reviewing the reports from condition F26.
- (v) For visible emissions, the permittee shall assess compliance with condition F5 by conducting the monitoring required by condition F14.
- (vi) For particulate emissions, the permittee shall assess compliance with condition F5 by conducting the compliance assurance monitoring required by condition F15.
- (vii) For the maintenance requirements and operating hours limitations on the emergency engines, the permittee shall assess compliance with condition F5(d) by conducting the monitoring required by condition F14 and reviewing records required by condition F21.
- (viii) For NO<sub>x</sub> and SO<sub>2</sub> emissions from the C & D boilers, the permittee shall assess compliance with condition F6 of this permit by conducting the testing required by condition F10 and the monitoring required by condition F16.
- (ix) For NO<sub>x</sub> emissions from the GR-1 & GR-2 calciners, the permittee shall assess compliance with condition F6 by conducting the monitoring required by condition F16.
- (x) For NO<sub>x</sub> emissions from the E boiler, the permittee shall assess compliance with condition F6 of this permit by conducting the monitoring required by condition F16.
- (xi) For coal stockpile size limitation, the permittee shall assess compliance with condition F7 by conducting the monitoring required by condition F13 and reviewing the records maintained in accordance with condition F19.
- (xii) For process rate, the permittee shall assess compliance with condition F8 by conducting the monitoring required by condition F12 and reviewing the records maintained in accordance with condition F180.
- (xiii) For trona ore railcar loading, the permittee shall verify that records are maintained in accordance with condition F35(a).
- (xiv) For the steam tube replacement project, the permittee shall assess compliance with the project emissions limits in condition F33 by conducting the monitoring required by condition F34 and reviewing records required by condition F35.
- (xv) For any units subject to 40 CFR 60, Subpart D, the permittee shall assess compliance with Subpart D by conducting any applicable testing/monitoring and reviewing records required by §60.45.
- (xvi) For any units subject to 40 CFR 60, Subpart Db, the permittee shall assess compliance with Subpart Db by conducting any applicable testing/monitoring required by §§60.45b through 60.48b and reviewing records required by §60.49b.
- (xvii) For any unit subject to 40 CFR 60 Subpart Y, the permittee shall assess compliance with Subpart Y by conducting any applicable testing and monitoring required by §§60.255, 60.256, and 60.257, and by reviewing the records required by §60.258.
- (xviii) For any unit subject to 40 CFR 60 Subpart OOO, the permittee shall assess compliance with Subpart OOO by conducting any applicable testing and monitoring required by §§60.674 and 60.675, and by reviewing the records required by §60.676.
- (xix) For any engine subject to 40 CFR 60 Subpart IIII, the permittee shall assess compliance with Subpart IIII by conducting any applicable testing and monitoring required by

§§60.4209, 60.4211, 60.4212, and 60.4213, and by reviewing the records required by §§60.4211 and 60.4214.

- (xx) The permittee shall assess compliance with Part 63 Subpart ZZZZ by conducting any applicable testing and monitoring required by §§63.6610 through 63.6640 and by reviewing the records required by §§63.6655 and 63.6665.
- (xxi) For the boilers and process heaters, the permittee shall assess compliance with Subpart DDDDD by conducting any applicable testing and monitoring required by the subpart, and by reviewing the records required by subpart.
- (c) The compliance certification shall include:
  - (i) The permit condition or applicable requirement that is the basis of the certification;
  - (ii) The current compliance status;
  - (iii) Whether compliance was continuous or intermittent; and
  - (iv) The methods used for determining compliance.
- (d) For any permit conditions or applicable requirements for which the source is not in compliance, the permittee shall submit with the compliance certification a proposed compliance plan and schedule for Division approval.
- (e) The compliance certification shall be submitted to the Division in accordance with condition G4 of this permit and to the Assistant Regional Administrator, Office of Enforcement, Compliance, and Environmental Justice (8ENF-T), U.S. EPA - Region VIII, 1595 Wynkoop Street, Denver, CO 80202-1129.
- (f) Determinations of compliance or violations of this permit are not restricted to the monitoring requirements listed in paragraph (b) of this condition; other credible evidence may be used.

Compliance Schedule [WAQSR Ch 6, Sec 3 (h)(iii)(C) and (D)]

- (C2) The permittee shall continue to comply with the applicable requirements with which the permittee has certified that it is already in compliance.
- (C3) The permittee shall comply in a timely manner with applicable requirements that become effective during the term of this permit.

## GENERAL PERMIT CONDITIONS

### Powers of the Administrator: [W.S. 35-11-110]

- (G1) (a) The Administrator may require the owner or operator of any point source to complete plans and specifications for any application for a permit required by the Wyoming Environmental Quality Act or regulations made pursuant thereto and require the submission of such reports regarding actual or potential violations of the Wyoming Environmental Quality Act or regulations thereunder.
- (b) The Administrator may require the owner or operator of any point source to establish and maintain records; make reports; install, use and maintain monitoring equipment or methods; sample emissions, or provide such other information as may be reasonably required and specified.

### Permit Renewal and Expiration: [WAQSR Ch 6, Sec 3(c)(i)(C), (d)(ii), (d)(iv)(B), and (h)(i)(B)] [W.S. 35-11-206(f)]

- (G2) This permit is issued for a fixed term of five years. Permit expiration terminates the permittee's right to operate unless a timely and complete renewal application is submitted at least six months prior to the date of permit expiration. If the permittee submits a timely and complete application for renewal, the permittee's failure to have an operating permit is not a violation of WAQSR Chapter 6, Section 3 until the Division takes final action on the renewal application. This protection shall cease to apply after a completeness determination if the applicant fails to submit by the deadline specified in writing by the Division any additional information identified as being needed to process the application.

### Duty to Supplement: [WAQSR Ch 6, Sec 3(c)(iii)]

- (G3) The permittee, upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the permit application, shall promptly submit such supplementary facts or corrected information. The permittee shall also provide additional information as necessary to address any requirements that become applicable to the facility after this permit is issued.

### Submissions: [WAQSR Ch 6, Sec 3(c)(iv)] [W.S. 35-11-206(c)] **(Modified November 30, 2010)**

- (G4) Any document submitted shall be certified as being true, accurate, and complete by a responsible official.
- (a) Submissions to the Division.
- (i) Any submissions to the Division including reports, certifications, and emission inventories required under this permit shall be submitted as separate, stand-alone documents and shall be sent to:
- Administrator, Air Quality Division  
122 West 25th Street  
Cheyenne, Wyoming 82002
- (ii) **Unless otherwise noted elsewhere in this permit, a copy of each submission to the Administrator under paragraph (a)(i) of this condition shall be sent to the DEQ Air Quality Contact listed on page 3 of this permit.**
- (b) Submissions to EPA.
- (i) Each certification required under condition C1 of this permit shall also be sent to:
- Assistant Regional Administrator  
Office of Enforcement, Compliance, and Environmental Justice (8ENF-T)  
U.S. EPA - Region VIII  
1595 Wynkoop Street  
Denver, CO 80202-1129
- (ii) All other required submissions to EPA shall be sent to:
- Office of Partnerships and Regulatory Assistance  
Air and Radiation Program (8P-AR)  
U.S. EPA - Region VIII  
1595 Wynkoop Street  
Denver, CO 80202-1129

Changes for Which No Permit Revision Is Required: [WAQSR Ch 6, Sec 3(d)(iii)]

- (G5) The permittee may change operations without a permit revision provided that:
- (a) The change is not a modification under any provision of title I of the Clean Air Act;
  - (b) The change has met the requirements of Chapter 6, Section 2 of the WAQSR and is not a modification under Chapter 5, Section 2 or Chapter 6, Section 4 of the WAQSR and the changes do not exceed the emissions allowed under the permit (whether expressed therein as a rate of emissions or in terms of total emissions); and
  - (c) The permittee provides EPA and the Division with written notification at least 14 days in advance of the proposed change. The permittee, EPA, and the Division shall attach such notice to their copy of the relevant permit. For each such change, the written notification required shall include a brief description of the change within the permitted facility, the date on which the change will occur, any change in emissions, and any permit term or condition that is no longer applicable as a result of the change. The permit shield, if one exists for this permit, shall not apply to any such change made.

Transfer of Ownership or Operation: [WAQSR Ch 6, Sec 3(d)(v)(A)(IV)]

- (G6) A change in ownership or operational control of this facility is treated as an administrative permit amendment if no other change in this permit is necessary and provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittee has been submitted to the Division.

Reopening for Cause: [WAQSR Ch 6, Sec 3(d)(vii)] [W.S. 35-11-206(f)(ii) and (iv)]

- (G7) The Division will reopen and revise this permit as necessary to remedy deficiencies in the following circumstances:
- (a) Additional applicable requirements under the Clean Air Act or the WAQSR that become applicable to this source if the remaining permit term is three or more years. Such reopening shall be completed not later than 18 months after promulgation of the applicable requirement. No reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions have been extended.
  - (b) Additional requirements (including excess emissions requirements) become applicable to an affected source under the acid rain program. Upon approval by EPA, excess emissions offset plans shall be deemed to be incorporated into the permit.
  - (c) The Division or EPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.
  - (d) The Division or EPA determines that the permit must be revised or revoked to assure compliance with applicable requirements.

Annual Fee Payment: [WAQSR Ch 6, Sec 3(f)(i), (ii), and (vi)] [W.S. 35-11-211]

- (G8) The permittee shall, as a condition of continued operations, submit an annual fee to the Division as established in Chapter 6, Section 3 (f) of the WAQSR. The Division shall give written notice of the amount of fee to be assessed and the basis for such fee assessment annually. The assessed fee is due on receipt of the notice unless the fee assessment is appealed pursuant to W.S. 35-11-211(d). If any part of the fee assessment is not appealed it shall be paid to the Division on receipt of the written notice. Any remaining fee which may be due after completion of the appeal is immediately due and payable upon issuance of the Council's decision. Failure to pay fees owed the Division is a violation of Chapter 6, Section 3 (f) and W.S. 35-11-203 and may be cause for the revocation of this permit.

Annual Emissions Inventories: [WAQSR Ch 6, Sec 3(f)(v)(G)]

- (G9) The permittee shall submit an annual emission inventory for this facility to the Division for fee assessment and compliance determinations within 60 days following the end of the calendar year. The emissions inventory shall be in a format specified by the Division.

Severability Clause: [WAQSR Ch 6, Sec 3(h)(i)(E)]

- (G10) The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

Compliance: [WAQSR Ch 6, Sec 3(h)(i)(F)(I) and (II)] [W.S. 35-11-203(b)]

- (G11) The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Air Act, Article 2 of the Wyoming Environmental Quality Act, and the WAQSR and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

Permit Actions: [WAQSR Ch 6, Sec 3(h)(i)(F)(III)] [W.S. 35-11-206(f)]

- (G12) This permit may be modified, revoked, reopened, and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.

Property Rights: [WAQSR Ch 6, Sec 3(h)(i)(F)(IV)]

- (G13) This permit does not convey any property rights of any sort, or any exclusive privilege.

Duty to Provide Information: [WAQSR Ch 6, Sec 3(h)(i)(F)(V)]

- (G14) The permittee shall furnish to the Division, within a reasonable time, any information that the Division may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Division copies of records required to be kept by the permit, including information claimed and shown to be confidential under W.S. 35-11-1101 (a) of the Wyoming Environmental Quality Act. Upon request by the Division, the permittee shall also furnish confidential information directly to EPA along with a claim of confidentiality.

Emissions Trading: [WAQSR Ch 6, Sec 3(h)(i)(H)]

- (G15) No permit revision is required, under any approved economic incentives, marketable permits, emissions trading and other similar programs or processes for changes that are provided for in this permit.

Inspection and Entry: [WAQSR Ch 6, Sec 3(h)(iii)(B)] [W.S. 35-11-206(c)]

- (G16) Authorized representatives of the Division, upon presentation of credentials and other documents as may be required by law, shall be given permission to:
- (a) enter upon the permittee's premises where a source is located or emissions related activity is conducted, or where records must be kept under the conditions of this permit;
  - (b) have access to and copy at reasonable times any records that must be kept under the conditions of this permit;
  - (c) inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit;
  - (d) sample or monitor any substances or parameters at any location, during operating hours, for the purpose of assuring compliance with this permit or applicable requirements.

Excess Emissions Due to an Emergency: [WAQSR Ch 6, Sec 3(l)]

- (G17) The permittee may seek to establish that noncompliance with a technology-based emission limitation under this permit was due to an emergency, as defined in Ch 6, Sec 3(l)(i) of the WAQSR. To do so, the permittee shall demonstrate the affirmative defense of emergency through properly signed, contemporaneous operating logs, or other relevant evidence that:
- (a) an emergency occurred and that the permittee can identify the cause(s) of the emergency;
  - (b) the permitted facility was, at the time, being properly operated;
  - (c) during the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards, or other requirements in this permit;

- (d) The permittee submitted notice of the emergency to the Division within one working day of the time when emission limitations were exceeded due to the emergency. This notice must contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken.

Diluting and Concealing Emissions: [WAQSR Ch 1, Sec 4]

- (G18) No person shall cause or permit the installation or use of any device, contrivance, or operational schedule which, without resulting in reduction of the total amount of air contaminant released to the atmosphere, shall dilute or conceal an emission from a source. This condition shall not apply to the control of odors.

Unavoidable Equipment Malfunction: [WAQSR Ch 1, Sec 5]

- (G19) (a) Any source believing that any emissions in excess of established regulation limits or standards resulted from an unavoidable equipment malfunction, shall notify the Division within 24 hours of the incident via telephone, electronic mail, fax, or other similar method. A detailed description of the circumstances of the incident as described in paragraph 5(a)(i)(A) Chapter 1, including a corrective program directed at preventing future such incidents, must be submitted within 14 days of the onset of the incident. The Administrator may extend this 14-day time period for cause.
- (b) The burden of proof is on the owner or operator of the source to provide sufficient information to demonstrate that an unavoidable equipment malfunction occurred.

Fugitive Dust: [WAQSR Ch 3, Sec 2(f)]

- (G20) The permittee shall minimize fugitive dust in compliance with standards in Ch 3, Sec 2(f) of WAQSR for construction/demolition activities, handling and transportation of materials, and agricultural practices.

Carbon Monoxide: [WAQSR Ch 3, Sec 5]

- (G21) The emission of carbon monoxide in stack gases from any stationary source shall be limited as may be necessary to prevent ambient standards from being exceeded.

Asbestos: [WAQSR Ch 3, Sec 8]

- (G22) The permittee shall comply with emission standards for asbestos during abatement, demolition, renovation, manufacturing, spraying and fabricating activities.
- (a) No owner or operator shall build, erect, install, or use any article, machine, equipment, process, or method, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous dilutants to achieve compliance with a visible emissions standard, and the piecemeal carrying out of an operation to avoid coverage by a standard that applies only to operations larger than a specified size.
- (b) All owners and operators conducting an asbestos abatement project, including an abatement project on a residential building, shall be responsible for complying with Federal requirements and State standards for packaging, transportation, and delivery to an approved waste disposal facility as provided in paragraph (m) of Ch 3, Sec 8.
- (c) The permittee shall follow State and Federal standards for any demolition and renovation activities conducted at this facility, including:
- (i) A thorough inspection of the affected facility or part of the facility where the demolition or renovation activity will occur shall be conducted to determine the presence of asbestos, including Category I and Category II non-friable asbestos containing material. The results of the inspection will determine which notification and asbestos abatement procedures are applicable to the activity.
- (ii) The owner or operator shall follow the appropriate notification requirements of Ch 3, Sec 8(i)(ii).
- (iii) The owner or operator shall follow the appropriate procedures for asbestos emissions control, as specified in Chapter 3, Section 8(i)(iii).
- (d) No owner or operator of a facility may install or reinstall on a facility component any insulating materials that contain commercial asbestos if the materials are either molded and friable or wet-applied and friable after drying. The provisions of this paragraph do not apply to spray-applied insulating materials regulated under paragraph (j) of Ch 3, Sec 8.
- (e) The permittee shall comply with all other requirements of WAQSR Ch 3, Sec 8.

Open Burning Restrictions: [WAQSR Ch 10, Sec 2]

- (G23) The permittee conducting an open burn shall comply with all rules and regulations of the Wyoming Department of Environmental Quality, Division of Air Quality, and with the Wyoming Environmental Quality Act.
- (a) No person shall burn prohibited materials using an open burning method, except as may be authorized by permit. *"Prohibited materials"* means substances including, but not limited to; natural or synthetic rubber products, including tires; waste petroleum products, such as oil or used oil filters; insulated wire; plastic products, including polyvinyl chloride ("PVC") pipe, tubing and connectors; tar, asphalt, asphalt shingles, or tar paper; railroad ties; wood, wood waste, or lumber that is painted or chemically treated; explosives or ammunition; batteries; hazardous waste products; asbestos or asbestos containing materials; or materials which cause dense smoke discharges, excluding refuse and flaring associated with oil and gas well testing, completions and well workovers.
  - (b) No person or organization shall conduct or cause or permit open burning for the disposal of trade wastes, for a salvage operation, for the destruction of fire hazards if so designated by a jurisdictional fire authority, or for firefighting training, except when it can be shown by a person or organization that such open burning is absolutely necessary and in the public interest. Any person or organization intending to engage in such open burning shall file a request to do so with the Division.

Sulfur Dioxide Emission Trading and Inventory Program [WAQSR Ch 14]

- (G24) Any BART (Best Available Retrofit Technology) eligible facility, or facility which has actual emissions of SO<sub>2</sub> greater than 100 tpy in calendar year 2000 or any subsequent year, shall comply with the applicable requirements of WAQSR Ch 14, Sections 1 through 3, with the exceptions described in sections 2(c) and 3(a).

Stratospheric Ozone Protection Requirements: [40 CFR Part 82]

- (G25) The permittee shall comply with all applicable Stratospheric Ozone Protection Requirements, including but not limited to:
- (a) *Standards for Appliances* [40 CFR Part 82, Subpart F]  
The permittee shall comply with the standards for recycling and emission reduction pursuant to 40 CFR Part 82, Subpart F - Recycling and Emissions Reduction, except as provided for motor vehicle air conditioners (MVACs) in Subpart B:
    - (i) Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to §82.156.
    - (ii) Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to §82.158.
    - (iii) Persons performing maintenance, service, repair, or disposal of appliances must be certified by an approved technician certification program pursuant to §82.161.
    - (iv) Persons disposing of small appliances, MVACs, and MVAC-like appliances must comply with record keeping requirements pursuant to §82.166. ("MVAC-like appliance" is defined at §82.152).
    - (v) Persons owning commercial or industrial process refrigeration equipment must comply with the leak repair requirements pursuant to §82.166.
    - (vi) Owners/operators of appliances normally containing 50 or more pounds of refrigerant must keep records of refrigerant purchased and added to such appliances pursuant to §82.166.
    - (vii) The permittee shall comply with all other requirements of Subpart F.
  - (b) *Standards for Motor Vehicle Air Conditioners* [40 CFR Part 82, Subpart B]  
If the permittee performs a service on motor (fleet) vehicles when this service involves ozone-depleting substance refrigerant in the MVAC, the permittee is subject to all the applicable requirements as specified in 40 CFR Part 82, Subpart B, Servicing of Motor Vehicle Air Conditioners. The term "motor vehicle" as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been completed. The term "MVAC" as used in Subpart B does not include the air-tight sealed refrigeration system used as refrigerated cargo, or the system used on passenger buses using HCFC-22 refrigerant.

**STATE ONLY PERMIT CONDITIONS**  
(modified February 22, 2013)

The conditions listed in this section are State only requirements and are not federally enforceable.

Ambient Standards

(S1) The permittee shall operate the emission units described in this permit such that the following ambient standards are not exceeded:

POLLUTANT	STANDARD	CONDITION	WAQSR CH. 2, SEC.
PM <sub>10</sub> particulate matter	50 micrograms per cubic meter	annual arithmetic mean	2 (a)
	150 micrograms per cubic meter	24-hr average concentration with not more than one exceedance per year	
PM <sub>2.5</sub> particulate matter	15 micrograms per cubic meter	annual arithmetic mean	2 (b)
	<u>35</u> micrograms per cubic meter	98 <sup>th</sup> percentile 24-hour average concentration	
Nitrogen dioxide	<u>53 parts per billion</u>	<u>annual average concentration</u>	3
	<u>100 parts per billion</u>	<u>three-year average of the annual 98<sup>th</sup> percentile of the daily maximum 1-hr average concentration</u>	
	<u>0.053 parts per million</u>	<u>annual arithmetic mean</u>	
Sulfur dioxide	<u>75 parts per billion</u>	<u>three-year average of the annual (99<sup>th</sup> percentile) of the daily max 1-hr average</u>	4
	<u>0.5 parts per million</u>	<u>3-hr blocks not to be exceeded more than once per calendar year</u>	
Carbon monoxide	10 milligrams per cubic meter	max 8-hr concentration with not more than one exceedance per year	5
	40 milligrams per cubic meter	max 1-hr concentration with not more than one exceedance per year	
Ozone	<u>0.75 parts per million</u>	<u>three-year average of the annual fourth-highest daily maximum 8-hr average concentration</u>	6
Hydrogen sulfide	70 micrograms per cubic meter	½ hour average not to be exceeded more than two times per year	7
	40 micrograms per cubic meter	½ hour average not to be exceeded more than two times in any five consecutive days	
Suspended sulfate	0.25 milligrams SO <sub>3</sub> per 100 square centimeters per day	maximum annual average	8
	0.50 milligrams SO <sub>3</sub> per 100 square centimeters per day	maximum 30-day value	
Lead and its compounds	<u>0.15</u> micrograms per cubic meter	maximum arithmetic <u>3-month mean concentration for a 3-year period</u>	10

Hydrogen Sulfide: [WAQSR Ch 3, Sec 7]

- (S2) Any exit process gas stream containing hydrogen sulfide which is discharged to the atmosphere from any source shall be vented, incinerated, flared, or otherwise disposed of in such a manner that ambient sulfur dioxide and hydrogen sulfide standards are not exceeded.

Odors: [WAQSR Ch 2, Sec 11]

- (S3) (a) The ambient air standard for odors from any source shall be limited to an odor emission at the property line which is undetectable at seven dilutions with odor free air as determined by a scentometer as manufactured by the Barnebey-Cheney Company or any other instrument, device, or technique designated by the Division as producing equivalent results. The occurrence of odors shall be measured so that at least two measurements can be made within a period of one hour, these determinations being separated by at least 15 minutes.
- (b) Odor producing materials shall be stored, transported, and handled in a manner that odors produced from such materials are confined and that accumulation of such materials resulting from spillage or other escape is prevented.

**SUMMARY OF SOURCE EMISSION LIMITS AND REQUIREMENTS**

Source ID#: EM-1 through EM-5 Source Description: Diesel Fired Emergency Engines (modified February 22, 2013)

Pollutant	Emissions Limit / Work Practice Standard	Corresponding Regulation(s)	Testing Requirements	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Particulate	30% opacity. Operate and maintain hours meter [F5]	WAQSR Ch 3, Sec 2; Ch 6, Sec 2 waiver wv-13859	Testing if required [F11]	Semiannual observations. Monitor operating hours. [F14]	Record excess visible emissions, maintenance, and hours. [F21]	Report excess emissions and permit deviations [F31]
Additional NO <sub>x</sub> , CO, HC, PM	WAQSR Ch 5, Sec 2 and 40 CFR 60 Subparts A and IIII					
HAPs	WAQSR Ch 5, Sec 3 and 40 CFR 63 Subparts A and ZZZZ					

Source ID#: A-305, A-309, FD-120, FD-612, FD-613, FD-615, FD-617, GR-1-A, GR-2-A, GR-2-B, GR-3-A & RO-1

Source Description: Baghouse controlled emission points subject to Subpart OOO (modified February 22, 2013)

Pollutant	Emissions Limit / Work Practice Standard	Corresponding Regulation(s)	Testing Requirements	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Particulate	7 % Opacity; See Table I for PM emission limits [F5]	WAQSR Ch 6, Sec 2 Permits MD-129A & MD-567A, 6/17/1997 Division Letter	If required [F11]	Daily CAM [F15]	Record CAM results [F22]	Semiannual reports of CAM results [F29] Report excess emissions and permit deviations [F31]
Particulate	WAQSR Ch 5, Sec 2 and 40 CFR 60 Subparts A & OOO					

Source ID#: FD-614, FD-616, GR-1-B(1) & GR-1-B(2) Source Description: Baghouse Controlled Emission Points Subject to Subpart OOO (modified February 22, 2013)

Pollutant	Emissions Limit / Work Practice Standard	Corresponding Regulation(s)	Testing Requirements	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Particulate	7 % Opacity; See Table I for PM emission limits [F5]	WAQSR Ch 6, Sec 2 Permit MD-567A	If required [F11]	Daily CAM [F15]	Record CAM results [F22]	Semiannual reports of CAM results [F29] Report excess emissions and permit deviations [F31]
Particulate	WAQSR Ch 5, Sec 2 and 40 CFR 60 Subparts A & OOO					

These tables are intended only to highlight and summarize applicable requirements for each source. The corresponding permit conditions, listed in brackets, contain detailed descriptions of the compliance requirements. Compliance with the summary conditions in these tables may not be sufficient to meet permit requirements. These tables may not reflect all emission sources at this facility.

Source ID#: GR-2-E(1), GR-2-E(2), GR-2-F, GR-2-G, GR-2-H, GR-3-F, GR-3-G, GR-3-K, GR-3-L, GR-3-M, GR-3-N, GR-3-P, GR-3-Q & GR-3-R

Source Description: Scrubber Controlled GR-2 & GR-3 Dissolvers & Dryers

Pollutant	Emissions Limit / Work Practice Standard	Corresponding Regulation(s)	Testing Requirements	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Particulate	20 % Opacity; See Table I for PM emission limits [F5] Annual Production Limits [F8]	WAQSR Ch 6, Sec 2 Permit MD-129A, MD-369	If required [F11]	Monitor production [F12] Daily CAM [F15]	Record production [F18] Record CAM results [F22]	Annual reports of production rates results [F25] Semiannual reports of CAM results [F29] Report excess emissions and permit deviations [F31]

Source ID#: GR-3-B, GR-3-U & GR-3-V

Source Description: Baghouse Controlled GR-3 Ore Handling Equipment & Housekeeping Equipment

Pollutant	Emissions Limit / Work Practice Standard	Corresponding Regulation(s)	Testing Requirements	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Particulate	20 % Opacity; See Table I for PM emission limits [F5]	WAQSR Ch 6, Sec 2 Permit MD-129A	If required [F11]	Daily CAM [F15]	Record CAM results [F22]	Semiannual reports of CAM results [F29] Report excess emissions and permit deviations [F31]

Source ID#: GR-3-C Source Description: GR-3 Ore Gallery (Baghouse)

Pollutant	Emissions Limit / Work Practice Standard	Corresponding Regulation(s)	Testing Requirements	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Particulate	7 % Opacity; See Table I for PM emission limits [F5]	WAQSR 6/17/1997 Division Letter	If required [F11]	Daily CAM [F15]	Record CAM results [F22]	Semiannual reports of CAM results [F29] Report excess emissions and permit deviations [F31]

These tables are intended only to highlight and summarize applicable requirements for each source. The corresponding permit conditions, listed in brackets, contain detailed descriptions of the compliance requirements. Compliance with the summary conditions in these tables may not be sufficient to meet permit requirements. These tables may not reflect all emission sources at this facility.

Source ID#: GR-1-F, GR-1-G & GR-1-H Source Description: Scrubber Controlled GR-1 Dryers

Pollutant	Emissions Limit / Work Practice Standard	Corresponding Regulation(s)	Testing Requirements	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Particulate	20 % Opacity; See Table I for PM emission limits [F5] Annual Production Limits [F8]	WAQSR Ch 6, Sec 2 Permit MD-129A, MD-369	If required [F11]	Monitor production [F12] Quarterly Method 9 observations [F14] Daily CAM [F15]	Record production [F18] Record the results of the Method 9 observations [F21] Record CAM results [F22]	Annual reports of production rates results [F25] Semiannual reports of Method 9 observation results [F28] Semiannual reports of CAM results [F29] Report excess emissions and permit deviations [F31]

Source ID#: GR-1-J(1), GR-1-J(2) & GR-2-J Source Description: GR-2 Housekeeping Scrubbers (modified February 22, 2013)

Pollutant	Emissions Limit / Work Practice Standard	Corresponding Regulation(s)	Testing Requirements	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Particulate	20 % Opacity; See Table I for PM emission limits [F5]	WAQSR Ch 6, Sec 2 Permit MD-129A	If required [F11]	Daily CAM [F15]	Record CAM results [F22]	Semiannual reports of CAM results [F29] Report excess emissions and permit deviations [F31]
Particulate	<b>WAQSR Ch 5, Sec 2 and 40 CFR 60 Subparts A &amp; OOO</b>					

Source ID#: CH-1 & CH-2 Source Description: Baghouse Controlled Coal Truck/Railcar Unloading and Tripper Deck/Coal Bunkers (modified February 22, 2013)

Pollutant	Emissions Limit / Work Practice Standard	Corresponding Regulation(s)	Testing Requirements	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Particulate	< 20 % Opacity; See Table I for PM emission limits [F5]	WAQSR Ch 6, Sec 2 Permit MD-129A	If required [F11]	Daily CAM [F15]	Record CAM results [F22]	Semiannual reports of CAM results [F29] Report excess emissions and permit deviations [F31]
Particulate	<b>WAQSR Ch 5, Sec 2 and 40 CFR 60 Subparts A &amp; Y</b>					

These tables are intended only to highlight and summarize applicable requirements for each source. The corresponding permit conditions, listed in brackets, contain detailed descriptions of the compliance requirements. Compliance with the summary conditions in these tables may not be sufficient to meet permit requirements. These tables may not reflect all emission sources at this facility.

Source ID#: **GR-3-D & GR-3-E** Source Description: **ESP Controlled GR-3 Calciners**

Pollutant	Emissions Limit / Work Practice Standard	Corresponding Regulation(s)	Testing Requirements	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Particulate	20 % Opacity; 37.9 lb/hr particulate each [F5]	WAQSR Ch 6, Sec 2 Permit MD-129A 9/7/1989 Division Letter	Annual emissions testing [F9] Additional tests if required [F11]	COMs [F14] Daily CAM [F15]	Record results of all testing [F24] COMs Records [F21] Record CAM results [F22]	Report test results to the Division [F30] Quarterly COMs reports [F28] Semiannual reports of CAM results [F29] Report excess emissions and permit deviations [F31]

Source ID#: **GR-1-C, GR-1-D, GR-1-E, GR-2-C & GR-2-D** Source Description: **ESP Controlled GR-1 & GR-2 Calciners**

Pollutant	Emissions Limit / Work Practice Standard	Corresponding Regulation(s)	Testing Requirements	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Particulate	20 % Opacity; 15.00 lb/hr particulate each [F5] Process Rate Limits [F8]	WAQSR Ch 6, Sec 2 Permit MD-129A, MD-369	Once per permit term emissions testing [F9] Additional tests if required [F11]	Monitor production [F12] COMs [F14] Daily CAM [F15]	Record results of all testing [F24] Record production [F18] COMs Records [F21] Record CAM results [F22]	Report test results to the Division [F30] Annual reports of production rates results [F25] Quarterly COMs reports [F28] Semiannual reports of CAM results [F29] Report excess emissions and permit deviations [F31]
NO <sub>x</sub>	8.70 lb/hr each [F6]	WAQSR Ch 6, Sec 2 Permit MD-129	Once per permit term emissions testing [F9] Additional tests if required [F11]	Consists of emission testing [F16]	Record results of all testing [F24]	Report test results to the Division [F30] Report excess emissions and permit deviations [F31]

These tables are intended only to highlight and summarize applicable requirements for each source. The corresponding permit conditions, listed in brackets, contain detailed descriptions of the compliance requirements. Compliance with the summary conditions in these tables may not be sufficient to meet permit requirements. These tables may not reflect all emission sources at this facility.

Source ID#: GR-2-L & GR-3-W Source Description: ESP Controlled C and D Boilers (modified February 22, 2013)

Pollutant	Emissions Limit / Work Practice Standard	Corresponding Regulation(s)	Testing Requirements	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Particulate	20 % opacity, particulate emissions and requirements [F5]	WAQSR Ch 6, Sec 2 Permit MD-129A	Annual emissions testing [F10]  Additional tests if required [F11]	COMs in accordance with Subpart D [F14]  Daily CAM [F15]	Maintain COMs records in accordance with Subpart D [F21]  Record CAM results [F22]	COMs reports in accordance with Subpart D [F28] Semiannual reports of CAM results [F29] Report excess emissions and permit deviations [F31]
NO <sub>x</sub>	<u>Limits and installation of separated overfire air requirements</u> [F6]	<u>WAQSR Ch 6, Sec 2 Permit MD-10837</u>	<u>Test after installation of separated overfire air</u> [F10]	Monitor <u>using CEMs</u> [F16]	Maintain records [F23]	Submit <u>quarterly CEM</u> reports [F30] Report excess emissions and permit deviations [F31]
SO <sub>2</sub> and NO <sub>x</sub>	<b>WAQSR Ch 5, Sec 2 and 40 CFR 60 Subparts A &amp; D</b>					
HAPs	<b>WAQSR Ch 5, Sec 2 and 40 CFR 63 Subparts A &amp; DDDDD</b>					

Source ID#: GR-3-X Source Description: FGR Controlled E Boiler (modified February 22, 2013)

Pollutant	Emissions Limit / Work Practice Standard	Corresponding Regulation(s)	Testing Requirements	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Particulate	20 % opacity [F5]	WAQSR Ch 3, Sec 2	If required [F11]	Natural gas firing [F14]	None	Annual reports of fuel fired [F28] Report excess emissions and permit deviations [F31]
NO <sub>x</sub>	0.08 lb/MMBtu, 39.2 lb/hr and 171.7 TPY [F6]	WAQSR Ch 6, Sec 2 Permit <u>MD-567A</u> [F6]	If required [F11]	Monitor in accordance with Subpart Db [F16]	Maintain records [F23]	Submit reports [F30] Report excess emissions and permit deviations [F31]
CO	0.038 lb/MMBtu, 18.6 lb/hr and 81.6 TPY [F6]	WAQSR Ch 6, Sec 2 Permit <u>MD-567A</u>	If required [F11]	None [F16]	None	Report excess emissions and permit deviations [F31]
<b>Particulate, NO<sub>x</sub>, SO<sub>2</sub></b>	<b>WAQSR Ch 5, Sec 2 and 40 CFR 60 Subparts A &amp; Db</b>					
HAPs	<b>WAQSR Ch 5, Sec 2 and 40 CFR 63 Subparts A &amp; DDDDD</b>					

These tables are intended only to highlight and summarize applicable requirements for each source. The corresponding permit conditions, listed in brackets, contain detailed descriptions of the compliance requirements. Compliance with the summary conditions in these tables may not be sufficient to meet permit requirements. These tables may not reflect all emission sources at this facility.

Source Description: **DECA Melting (modified February 22, 2013)**

<u>Pollutant</u>	<u>Emissions Limit / Work Practice Standard</u>	<u>Corresponding Regulation(s)</u>	<u>Testing Requirements</u>	<u>Monitoring Requirements</u>	<u>Recordkeeping Requirements</u>	<u>Reporting Requirements</u>
<b>Particulate</b>	<b>Treat DECA areas [F4]</b>	<b>WAQSR Ch 6, Sec 2 Waiver wv-13858</b>	<b>Additional tests if required [F11]</b>	<b>Monitor dust suppression activities [F13]</b>	<b>Record dust suppression activities [F19]</b>	<b>Report excess emissions and permit deviations [F31]</b>

These tables are intended only to highlight and summarize applicable requirements for each source. The corresponding permit conditions, listed in brackets, contain detailed descriptions of the compliance requirements. Compliance with the summary conditions in these tables may not be sufficient to meet permit requirements. These tables may not reflect all emission sources at this facility.

## ABBREVIATIONS

ACFM	Actual cubic feet per minute
AQD	Air Quality Division
BACT	Best available control technology (see Definitions)
Btu	British Thermal Unit
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
C.F.R.	Code of Federal Regulations
CMS	Continuous Monitoring System
CO	Carbon monoxide
COM	Continuous Opacity Monitor
°F	Degrees Fahrenheit
DEQ	Wyoming Department of Environmental Quality
EPA	United States Environmental Protection Agency (see Definitions)
ESP	Electrostatic Precipitator
gal	Gallon(s)
gr	Grain(s)
H <sub>2</sub> S	Hydrogen sulfide
HAP(s)	Hazardous air pollutant(s)
hp	Horsepower
hr	Hour(s)
ID#	Identification number
lb	Pound(s)
M	Thousand
MACT	Maximum available control technology (see Definitions)
mfr	Manufacturer
mg	Milligram(s)
MM	Million
MVAC	Motor Vehicle Air Conditioner
N/A	Not applicable
NMHC(s)	Non-methane hydrocarbon(s)
NO <sub>x</sub>	Oxides of nitrogen
O <sub>2</sub>	Oxygen
OPP	Operating Permit Program
PM	Particulate matter
PM <sub>10</sub>	Particulate matter less than or equal to a nominal diameter of 10 micrometers
ppmv	Parts per million (by volume)
ppmw	Parts per million (by weight)
QIP	Quality Improvement Plan
SCF	Standard cubic foot (feet)
SCFD	Standard cubic foot (feet) per day
SCM	Standard cubic meter(s)
SIC	Standard Industrial Classification
SO <sub>2</sub>	Sulfur dioxide
SO <sub>x</sub>	Oxides of sulfur
TBD	To be determined
TPD	Ton(s) per day
TPH	Ton(s) per hour
TPY	Tons per year
U.S.C.	United States Code
µg	Microgram(s)
VOC(s)	Volatile organic compound(s)
W.S.	Wyoming Statute
WAQSR	Wyoming Air Quality Standards & Regulations (see Definitions)

## DEFINITIONS

**"Act"** means the Clean Air Act, as amended, 42 U.S.C. 7401, *et seq.*

**"Administrator"** means Administrator of the Air Quality Division, Wyoming Department of Environmental Quality.

**"Applicable requirement"** means all of the following as they apply to emissions units at a source subject to Chapter 6, Section 3 of the WAQSR (including requirements with future effective compliance dates that have been promulgated or approved by the EPA or the State through rulemaking at the time of issuance of the operating permit):

- (a) Any standard or other requirement provided for in the Wyoming implementation plan approved or promulgated by EPA under title I of the Act that implements the relevant requirements of the Act, including any revisions to the plan promulgated in 40 C.F.R. Part 52;
- (b) Any standards or requirements in the WAQSR which are not a part of the approved Wyoming implementation plan and are not federally enforceable;
- (c) Any term or condition of any preconstruction permits issued pursuant to regulations approved or promulgated through rulemaking under title I, including parts C or D of the Act and including Chapter 5, Section 2 and Chapter 6, Sections 2 and 4 of the WAQSR;
- (d) Any standard or other requirement promulgated under Section 111 of the Act, including Section 111(d) and Chapter 5, Section 2 of the WAQSR;
- (e) Any standard or other requirement under Section 112 of the Act, including any requirement concerning accident prevention under Section 112(r)(7) of the Act and including any regulations promulgated by EPA and the State pursuant to Section 112 of the Act;
- (f) Any standard or other requirement of the acid rain program under title IV of the Act or the regulations promulgated thereunder;
- (g) Any requirements established pursuant to Section 504(b) or Section 114(a)(3) of the Act concerning enhanced monitoring and compliance certifications;
- (h) Any standard or other requirement governing solid waste incineration, under Section 129 of the Act;
- (i) Any standard or other requirement for consumer and commercial products, under Section 183(e) of the Act (having to do with the release of volatile organic compounds under ozone control requirements);
- (j) Any standard or other requirement of the regulations promulgated to protect stratospheric ozone under title VI of the Act, unless the EPA has determined that such requirements need not be contained in a title V permit;
- (k) Any national ambient air quality standard or increment or visibility requirement under part C of title I of the Act, but only as it would apply to temporary sources permitted pursuant to Section 504(e) of the Act; and
- (l) Any state ambient air quality standard or increment or visibility requirement of the WAQSR.
- (m) Nothing under paragraphs (A) through (L) above shall be construed as affecting the allowance program and Phase II compliance schedule under the acid rain provision of Title IV of the Act.

**"BACT" or "Best available control technology"** means an emission limitation (including a visible emission standard) based on the maximum degree of reduction of each pollutant subject to regulation under the WAQSR or regulation under the Federal Clean Air Act, which would be emitted from or which results for any proposed major emitting facility or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application or production processes and available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular class of sources would make the imposition of an emission standard infeasible, he may instead prescribe a design,

equipment, work practice or operational standard or combination thereof to satisfy the requirement of Best Available Control Technology. Such standard shall, to the degree possible, set forth the emission reduction achievable by implementation of such design, equipment, work practice, or operation and shall provide for compliance by means which achieve equivalent results. Application of BACT shall not result in emissions in excess of those allowed under Chapter 5, Section 2 of the WAQSR and any other new source performance standard or national emission standards for hazardous air pollutants promulgated by EPA but not yet adopted by the state.

**"Department"** means the Wyoming Department of Environmental Quality or its Director.

**"Director"** means the Director of the Wyoming Department of Environmental Quality.

**"Division"** means the Air Quality Division of the Wyoming Department of Environmental Quality or its Administrator.

**"Emergency"** means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

**"EPA"** means the Administrator of the U.S. Environmental Protection Agency or the Administrator's designee.

**"Fuel-burning equipment"** means any furnace, boiler apparatus, stack, or appurtenances thereto used in the process of burning fuel or other combustible material for the purpose of producing heat or power by indirect heat transfer.

**"Fugitive emissions"** means those emissions which could not reasonably pass through a stack chimney, vent, or other functionally equivalent opening.

**"Insignificant activities"** means those activities which are incidental to the facility's primary business activity and which result in emissions of less than one ton per year of a regulated pollutant not included in the Section 112 (b) list of hazardous air pollutants or emissions less than 1000 pounds per year of a pollutant regulated pursuant to listing under Section 112 (b) of the Act provided, however, such emission levels of hazardous air pollutants do not exceed exemptions based on insignificant emission levels established by EPA through rulemaking for modification under Section 112 (g) of the Act.

**"MACT" or "Maximum achievable control technology"** means the maximum degree of reduction in emissions that is deemed achievable for new sources in a category or subcategory that shall not be less stringent than the emission control that is achieved in practice by the best controlled similar source, as determined by the Administrator. Emission standards promulgated for existing sources in a category or subcategory may be less stringent than standards for new sources in the same category or subcategory but shall not be less stringent, and may be more stringent than:

- (a) the average emission limitation achieved by the best performing 12 percent of the existing sources (for which the Administrator has emission information), excluding those sources that have, within 18 months before the emission standard is proposed or within 30 months before such standard is promulgated, whichever is later, first achieved a level of emission rate or emission reduction which complies, or would comply if the source is not subject to such standard, with the lowest achievable emission rate applicable to the source category and prevailing at the time, in the category or subcategory for categories and subcategories with 30 or more sources, or
- (b) the average emission limitation achieved by the best performing five sources (for which the Administrator has or could reasonably obtain emissions information) in the category or subcategory for categories or subcategories with fewer than 30 sources.

**"Modification"** means any physical change in, or change in the method of operation of, an affected facility which increases the amount of any air pollutant (to which any state standards applies) emitted by such facility or which results in the emission of any such air pollutant not previously emitted.

**"Permittee"** means the person or entity to whom a Chapter 6, Section 3 permit is issued.

**"Potential to emit"** means the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant,

including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation is enforceable by EPA and the Division. This term does not alter or affect the use of this term for any other purposes under the Act, or the term "capacity factor" as used in title IV of the Act or the regulations promulgated thereunder.

**"Regulated air pollutant"** means the following:

- (a) Nitrogen oxides (NO<sub>x</sub>) or any volatile organic compound;
- (b) Any pollutant for which a national ambient air quality standard has been promulgated;
- (c) Any pollutant that is subject to any standard established in Chapter 5, Section 2 of the WAQSR or Section 111 of the Act;
- (d) Any Class I or II substance subject to a standard promulgated under or established by title VI of the Act; or
- (e) Any pollutant subject to a standard promulgated under Section 112 or other requirements established under Section 112 of the Act, including Sections 112(g), (j), and (r) of the Act, including the following:
  - (i) Any pollutant subject to requirements under Section 112(j) of the Act. If EPA fails to promulgate a standard by the date established pursuant to Section 112(e) of the Act, any pollutant for which a subject source would be major shall be considered to be regulated on the date 18 months after the applicable date established pursuant to Section 112(e) of the Act; and
  - (ii) Any pollutant for which the requirements of Section 112(g)(2) of the Act have been met, but only with respect to the individual source subject to Section 112(g)(2) requirement.
- (f) Pollutants regulated solely under Section 112(r) of the Act are to be regulated only with respect to the requirements of Section 112(r) for permits issued under this Chapter 6, Section 3 of the WAQSR.

**"Renewal"** means the process by which a permit is reissued at the end of its term.

**"Responsible official"** means one of the following:

- (a) For a corporation:
  - (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or
  - (ii) A duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:
    - (A) the facilities employ more than 250 persons or have gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars); or
    - (B) the delegation of authority to such representative is approved in advance by the Division;
- (b) For a partnership or sole proprietorship: a general partner or the proprietor, respectively;
- (c) For a municipality, State, Federal, or other public agency: Either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency; or
- (d) For affected sources:
  - (i) The designated representative or alternate designated representative in so far as actions, standards, requirements, or prohibitions under title IV of the Act or the regulations promulgated thereunder are concerned; and
  - (ii) The designated representative, alternate designated representative, or responsible official under Chapter 6, Section 3 (b)(xxvi) of the WAQSR for all other purposes under this section.

**"WAQSR"** means the Wyoming Air Quality Standards and Regulations promulgated under the Wyoming Environmental Quality Act, W.S. §35-11-101, *et seq.*

**Appendix A**  
Compliance Assurance Monitoring (CAM) Plans



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## COMPLIANCE ASSURANCE MONITORING PLAN A

### BACKGROUND:

#### **Emissions Unit**

Description: GR-2 Calciners  
Identification: GR-1-C, GR-1-D, GR-1-E, GR-2-C, GR-2-D  
Facility: Green River Soda Ash Plant, Wyoming, USA

#### **Applicable Regulation, Emission Limit, and Monitoring Requirements**

Regulation No.: Operating Permit No. 3-1-123  
Emission Limit: 15.0 lb/hr PM for each unit  
Monitoring Requirements: CAM for PM

#### **Control Technology Electrostatic Precipitator (ESP)**

### MONITORING APPROACH:

#### **Indicator:**

Total power input to each ESP will be used as an indicator. Normal process operations will not produce conditions that adversely affect the ESP, so no process operational parameters will be monitored. Monitoring is not required when the fan is off.

#### **Rationale:**

ESP collection efficiency is related to the total power within its fields. Stack testing has shown the minimum levels that must be maintained to provide a reasonable assurance of compliance with the PM limit (see stack test results and rationale for justification of indicator minimums selected).

#### **Measurement Approach:**

ESP voltage and current are measured for each field, using a voltmeter and an ammeter. The total power (P) to each ESP is the sum of the products of the voltage (V) and current (I) in each field:  $P = V_{inlet}I_{inlet} + V_{center}I_{center} + V_{outlet}I_{outlet}$ . Voltage and current are measured continuously and used to calculate the power every 15 minutes.

#### **Analytical devices required: AVC (Automatic Voltage Controllers)**

#### **Indicator Range:**

An excursion is defined as a three hour block average ESP power input less than 54.0 KW, which will trigger an alarm in the control room. Excursions trigger an inspection, corrective action and a reporting requirement. Duration of the startup and shutdown periods will be minimized to the extent reasonably, safely and

practicably possible. Startup and shutdown events will be reported in the required semi-annual reports.

**Performance Criteria:**

Data Representativeness: The voltmeter and ammeter are part of the ESP design and included in their instrumentation. The power calculated is accurate to  $\pm 1$  KW.

QA/QC Practices and Criteria:

Inspection and operation of the AVCs will be checked at least semi-annually. Confirm the ammeter and voltmeter zero when each ESP is not operating.

**Monitoring Report:**

A report will be submitted semi-annually and will include the number, duration, cause, and the corrective actions taken for excursions.

**Quality Improvement Plan (QIP) Threshold:**

It is proposed that the QIP threshold be when excursions plus startup and shutdown periods are in excess of 10% of the operating time for the unit in a six-month period. Operating time is defined as the number of hours the fan is on. If the QIP threshold is exceeded in a semi-annual reporting period, a QIP will be developed and implemented. The QIP threshold will not be applicable when the unit has operated for less than 400 hours in a six-month period.

**RESPONSE TO EXCURSION:**

Upon noting an alarm, an operator will immediately notify maintenance to inspect the ESP. Maintenance personnel will inspect the ESP within 4 hours of receiving notification and make needed repairs as soon as practicable.

**JUSTIFICATION FOR MONITORING APPROACH:**

**Background:**

The pollutant-specific emission units for each of the five GR-2 calciners are an ESP unit on each calciner. Each ESP has three fields.

**Rationale for Performance Indicators and Operating Ranges:**

In an ESP, electric fields are established by applying a direct-current voltage across a pair of electrodes: a discharge electrode (wire) and a collection electrode (plate). Particulate matter suspended in the gas stream is electrically charged by passing through the electric field around each negatively charged wire. The negatively charged particles then migrate toward the positively charged collection plate where they form a surface layer on the plate. The particulate layer falls from the plate when the plates are rapped.

The automatic voltage controllers evaluate the energy required to charge the particles just prior to initiating a spark across the air space between the wires and the plate. The most efficient operation occurs when maximum power is supplied at a level just below the spark over point. The AVC maintains the highest possible average ESP power levels by controlling the spark rate.

The total power is a function of voltage and current. Voltage will build up in the wires until the air space is ionized sufficiently enough to result in a spark. Low voltage levels are an indication of close clearances (swinging wires) or grounded wires. The current flow from the wires to the plate decreases as the resistance to electric flow increases due to dust build-up from poor rapping efficiency. Monitoring total power will provide reasonable assurance that the ESP is functioning properly.

**Selection of Electrostatic Precipitator Operating Ranges:**

The selected excursion level is the three hour average of three consecutive one hour average total power readings less than 54.0 KW. When an excursion occurs, corrective action will be initiated, beginning with an evaluation of the occurrence to determine the action required to correct the situation. All excursions will be documented and recorded.

The indicator range for the ESP power was selected based upon the minimum total power measured during compliance testing to meet the 15.0 lb/hr permit limit. A stack test is determined to pass the particulate emission limit when the average of three one-hour stack test emission rates is below 15.0 lb/hr. This is the rationale for defining the minimum operating total power.

**STACK TEST RESULTS:**

DATE	Source	Process	Run #	Total VA	Lbs./Hr.	Opacity
1/11/1996			1	80123	2.39	10.8
1/11/1996	GR-1-C	GR2 Calc. #1	2	82553	2.19	10.7
1/11/1996			3	82078	3.08	10.3
10/5/2007			1	75557	11	7.0
10/5/2007	GR-1-C	GR2 Calc. #1	2	75257	10.4	6.3
10/5/2007			3	76889	11.8	5.2
7/28/2010			1	80592	3.97	1
7/28/2010			2	80675	4.07	1.1
7/28/2010			3	76100	4.62	2.2
7/29/2010	GR-1-C	GR2 Calc. #1	4	74475	6.04	4.7
7/29/2010			5	72050	9.97	4.5
7/29/2010			6	69267	6.24	4.6
7/29/2010			7	73292	8.51	4.9
7/29/2010			8	78167	3.01	1.8

DATE	Source	Process	Run #	Total VA	Lbs./Hr.	Opacity
10/10/2003			1	75000	12.67	12.7
10/10/2003	GR-1-D	GR2 Calc. #2	2	74734	14.67	14.7
10/10/2003			3	75311	10.92	10.9
7/30/2010			1	62354	16.63	13.3
7/30/2010			2	66050	19.32	11
7/30/2010			3	65700	19.98	12.3
7/30/2010			4	64892	20.98	13.3
7/30/2010	GR-1-D	GR2 Calc. #2	5	63518	20.17	15
8/2/2010			6	71750	7.93	7.3
8/2/2010			7	69933	8.83	7.9
8/3/2010			8	70342	7.43	6.4
8/3/2010			9	76408	5.62	5.3
10/28/2010			1	69087	21.47	14.96
10/28/2010	GR-1-D	GR2 Calc. #2	2	68800	22.62	15.81
10/29/2010			3	70760	23.35	14.1
11/30/2010			2	66700	9.62	10.87
11/30/2010	GR-1-D	GR2 Calc. #2	3	66800	8.5	25.36
12/1/2010			4	68400	9.97	10.14

DATE	Source	Process	Run #	Total VA	Lbs./Hr.	Opacity
6/29/2006			2	64329	13	15.1
6/29/2006	GR-1-E	GR2 Calc. #3	3	68683	12.3	13.9
6/30/2006			4	62408	10.4	12.1
8/3/2010			1	80675	4.43	7.2
8/3/2010			2	80062	3.34	6.9
8/4/2010			3	70025	7.64	10
8/4/2010			4	68858	9.36	10.9
8/4/2010	GR-1-E	GR2 Calc. #3	5	69550	8.81	11.1
8/4/2010			6	69945	6.83	9.1
8/4/2010			7	68982	8.63	9.4
8/5/2010			8	76533	2.84	5.1
8/5/2010			9	76800	3.96	5.3

DATE	Source	Process	Run #	Total VA	Lbs./Hr.	Opacity
4/9/1997			2	58896	2.54	12.9
4/9/1997	GR-2-C	GR2 Calc. #4	3	59483	2.94	12.1
4/10/1997			4	61681	4.01	12
3/30/2001			1	65099	9.16	15.5
3/30/2001	GR-2-C	GR2 Calc. #4	2	34076	9.18	12.3
3/30/2001			3	62806	7.31	14.8
4/5/2005			1	72293	7.59	7.6
4/5/2005	GR-2-C	GR2 Calc. #4	2	72068	6.12	6.1
4/5/2005			3	71247	6.82	6.8
7/30/2010			1	64708	17.41	12.1
7/30/2010	GR-2-C	GR2 Calc. #4	2	65331	16.26	11.5

7/30/2010			3	65200	17.26	12.1
7/30/2010			4	65200	16.41	11.4
7/30/2010			5	66538	17.66	11.4
7/30/2010			6	68000	13.55	9.1
8/2/2010			7	69715	6.84	7
8/2/2010			8	70715	7.91	6.2
8/3/2010			9	74250	5.21	5.6
8/3/2010			10	74742	4.4	5.5
8/3/2010			11	75346	3.94	4.3
10/29/2010			1	65924	15.18	13.43
10/29/2010	GR-2-C	GR2 Calc. #4	2	66214	16.04	12.68
10/29/2010			3	66073	17.76	13.09
12/1/2010			1	66000	13.93	11.95
12/1/2010	GR-2-C	GR2 Calc. #4	2	64500	12.17	12.08
12/1/2010			3	63500	13.01	12.74
12/1/2010			4	62900	4.85	13.03

DATE	Source	Process	Run #	Total VA	Lbs./Hr.	Opacity
3/25/2003			1	62656	11.2	10.4
3/25/2003	GR-2-D	GR2 Calc. #5	2	64190	5.53	10
3/25/2003			3	61464	3.88	10.9
7/28/2010			3	70269	7.69	3.8
7/29/2010			4	59092	12.41	10.9
7/29/2010			5	58400	12.72	11.3
7/29/2010	GR-2-D	GR2 Calc. #5	6	58458	12.44	10.9
7/29/2010			7	59600	10.97	10.6
7/29/2010			8	59233	15.79	10.7
8/4/2010			9	72667	3.18	4.6
8/4/2010			10	74425	3.04	4

## COMPLIANCE ASSURANCE MONITORING PLAN B-1

### BACKGROUND:

#### Emissions Unit

Description: GR-3 Calciners  
Identification: GR-3-D  
Facility: Green River Soda Ash Plant, Wyoming, USA

#### Applicable Regulation, Emission Limit, and Monitoring Requirements

Regulation No.: Operating Permit No. 3-1-123  
Emission Limit: 37.9 lb/hr PM for each unit.  
Monitoring Requirements: CAM for PM

Control Technology Electrostatic Precipitator (ESP)

### MONITORING APPROACH:

#### Indicator:

Total power input to each ESP will be used as an indicator. Normal process operations will not produce conditions that adversely affect the ESP, so no process operational parameters will be monitored. Monitoring is not required when the fan is off.

#### Rationale:

ESP collection efficiency is related to the total power within its fields. Stack testing has shown the minimum levels that must be maintained to provide a reasonable assurance of compliance with the PM limit (see stack test results and rationale for justification of indicator minimums selected).

#### Measurement Approach:

ESP voltage and current are measured for each field, using a voltmeter and an ammeter. The total power (P) to each ESP is the sum of the products of the voltage (V) and current (I) in each field:  $P = V_{inlet}I_{inlet} + V_{center}I_{center} + V_{outlet}I_{outlet}$ . Voltage and current are measured continuously and used to calculate the power every 15 minutes.

Analytical devices required: AVC (Automatic Voltage Controllers)

#### Indicator Range:

An excursion is defined as a three hour block average ESP power input less than 71.1 KW, which will trigger an alarm in the control room. Excursions trigger an inspection, corrective action and a reporting requirement. Duration of the startup

and shutdown periods will be minimized to the extent reasonably, safely and practicably possible. Startup and shutdown events will be reported in the required semi-annual reports.

**Performance Criteria:**

Data Representativeness: The voltmeter and ammeter are part of the ESP design and included in their instrumentation. The power calculated is accurate to  $\pm 1$  KW.

**QA/QC Practices and Criteria:**

Inspection and operation of the AVCs will be checked at least semi-annually. Confirm the ammeter and voltmeter zero when each ESP is not operating.

**Monitoring Report:**

A report will be submitted semi-annually and will include the number, duration, cause, and the corrective actions taken for excursions.

**Quality Improvement Plan (QIP) Threshold:**

It is proposed that the QIP threshold be when excursions plus startup and shutdown periods are in excess of 10% of the operating time for the unit in a six-month period. Operating time is defined as the number of hours the fan is on. If the QIP threshold is exceeded in a semi-annual reporting period, a QIP will be developed and implemented. The QIP threshold will not be applicable when the unit has operated for less than 400 hours in a six-month period.

**RESPONSE TO EXCURSION:**

Upon noting an alarm, an operator will immediately notify maintenance to inspect the ESP. Maintenance personnel will inspect the ESP within 4 hours of receiving notification and make needed repairs as soon as practicable.

**JUSTIFICATION FOR MONITORING APPROACH:**

**Background:**

The pollutant-specific emission units for each of the two GR-3 calciners are an ESP unit on each calciner. Each ESP has three fields.

**Rationale for Performance Indicators and Operating Ranges:**

In an ESP, electric fields are established by applying a direct-current voltage across a pair of electrodes: a discharge electrode (wire) and a collection electrode (plate). Particulate matter suspended in the gas stream is electrically charged by passing through the electric field around each negatively charged wire. The negatively charged particles then migrate toward the positively

charged collection plate where they form a surface layer on the plate. The particulate layer falls from the plate when the plates are rapped.

The automatic voltage controllers evaluate the energy required to charge the particles just prior to initiating a spark across the air space between the wires and the plate. The most efficient operation occurs when maximum power is supplied at a level just below the spark over point. The AVC maintains the highest possible average ESP power levels by controlling the spark rate.

The total power is a function of voltage and current. Voltage will build up in the wires until the air space is ionized sufficiently enough to result in a spark. Low voltage levels are an indication of close clearances (swinging wires) or grounded wires. The current flow from the wires to the plates decreases as the resistance to electric flow increases due to dust build-up from poor rapping efficiency. Monitoring total power will provide reasonable assurance that the ESP is functioning properly.

#### **Selection of Electrostatic Precipitator Operating Ranges:**

The selected excursion level is the three hour block average of three consecutive one hour average total power readings less than 71.1 KW. When an excursion occurs, corrective action will be initiated, beginning with an evaluation of the occurrence to determine the action required to correct the situation. All excursions will be documented and recorded.

The indicator range for the ESP power was selected based upon the minimum total power measured during compliance testing to meet the 37.9 lb/hr permit limit. A stack test is determined to pass the particulate emission limit when the average of three one-hour stack test emission rates is below 37.9 lb/hr. This is the rationale for defining the minimum operating total power.

#### **STACK TEST RESULTS:**

DATE	Source	Process	RUN NO.	Total Power	Lbs./Hr.	Opacity
12/14/1999	GR-3-D	GR3 Calc. #1	1	100451	24.31	8.6
12/14/1999	GR-3-D		2	104425	24.37	9.1
12/14/1999	GR-3-D		3	99282	28.46	9.6
5/30/2001	GR-3-D	GR3 Calc. #1	1	109004	17.1	10.3
5/30/2001	GR-3-D		2	110686	16.9	10.7
5/30/2001	GR-3-D		3	110158	18.33	10.4
6/27/2002	GR-3-D	GR3 Calc. #1	1	108401	32.97	11.1
6/27/2002	GR-3-D		2	111070	42.8	10.8
6/27/2002	GR-3-D		3	114360	37.81	11
5/21/2003	GR-3-D	GR3 Calc. #1	1	106310	32.63	8.7
5/21/2003	GR-3-D		2	107075	28.26	6.3
5/21/2003	GR-3-D		3	101723	33.97	7.4

DATE	Source	Process	RUN NO.	Total Power	Lbs./Hr.	Opacity
10/28/2004	GR-3-D		1	105265	34.57	10.6
10/28/2004	GR-3-D	GR3 Calc. #1	2	106902	36.16	11
10/28/2004	GR-3-D		3	105064	40.05	10.6
9/15/2005	GR-3-D		1	104935	23.42	9.3
9/15/2005	GR-3-D	GR3 Calc. #1	2	114136	20.29	6.5
9/15/2005	GR-3-D		3	112269	20.32	8.3
9/25/2006	GR-3-D		1	89892	37.03	16.6
9/25/2006	GR-3-D	GR3 Calc. #1	2	109350	32.52	15.7
9/25/2006	GR-3-D		3	109432	30.29	14.2
11/2/2007	GR-3-D		1	110568	22.3	9.4
11/2/2007	GR-3-D	GR3 Calc. #1	2	113410	19.92	9.9
11/2/2007	GR-3-D		3	87067	21.27	10.6
8/12/2008	GR-3-D		1	91328	17.18	14.3
8/12/2008	GR-3-D	GR3 Calc. #1	2	108957	12.57	10.8
8/12/2008	GR-3-D		3	108106	14.22	10
7/16/2009	GR-3-D		1	66000	27.61	10.1
7/16/2009	GR-3-D	GR3 Calc. #1	2	75850	37.01	11.7
7/16/2009	GR-3-D		3	71300	34.01	12.5
4/12/2010	GR-3-D		1	109173	27.2	13.5
4/12/2010	GR-3-D		2	106843	41.15	15.2
4/12/2010	GR-3-D		3	108357	26.59	14.2
4/13/2010	GR-3-D		4	109425	33.94	15.4
4/13/2010	GR-3-D		5	111086	28.5	13.1
4/13/2010	GR-3-D		6	115486	20.76	11.4
4/13/2010	GR-3-D		7	116583	19.29	11.4
4/13/2010	GR-3-D		8	115014	22.09	11.7
4/13/2010	GR-3-D	GR3 Calc. #1	9	109800	31.27	14.5
4/13/2010	GR-3-D		10	114383	22.44	11.7
4/13/2010	GR-3-D		11	116050	29.68	11.6
4/13/2010	GR-3-D		12	118467	23.28	10.8
4/14/2010	GR-3-D		13	110571	30.36	13.6
4/14/2010	GR-3-D		14	111633	26.47	14.7
4/14/2010	GR-3-D		15	113300	23.17	12.6
4/14/2010	GR-3-D		16	113571	22.4	11.4
4/14/2010	GR-3-D		17	113963	22.66	11.1
4/14/2010	GR-3-D		18	114771	27.98	13
7/6/2011	GR-3-D		1	94002	23.74	7
7/6/2011	GR-3-D	GR3 Calc. #1	2	105768	23.75	5.5
7/6/2011	GR-3-D		3	110102	19.61	5.1
5/22/2012	GR-3-D		1	77500	100.65	15.1
5/22/2012	GR-3-D	GR3 Calc. #1	2	79300	86.78	15.2
5/22/2012	GR-3-D		3	88800	82.38	13.6
7/31/2012	GR-3-D		1	86400	21.54	11.5
7/31/2012	GR-3-D		2	77900	20.33	15
7/31/2012	GR-3-D	GR3 Calc. #1	3	115600	11.03	7.8
7/31/2012	GR-3-D		4	112900	14.61	8.5

## COMPLIANCE ASSURANCE MONITORING PLAN B-2

### BACKGROUND:

#### Emissions Unit

Description: GR-3 Calciners  
Identification: GR-3-E  
Facility: Green River Soda Ash Plant, Wyoming, USA

#### Applicable Regulation, Emission Limit, and Monitoring Requirements

Regulation No.: Operating Permit No. 3-1-123  
Emission Limit: 37.9 lb/hr PM for each unit.  
Monitoring Requirements: CAM for PM

#### Control Technology Electrostatic Precipitator (ESP)

### MONITORING APPROACH:

#### Indicator:

Total power to each ESP will be used as an indicator. Normal process operations will not produce conditions that adversely affect the ESP, so no process operational parameters will be monitored. Monitoring is not required when the fan is off.

#### Rationale:

ESP collection efficiency is related to the total power within its fields. Stack testing has shown the minimum levels that must be maintained to provide a reasonable assurance of compliance with the PM limit (see stack test results and rationale for justification of indicator minimums selected).

#### Measurement Approach:

ESP voltage and current are measured for each field, using a voltmeter and an ammeter. The total power (P) input to each ESP is the sum of the products of the voltage (V) and current (I) in each field:  $P = V_{inlet}I_{inlet} + V_{center}I_{center} + V_{outlet}I_{outlet}$ . Voltage and current are measured continuously and used to calculate the power every 15 minutes.

Analytical devices required: AVC (Automatic Voltage Controllers)

#### Indicator Range:

An excursion is defined as a three hour block average ESP power input less than 73.9 KW, which will trigger an alarm in the control room. Excursions trigger an inspection, corrective action and a reporting requirement. Duration of the startup and shutdown periods will be minimized to the extent reasonably, safely and

practicably possible. Startup and shutdown events will be reported in the required semi-annual reports.

**Performance Criteria:**

Data Representativeness: The voltmeter and ammeter are part of the ESP design and included in their instrumentation. The power calculated is accurate to  $\pm 1$  KW.

QA/QC Practices and Criteria: Inspection and operation of the AVCs will be checked at least semi-annually. Confirm the ammeter and voltmeter zero when each ESP is not operating.

**Monitoring Report:**

A report will be submitted semi-annually and will include the number, duration, cause, and the corrective actions taken for excursions.

**Quality Improvement Plan (QIP) Threshold:**

It is proposed that the QIP threshold be when excursions plus startup and shutdown periods are in excess of 10% of the operating time for the unit in a six-month period. Operating time is defined as the number of hours the fan is on. If the QIP threshold is exceeded in a semi-annual reporting period, a QIP will be developed and implemented. The QIP threshold will not be applicable when the unit has operated for less than 400 hours in a six-month period.

**RESPONSE TO EXCURSION:**

Upon noting an alarm, an operator will immediately notify maintenance to inspect the ESP. Maintenance personnel will inspect the ESP within 4 hours of receiving notification and make needed repairs as soon as practicable.

**JUSTIFICATION FOR MONITORING APPROACH:**

**Background:**

The pollutant-specific emission units for each of the two GR-3 calciners are an ESP unit on each calciner. Each ESP has three fields.

**Rationale for Performance Indicators and Operating Ranges:**

In an ESP, electric fields are established by applying a direct-current voltage across a pair of electrodes: a discharge electrode (wire) and a collection electrode (plate). Particulate matter suspended in the gas stream is electrically charged by passing through the electric field around each negatively charged wire. The negatively charged particles then migrate toward the positively charged collection plate where they form a surface layer on the plate. The particulate layer falls from the plate when the plates are rapped.

The automatic voltage controllers evaluate the energy required to charge the particles just prior to initiating a spark across the air space between the wires and the plate. The most efficient operation occurs when maximum power is supplied at a level just below the spark over point. The AVC maintains the highest possible average ESP power levels by controlling the spark rate.

The total power is a function of voltage and current. Voltage will build up in the wires until the air space is ionized sufficiently enough to result in a spark. Low voltage levels are an indication of close clearances (swinging wires) or grounded wires. The current flow from the wires to the plates decreases as the resistance to electric flow increases due to dust build-up from poor rapping efficiency. Monitoring total power will provide reasonable assurance that the ESP is functioning properly.

**Selection of Electrostatic Precipitator Operating Ranges:**

The selected excursion level is the three hour block average of three consecutive one hour average total power readings less than 73.9 KW. When an excursion occurs, corrective action will be initiated, beginning with an evaluation of the occurrence to determine the action required to correct the situation. All excursions will be documented and recorded.

The indicator range for the ESP power was selected based upon the minimum total power measured during compliance testing to meet the 37.9 lb/hr permit limit. A stack test is determined to pass the particulate emission limit when the average of three one-hour stack test emission rates is below 37.9 lb/hr. This is the rationale for defining the minimum operating total power.

**STACK TEST RESULTS:**

DATE	Source	Process	RUN NO.	Total Power	Lbs./Hr.	Opacity
5/24/1995	GR-3-E	GR3 Calc. #2	1	82341	22.67	12.2
5/24/1995	GR-3-E		2	80440	22.65	12.9
5/24/1995	GR-3-E		3	78236	21.81	11.8
12/14/1999	GR-3-E	GR3 Calc. #2	1	102215	20.01	15.7
12/14/1999	GR-3-E		2	103730	22.41	16.3
12/14/1999	GR-3-E		3	106946	19.64	16.2
5/30/2001	GR-3-E	GR3 Calc. #2	1	109823	17.11	11.5
5/30/2001	GR-3-E		2	117984	20.39	11.5
5/30/2001	GR-3-E		3	107807	21.76	14.6
6/27/2002	GR-3-E	GR3 Calc. #2	1	129294	15.25	9
6/27/2002	GR-3-E		2	116440	20.57	10.8
6/27/2002	GR-3-E		3	128628	16.44	8
5/21/2003	GR-3-E	GR3 Calc. #2	1	67845	22.85	13.5
5/21/2003	GR-3-E		2	75812	19.62	13.8
5/21/2003	GR-3-E		3	80712	28.48	13.6

DATE	Source	Process	RUN NO.	Total Power	Lbs./Hr.	Opacity
10/28/2004	GR-3-E		1	102492	40.25	13.5
10/28/2004	GR-3-E		2	103217	29.73	12.3
10/28/2004	GR-3-E	GR3 Calc. #2	3	106659	32.58	13.1
8/18/2005	GR-3-E		3	108248	17.65	5.6
8/18/2005	GR-3-E		4	100118	18.87	6.9
8/18/2005	GR-3-E		5	107484	19.29	6.3
9/25/2006	GR-3-E		1	91803	25.25	12.3
9/25/2006	GR-3-E	GR3 Calc. #2	2	99602	23.52	12.4
9/25/2006	GR-3-E		3	95179	31.02	11.5
8/13/2007	GR-3-E		1	105391	36.75	17.1
8/13/2007	GR-3-E	GR3 Calc. #2	2	104043	28.91	15.6
8/13/2007	GR-3-E		3	110326	23.11	15.7
8/12/2008	GR-3-E		1	101543	20.41	15.6
8/12/2008	GR-3-E	GR3 Calc. #2	2	102683	25.83	15.3
8/12/2008	GR-3-E		3	101047	29.99	14.4
7/17/2009	GR-3-E		1	73750	26.84	13.45
7/17/2009	GR-3-E	GR3 Calc. #2	2	73170	27.61	12.72
7/17/2009	GR-3-E		3	74750	20.87	12.09
6/30/2010	GR-3-E		1	107100	22.28	9.0
6/30/2010	GR-3-E		2	106000	28.94	9.8
6/30/2010	GR-3-E		3	105338	26.81	10.5
6/30/2010	GR-3-E		4	103943	20.58	11.8
6/30/2010	GR-3-E		5	105758	31.18	9.7
6/30/2010	GR-3-E		6	106556	20.04	8.8
6/30/2010	GR-3-E		7	106450	21.03	9.8
6/30/2010	GR-3-E		8	105875	15.86	9.8
7/1/2010	GR-3-E	GR3 Calc. #2	9	106190	13.28	9.8
7/1/2010	GR-3-E		10	106225	24.52	9.7
7/1/2010	GR-3-E		11	106367	19.18	10.4
7/1/2010	GR-3-E		12	106389	25.74	11.3
7/1/2010	GR-3-E		13	105233	25.18	11.1
7/1/2010	GR-3-E		14	105444	30.63	10.4
7/1/2010	GR-3-E		15	104638	38.11	10.9
7/1/2010	GR-3-E		16	105745	20.58	10.4
7/1/2010	GR-3-E		17	106211	22.35	9.7
7/1/2010	GR-3-E		18	106567	21.72	10.6
7/6/2011	GR-3-E		1	107659	34.48	15.1
7/6/2011	GR-3-E	GR3 Calc. #2	2	111128	29.03	14.6
7/6/2011	GR-3-E		3	106055	31.18	14.3
5/22/2012	GR-3-D		1	104700	65.71	12.6
5/22/2012	GR-3-D	GR3 Calc. #2	2	105300	55.38	12.8
5/22/2012	GR-3-D		3	105400	55.02	11.3
7/31/2012	GR-3-D		1	108600	23.27	11.7
7/31/2012	GR-3-D	GR3 Calc. #2	2	114300	22.39	13.3
7/31/2012	GR-3-D		3	113900	21.53	11.3
7/31/2012	GR-3-D		4	114600	19.11	13.1

## COMPLIANCE ASSURANCE MONITORING PLAN C

### BACKGROUND:

#### Emissions Unit

Description: C Boiler  
Identification: GR-2-L  
Facility: Green River Soda Ash Plant, Wyoming, USA

#### Applicable Regulation, Emission Limit, and Monitoring Requirements

Regulation No.: Operating Permit No. 3-1-123  
Emission Limit: 50.0 lb/hr PM for each unit.  
Monitoring Requirements: CAM for PM

Control Technology Electrostatic Precipitator (ESP)

### MONITORING APPROACH:

#### Indicator:

Total power from each ESP will be used as an indicator. Normal process operations will not produce conditions that adversely affect the ESP, so no process operational parameters will be monitored. Monitoring is not required when the fan is off.

#### Rationale:

ESP collection efficiency is related to the total power within its fields. Stack testing has shown the minimum levels that must be maintained to provide a reasonable assurance of compliance with the PM limit (see stack test results and rationale for justification of indicator minimums selected).

#### Measurement Approach:

ESP voltage and current are measured for each field, using a voltmeter and an ammeter. The total power (P) input to each ESP is the sum of the products of the voltage (KV) and current (mA) in each field and each compartment:  $P = V_{inletA}I_{inletA} + V_{inletB}I_{inletB} + V_{centerA}I_{centerA} + V_{centerB}I_{centerB} + V_{outletA}I_{outletA} + V_{outletB}I_{outletB}$ . Voltage and current are measured continuously and used to calculate the power every 15 minutes.

Analytical devices required: AVC (Automatic Voltage Controllers)

#### Indicator Range:

An excursion is defined as a three-hour block average ESP power input less than 12.9 KW, which will trigger an alarm in the control room. Excursions trigger an inspection, corrective action and a reporting requirement. Duration of the startup

and shutdown periods will be minimized to the extent reasonably, safely and practicably possible. Startup and shutdown events will be reported in the required semi-annual reports.

**Performance Criteria:**

QA/QC Practices  
and Criteria:

Inspection and operation of the AVCs will be checked during annual boiler inspections. Confirm the ammeter and voltmeter zero when the ESP is not operating.

**Monitoring Report:**

A report will be submitted semi-annually and will include the number, duration, cause, and the corrective actions taken for excursions.

**Quality Improvement Plan (QIP) Threshold:**

It is proposed that the QIP threshold be when excursions plus startup and shutdown periods are in excess of 10% of the operating time for the unit in a six-month period. Operating time is defined as the number of hours the fan is on. If the QIP threshold is exceeded in a semi-annual reporting period, a QIP will be developed and implemented. The QIP threshold will not be applicable when the unit has operated for less than 400 hours in a six-month period.

**RESPONSE TO EXCURSION:**

Upon noting an alarm, an operator will immediately notify maintenance to inspect the ESP. Maintenance personnel will inspect the ESP within 4 hours of receiving notification and make needed repairs as soon as practicable.

**JUSTIFICATION FOR MONITORING APPROACH:**

**Background:**

The pollutant-specific emission unit in the C-boiler is an ESP unit. ESP here has three fields with two compartments each.

**Rationale for Performance Indicators and Operating Ranges:**

In an ESP, electric fields are established by applying a direct-current voltage across a pair of electrodes: a discharge electrode (wire) and a collection electrode (plate). Particulate matter suspended in the gas stream is electrically charged by passing through the electric field around each negatively charged wire. The negatively charged particles then migrate toward the positively charged collection plate where they form a surface layer on the plate. The particulate layer falls from the plate when the plates are rapped.

The automatic voltage controllers evaluate the energy required to charge the particles just prior to initiating a spark across the air space between the wires and

the plate. The most efficient operation occurs when maximum power is supplied at a level just below the spark over point. The AVC maintains the highest possible average ESP power levels by controlling the spark rate.

The total power is a function of voltage and current. Voltage will build up in the wires until the air space is ionized sufficiently enough to result in a spark. Low voltage levels are an indication of close clearances (swinging wires) or grounded wires. The current flow from the wires to the plates decreases as the resistance to electric flow increases due to dust build-up from poor rapping efficiency. Monitoring total power will provide reasonable assurance that the ESP is functioning properly.

**Selection of Electrostatic Precipitator Operating Ranges:**

The selected excursion level is the three hour block average of three consecutive one hour average total power readings less than 12.9 KW. When an excursion occurs, corrective action will be initiated, beginning with an evaluation of the occurrence to determine the action required to correct the situation. All excursions will be documented and recorded.

The indicator range for the ESP power was selected based upon the minimum total power measured during compliance testing to meet the 50.0 lb/hr permit limit. A stack test is determined to pass the particulate emission limit when the average of three one-hour stack test emission rates is below 50.0 lb/hr. This is the rationale for defining the minimum operating total power.

**STACK TEST RESULTS:**

DATE	Source	Process	RUN #	ESP KW	lb/hr	Opacity
5/25/1995	GR-2-L	C Boiler	1	29.0	42.4	10.7
5/25/1995	GR-2-L		2	27.9	39.2	10.1
5/25/1995	GR-2-L		3	30.2	42.4	10.5
11/3/1999	GR-2-L	C Boiler	1	17.5	39.8	6.4
11/3/1999	GR-2-L		2	19.0	37.1	6.5
11/3/1999	GR-2-L		3	20.6	36.0	5.2
9/7/2000	GR-2-L	C Boiler	1	No Data	17.3	5.2
9/7/2000	GR-2-L		3	No Data	22.2	5.3
9/7/2000	GR-2-L		4	No Data	44.8	10.2
6/25/2002	GR-2-L	C Boiler	1	40.8	28.2	10.5
6/25/2002	GR-2-L		2	39.4	25.9	8.3
6/25/2002	GR-2-L		3	42.9	25.8	8.5
3/26/2003	GR-2-L	C Boiler	1	39.3	20.1	9
3/26/2003	GR-2-L		2	37.9	21.3	9.1
3/26/2003	GR-2-L		3	37.5	26.8	9.3
10/26/2004	GR-2-L	C Boiler	1	24.0	49.7	14
10/26/2004	GR-2-L		2	26.1	52.7	14.1
10/26/2004	GR-2-L		3	27.2	47.8	12.8

DATE	Source	Process	RUN #	ESP KW	Ib/hr	Opacity
12/17/2004	GR-2-L		1	32.9	11.4	7.4
12/17/2004	GR-2-L	C Boiler	2	33.2	24.9	7.1
12/17/2004	GR-2-L		3	32.9	23.7	7.4
4/8/2005	GR-2-L		1	12.9	40.2	11.7
4/8/2005	GR-2-L	C Boiler	2	11.8	40.7	11.7
4/8/2005	GR-2-L		3	14.1	36.4	10.4
8/15/2006	GR-2-L		1	39.6	21.8	13.4
8/15/2006	GR-2-L	C Boiler	2	42.2	20.7	12.7
8/15/2006	GR-2-L		3	46.2	20.5	12.2
11/2/2007	GR-2-L		1	24.4	25.9	9.8
11/2/2007	GR-2-L	C Boiler	2	26.7	21.4	9.1
11/2/2007	GR-2-L		3	31.5	21.1	9.2
7/17/2008	GR-2-L		1	19.9	45.2	14.3
7/17/2008	GR-2-L	C Boiler	2	21.3	45.6	12.9
7/17/2008	GR-2-L		3	22.2	42.4	11.8
8/4/2009	GR-2-L		1	15.6	51.0	15.5
8/4/2009	GR-2-L	C Boiler	2	22.2	37.0	14
8/4/2009	GR-2-L		3	22.9	28.0	12.6
6/29/2010	GR-2-L		1	48.9	17.2	7.4
6/29/2010	GR-2-L	C Boiler	2	48.8	16.9	7.4
6/29/2010	GR-2-L		3	48.5	22.0	7.7
7/7/2011	GR-2-L		1	53.00	25.8	12.5
7/7/2011	GR-2-L	C Boiler	2	52.46	21.7	13
7/8/2011	GR-2-L		3	50.58	21.5	12.2

## COMPLIANCE ASSURANCE MONITORING PLAN D

### BACKGROUND:

#### Emissions Unit

Description: D Boiler  
Identification: GR-3-W  
Facility: Green River Soda Ash Plant, Wyoming, USA

#### Applicable Regulation, Emission Limit, and Monitoring Requirements

Regulation No.: Operating Permit No. 3-1-123  
Emission Limit: 80 lb/hr PM for each unit.  
Monitoring Requirements: CAM for PM

#### Control Technology Electrostatic Precipitator (ESP)

### MONITORING APPROACH:

#### Indicator:

Total power from each ESP will be used as an indicator. Normal process operations will not produce conditions that adversely affect the ESP, so no process operational parameters will be monitored. Monitoring is not required when the fan is off.

#### Rationale:

ESP collection efficiency is related to the total power within its fields. Stack testing has shown the minimum levels that must be maintained to provide a reasonable assurance of compliance with the PM limit (see stack test results and rationale for justification of indicator minimums selected).

#### Measurement Approach:

ESP voltage and current are measured for each field, using a voltmeter and an ammeter. The total power (P) input to each ESP is the sum of the products of the voltage (KV) and current (mA) in each field and each compartment:  $P = V_{inletA}I_{inletA} + V_{inletB}I_{inletB} + V_{centerA}I_{centerA} + V_{centerB}I_{centerB} + V_{outletA}I_{outletA} + V_{outletB}I_{outletB}$ . Voltage and current are measured continuously and used to calculate the power every 15 minutes.

#### Analytical devices required: AVC (Automatic Voltage Controllers)

#### Indicator Range:

An excursion is defined as a three-hour block average ESP power input less than 33.5 KW, which will trigger an alarm in the control room. Excursions trigger an inspection, corrective action and a reporting requirement. Duration of the startup

and shutdown periods will be minimized to the extent reasonably, safely and practicably possible. Startup and shutdown events will be reported in the required semi-annual reports.

**Performance Criteria:**

QA/QC Practices  
and Criteria:

Inspection and operation of the AVCs will be checked during annual boiler outages. Confirm the ammeter and voltmeter zero when the ESP is not operating.

**Monitoring Report:**

A report will be submitted semi-annually and will include the number, duration, cause, and the corrective actions taken for excursions.

**Quality Improvement Plan (QIP) Threshold:**

It is proposed that the QIP threshold be when excursions plus startup and shutdown periods are in excess of 10% of the operating time for the unit in a six-month period. Operating time is defined as the number of hours the fan is on. If the QIP threshold is exceeded in a semi-annual reporting period, a QIP will be developed and implemented. The QIP threshold will not be applicable when the unit has operated for less than 400 hours in a six-month period.

**RESPONSE TO EXCURSION:**

Upon noting an alarm, an operator will immediately notify maintenance to inspect the ESP. Maintenance personnel will inspect the ESP within 4 hours of receiving notification and make needed repairs as soon as practicable.

**JUSTIFICATION FOR MONITORING APPROACH:**

**Background:**

The pollutant-specific emission unit in the D-boiler is an ESP unit. ESP here has three fields with two compartments each.

**Rationale for Performance Indicators and Operating Ranges:**

In an ESP, electric fields are established by applying a direct-current voltage across a pair of electrodes: a discharge electrode (wire) and a collection electrode (plate). Particulate matter suspended in the gas stream is electrically charged by passing through the electric field around each negatively charged wire. The negatively charged particles then migrate toward the positively charged collection plate where they form a surface layer on the plate. The particulate layer falls from the plate when the plates are rapped.

The automatic voltage controllers evaluate the energy required to charge the particles just prior to initiating a spark across the air space between the wires and

the plate. The most efficient operation occurs when maximum power is supplied at a level just below the spark over point. The AVC maintains the highest possible average ESP power levels by controlling the spark rate.

The total power is a function of voltage and current. Voltage will build up in the wires until the air space is ionized sufficiently enough to result in a spark. Low voltage levels are an indication of close clearances (swinging wires) or grounded wires. The current flow from the wires to the plates decreases as the resistance to electric flow increases due to dust build-up from poor rapping efficiency. Monitoring total power will provide reasonable assurance that the ESP is functioning properly.

**Selection of Electrostatic Precipitator Operating Ranges:**

The selected excursion level is the three hour block average of three consecutive one hour average total power readings less than 33.5 KW. When an excursion occurs, corrective action will be initiated, beginning with an evaluation of the occurrence to determine the action required to correct the situation. All excursions will be documented and recorded.

The indicator range for the ESP power was selected based upon the minimum total power measured during compliance testing to meet the 80.0 lb/hr permit limit. A stack test is determined to pass the particulate emission limit when the average of three one-hour stack test emission rates is below 80.0 lb/hr. This is the rationale for defining the minimum operating total power.

**STACK TEST RESULTS:**

DATE	Source	Process	RUN #	Total KW	Lbs./Hr	Opacity
11/3/1999	GR-3-W	D BOILER	1	31.8	58.9	10.1
11/3/1999	GR-3-W		2	33.6	49.1	8.9
11/3/1999	GR-3-W		3	35.0	46.1	8.1
9/6/2000	GR-3-W	D BOILER	1	No Data	39.1	8
9/6/2000	GR-3-W		2	No Data	33.8	6.4
9/6/2000	GR-3-W		3	No Data	31.8	5.8
5/31/2001	GR-3-W	D BOILER	1	42.0	32.8	7.3
5/31/2001	GR-3-W		2	42.7	29.6	7
5/31/2001	GR-3-W		3	45.9	33.0	7.9
3/13/2002	GR-3-W	D BOILER	1	48.8	46.2	11.1
3/13/2002	GR-3-W		2	34.4	59.1	12.3
3/13/2002	GR-3-W		3	31.8	47.0	11.5
5/22/2003	GR-3-W	D BOILER	1	33.6	35.0	7.7
5/22/2003	GR-3-W		2	38.8	30.2	6.4
5/22/2003	GR-3-W		3	41.6	24.1	7.3
10/21/2004	GR-3-W	D BOILER	1	37.0	62.7	14.8
10/21/2004	GR-3-W		2	36.0	58.7	14.4
10/21/2004	GR-3-W		3	35.1	55.8	14.2

DATE	Source	Process	RUN #	Total KW	Lbs./Hr	Opacity
8/16/2005	GR-3-W	D BOILER	1	64.3	12.1	9.3
8/16/2005	GR-3-W		2	63.4	10.8	9
8/16/2005	GR-3-W		3	64.3	10.4	9
8/15/2006	GR-3-W	D BOILER	1	52.7	30.6	9.3
8/15/2006	GR-3-W		2	54.6	32.6	8.8
8/15/2006	GR-3-W		3	53.6	25.7	7.8
11/2/2007	GR-3-W	D BOILER	1	40.5	45.6	12.9
11/2/2007	GR-3-W		2	41.8	56.4	12.5
11/2/2007	GR-3-W		3	42.7	59.8	11.9
7/17/2008	GR-3-W	D BOILER	1	31.2	23.4	9.3
7/17/2008	GR-3-W		2	35.6	21.0	8.8
7/17/2008	GR-3-W		3	41.7	18.5	7.8
7/15/2009	GR-3-W	D BOILER	1	43.8	27.0	9.9
7/15/2009	GR-3-W		2	49.1	33.7	9.1
7/15/2009	GR-3-W		3	53.9	36.1	9.4
7/27/2010	GR-3-W	D BOILER	1	101.5	32.2	9
7/27/2010	GR-3-W		2	106.2	35.3	8.9
7/27/2010	GR-3-W		3	102.2	43.2	10.1
11/18/2011	GR-3-W	D BOILER	1	95.1	51.3	11.4
11/18/2011	GR-3-W		2	105.1	63.1	11.7
11/18/2011	GR-3-W		3	11.3	54.6	11.1
5/24/2012	GR-3-W	D BOILER	1	112.9	36.5	7.7
5/25/2012	GR-3-W		2	101.3	46.4	9.9
5/25/2012	GR-3-W		3	102.1	44.9	9.9

COMPLIANCE ASSURANCE MONITORING PLAN E

VENTURI SCRUBBERS

Source ID: GR-1-E(1), GR-1-E(2), GR-1-J(1), GR-1-J(2), GR-2-F, GR-2-G, GR-2-H, GR-2-J, GR-3-F, GR-3-G, GR-3-K, GR-3-L, GR-3-M, GR-3-N, GR-3-P, GR-3-Q, GR-3-R

BACKGROUND

Emission Unit: GR-1-E(1)  
Description: Venturi Scrubber  
Identification: GR1 Dissolver Scrubber

Emission Unit: GR-1-E(2)  
Description: Venturi Scrubber  
Identification: GR1 Dissolver Scrubber

Emission Unit: GR-1-J(1)  
Description: Venturi Scrubber  
Identification: GR1 Housekeeping scrubber-Rotex screens

Emission Unit: GR-1-J(2)  
Description: Venturi Scrubber  
Identification: GR1 Housekeeping scrubber-Rotex screens

Emission Unit: GR-2-F  
Description: Venturi Scrubber Ducon (Model 35/72) Type VVO  
Identification: GR2 Dryer scrubber #4

Emission Unit: GR-2-G  
Description: Venturi Scrubber (Ducon Model 35/72) Type VVO  
Identification: GR2 Dryer scrubber #5

Emission Unit: GR-2-H  
Description: Venturi Scrubber (Ducon Model 35/72) Type VVO  
Identification: GR2 Dryer scrubber #6

Emission Unit: GR-3-F  
Description: Venturi Scrubber (Ducon Model 23/54) Type VVO  
Identification: GR3 Dissolver scrubber #1

Emission Unit: GR-3-G  
Description: Venturi Scrubber (Ducon Model 23/54) Type VVO  
Identification: GR3 Dissolver scrubber #2

**Emission Unit:** GR-3-K  
**Description:** Venturi Scrubber  
**Identification:** GR3 Dryer scrubber #1 (Ducon Model 35/72) Type VVO

**Emission Unit:** GR-3-L  
**Description:** Venturi Scrubber (Ducon Model 35/72) Type VVO  
**Identification:** GR3 Dryer scrubber #2

**Emission Unit:** GR-3-M  
**Description:** Venturi Scrubber (Ducon Model 35/72) Type VVO  
**Identification:** GR3 Dryer scrubber #3

**Emission Unit:** GR-3-N  
**Description:** Venturi Scrubber (Ducon Model 35/72) Type VVO  
**Identification:** GR3 Dryer scrubber #4

**Emission Unit:** GR-3-P  
**Description:** Venturi Scrubber (Ducon Model 35/72) Type VVO  
**Identification:** GR3 Dryer scrubber #5

**Emission Unit:** GR-3-Q (Ducon Model 33/72) Type VVO  
**Description:** Venturi Scrubber  
**Identification:** GR3 Dryer scrubber #6

**Emission Unit:** GR-3-R (Ducon Model 35/72) Type VVO  
**Description:** Venturi Scrubber  
**Identification:** GR3 Dryer vent scrubber

**Facility:** TATA Chemical (Soda Ash) Partners  
Green River, Wyoming

**Applicable Regulation, Emission Limit and Monitoring Requirements:**

**Regulation or Permit No.:** Permit OP-123-1 applies to all venturi scrubbers-Daily recordkeeping of flow and differential pressure, semi-annual compliance reporting.  
Permits MD-129A, MD-369 apply to GR-1-J(1), GR-1-J(2), GR-2-J and GR-3-Q scrubbers requiring continuous monitoring of differential pressure and re-circulation flow rates, semi-annual reporting. Limits established based upon NSPS regulations at +/-30% of values during stack test.

**Emission Limit:** GR-1-J(1) and GR-1-J(2): 20% opacity; 2.0 Lbs./Hr.

Emission Limit: GR-2-J 20% opacity; 1.5 Lbs./Hr.  
 Emission Limit: GR-1-E(1)  
 GR-1-E(2) 20% opacity; 3.0 Lbs./Hr.  
 Emission Limit: GR-2-F  
 GR-2-G  
 GR-2-H 4.0 Lbs./Hr.  
 Emission Limit: GR-3-F and GR-3-G; 20% opacity; 2.0 Lbs./Hr.  
 Emission Limit: GR-3-K, GR-3-L, GR-3-M, GR-3-N, GR-3-P, GR-3-Q: 20%  
 opacity; 1.5 Lbs./Hr.  
 Emission Limit; GR-3-R: 20% opacity; 2.0 Lbs./Hr.

Control Technology: Venturi Scrubbers

### MONITORING APPROACH

Indicators: Weekly visual "see or no see" observations. Daily recording of differential pressure and scrubber re-circulation rate.

#### Rationale:

The scrubbers listed above are equipped with flow meters and magnehelic gauges/differential pressure cells to monitor scrubber performance. Without water, the scrubber cannot operate as designed. Without adequate differential pressure across the scrubbers, less dust is picked up by the system. Too much re-circulation water will result in wasted water and too much differential pressure results in a loss of product as it is sucked from the dryers/dissolvers. Re-circulation rate and differential pressure were selected based on operating history, visual emission evaluations and stack testing. No visible emissions have been noted when operating the scrubbers within +/-30% of the values for flow and pressure during a VEE or an emission test. Low flow results in increased concentrations of soda ash in the system and scaling of lines and demister pads. Too much differential pressure will result in pulling product or raw material from the production circuit and wasting it. It is therefore very important to operate the scrubbers within the specified ranges.

#### Measurement:

The scrubbers are equipped with flow meters and magnehelic gauges /differential pressure cells to monitor the scrubber performance. Readings of flow and differential pressure are monitored daily and documented on an environmental monitoring form for each plant. When the flows or the differential pressure are out of range, the operators are to make adjustments to the process to maintain compliance with the operating parameters. Flow control is through opening or closing the scrubber liquor recirculation valve. Differential pressure control is maintained by adjusting the scrubber dampers to increase or decrease the suction through the scrubber.

The measurement parameters for flow and pressure were determined during stack testing. A +/-30% range of the values during testing were assigned to each scrubber based on the NSPS. Four of the scrubbers are equipped with continuous monitoring equipment and can be read directly from process computers. Field readings are required for most of the scrubbers. Readings are taken once per day and documented on individual plant environmental log-sheets.

#### **Monitoring Devices Required:**

- Flow meters
- Magnehelic gauges or differential pressure cells
- Environmental logsheets
- Operator/Supervisor Process Computers

#### **QA/QC Procedures**

- Weekly "see or no see" Visible Emission Observations
- Daily operator documentation of flow and differential pressure
- Semi-annual Emission Reports

#### **Indicator Range**

The indicator ranges selected result in no visible emissions. The ranges were derived utilizing NSPS standards for scrubbers based on compliance testing.

#### **QIP (Quality Improvement Plan) Threshold**

When scrubber performance is out of compliance with the established opacity ranges, action will be taken to restore scrubber operations within the designated ranges. The QIP will be implemented when the scrubber is out of range for 5% in the semi-annual reporting period. A quality improvement plan will be developed and implemented when the 95% compliance limit is not met. Excessive emissions as a result of start-up, shutdown or equipment failure will not be counted as QIP events even though they are excess emissions.

### **JUSTIFICATION FOR MONITORING APPROACH**

#### **Background**

Tata Chemical operates seventeen (17) venturi scrubbers in two processing plants. Four of the scrubbers are utilized in the ore dissolving circuit, nine in the product drying circuit and four scrubbers are utilized for housekeeping (indoor dust) control to collect vapors and dust off product screens and tanks.

#### **Rationale for Performance Indicators and Operating Ranges**

Scrubber recirculation flow and differential pressure were selected because these two parameters are essential in producing our product with minimal emissions. If properly operating, there are no visible emissions from the scrubber stacks. Without re-circulation flow, the dust is not scrubbed. In addition,

~~the lack of adequate recirculation flow~~ increases the chance of plugging the scrubber. Without differential pressure, the product is not effectively dried and indoor air quality also suffers due to fugitive emissions. Operating ranges were selected through the use of stack tests or visible emission evaluations (VEEs). Scrubber flow and differential pressure were monitored and documented during stack tests and VEEs. A range of  $\pm 30\%$  of the flow and pressure were calculated to generate a normal operating range where visible emissions were absent.

## COMPLIANCE ASSURANCE MONITORING PLAN F

### ORICLONE SCRUBBERS

Source ID: GR-1-F, GR-1-G, GR-1-H

#### BACKGROUND

**Emission Unit:** GR-1-F  
**Description:** Oriclone Scrubber  
**Identification:** GR1 Dryer #1 Scrubber

**Emission Unit:** GR-1-G  
**Description:** Oriclone Scrubber  
**Identification:** GR1 Dryer #2 Scrubber

**Emission Unit:** GR-1-H  
**Description:** Oriclone Scrubber  
**Identification:** GR1 Dryer #3 Scrubber

**Facility:** Tata Chemical (Soda Ash) Partners  
Green River, Wyoming

#### **Applicable Regulation, Emission Limit and Monitoring Requirements:**

**Regulation or Permit No.:** Permit OP-123-1 applies to three the (3) Oriclone scrubbers. Daily recordkeeping is required for fan amps, flow. Semi-annual compliance reporting.

<b>Emission Limit:</b>	GR-1-F	20% opacity: 4.0 Lbs./Hr.
<b>Emission Limit:</b>	GR-1-G	20% opacity: 4.0 Lbs./Hr.
<b>Emission Limit:</b>	GR-1-H	20% opacity 4.0 Lbs./Hr.

**Control Technology:** Oriclone Scrubbers

#### MONITORING APPROACH

**Indicators:** Weekly visual "see or no see" observations  
Daily recording of scrubber re-circulation rate and fan amps.

#### **Rationale:**

The scrubbers listed above are equipped with flow meters and fan amp gauges. The Oriclone scrubbers are different from traditional venturi scrubbers. Oriclone scrubbers rely on the scrubber re-circulation water mixing directly with the fan versus water introduction in the cyclone of the venturi style scrubber. The fan breaks the water into fine droplets, mixing with the dust in the scrubber body. Demister pads (packing) located on the exit side of the scrubber (stack) prevents

the water/particulate from discharging to the atmosphere. The fan amps are critical in the Oriclone scrubber as too much water will waterlog, stall and trip the fan. Differential pressure is not read on the Oriclone scrubber.

**Measurement:**

The scrubbers are equipped with flow meters and amp gauges to monitor the scrubber performance. Readings of flow and fan amps are monitored daily and documented on an environmental monitoring form for each plant. When the flows or amps are out of range, the operators are to make adjustments to the process to maintain compliance with the operating parameters. Flow control is through opening or closing the scrubber liquor re-circulation valve. Fan amps are adjusted by opening or closing dampers.

The parameters for flow and amps were determined by conducting a Method 9 visual evaluation and documenting operating conditions at the time of the Method 9 readings. A range of +/-30% of flow meters and amp gauges was assigned to each scrubber based on the results of the tests or evaluations per NSPS standards.

**Monitoring Devices Required:**

- Flow meters (field and computer)
- Environmental logsheets
- Operator/Supervisor Process Computers
- Fan amp gauge

**QA/QC Procedures**

- Weekly "see or no see" Visible Emission Observations
- Daily operator documentation of flow and fan amps.
- Semi-annual Emission Reports

**Indicator Range**

The indicator ranges selected result in no visible emissions. Indicator ranges were established based on stack test data and the application of NSPS regulations.

**QIP (Quality Improvement Plan) Threshold**

When scrubber performance is out of compliance with the established ranges, action will be taken to restore scrubber operations within the designated range. The QIP will be implemented when the scrubber is out of range for 5% in the semi-annual reporting period. A quality improvement plan will be developed and implemented when the 95% compliance limit is not met. Excessive emissions as a result of start-up, shutdown or equipment failure will not be counted as QIP events even though they are excess emissions.

## JUSTIFICATION FOR MONITORING APPROACH

### **Background**

Tata Chemical operates three (3) oriclone scrubbers in GRI-II processing plant. All three of the scrubbers are utilized in the drying circuit. The scrubbers draw moisture and dust off the steam-tube dryers. This process keeps the product dry and building dust to a minimum. Dryers typically do not emit visible emissions as the scrubber water is mixed with the dust-laden air at the fan. The dust is dissolved in the water and trapped against the demister pads or packing and discharged into the bottom of the vessel where it is reprocessed. Lack of water and insufficient packing is about the only way to emit dust out the stack. Lack of water would also plug the demister section of the scrubber resulting in wet or moist product and a dusty building. Method 9 tests with almost no flow yielded no visible emissions.

### **Rationale for Performance Indicators and Operating Ranges**

Scrubber re-circulation flow and fan amps were selected because these two parameters are essential in producing our product with minimal emissions. If properly operating, there are no visible emissions from the scrubber stacks. Without re-circulation flow, the dust is not scrubbed. In addition, the lack of adequate recirculation flow increases the chance of plugging the scrubber. Fan amps are an indicator of overloading the scrubber with water or with dust. Operating ranges were selected through the use of stack tests or visible emission evaluations (VEEs). Scrubber flow and fan amps were monitored and documented during stack tests and VEEs. A range of +/-30% of the flow and fan amps during compliance testing was calculated to generate a normal operating range where visible emissions were absent.

## COMPLIANCE ASSURANCE MONITORING PLAN G

### FILTER BAGHOUSES

Source ID: A-305, A-309, CH-1, CH-2, FD-120, FD-612, FD-613, FD-614, FD-615, FD-616, FD-617, GR-1-A, GR-1-B(1), GR-1-B(2), GR-2-A, GR-2-B, GR-3-A, GR-3-B, GR-3-C, GR-3-U, GR-3-V, RO-1

#### BACKGROUND

Emission Unit: A-305

Description: Buell Norfelt Model 32-CE-256 with BHA "ON DEMAND" Pulse Filter Baghouse

Identification: Crusher A-305 Belt

Emission Unit: A-309

Description: Micropul Model 1215-10-20TRH with BHA "ON DEMAND" Pulse Filter Baghouse

Identification: A-309 Belt and Reclaim system

Emission Unit: CH-1

Description: BHA "ON DEMAND" Filter Baghouse

Identification: Coal Unloading-dump hopper and transfer belts/towers

Emission Unit: CH-2

Description: BHA "ON DEMAND" Filter Baghouse

Identification: Powerhouse Coal Handling-coal tripper belt and coal bunkers

Emission Unit: FD-120

Description: Micropul Model 432-K6-TRH Filter Baghouse

Identification: Crusher recycle screens/201-202 belts

Emission Unit: FD-612

Description: Micropul Model 3025-8-TRH with BHA "ON DEMAND" Pulse Filter Baghouse

Identification: 5 Bin-belts from production plants to top of bin

Emission Unit: FD-613

Description: Micropul Model 1805-8-TRH with BHA "ON DEMAND" Pulse Filter Baghouse

Identification: 4 Bin-belts from production plants to top of bin

**Emission Unit:** FD-614  
**Description:** Micropul Model 2215-8-TRH with BHA "ON DEMAND" Pulse Filter Baghouse

Identification: 4 Bin reclaim baghouse

**Emission Unit:** FD-615  
**Description:** Micropul Model 2215-8-TRH with BHA "ON DEMAND" Pulse Filter Baghouse

Identification: 5 Bin reclaim baghouse

**Emission Unit:** FD-616  
**Description:** Micropul Model 1205-8-TRH with BHA "ON DEMAND" Pulse Filter Baghouse

Identification: FD-606-607 Transfer Tower

**Emission Unit:** FD-617  
**Description:** DCL Model FS-260-G1141-C Filter Baghouse

Identification: Truck Loading Baghouse

**Emission Unit:** GR-1-A  
**Description:** Buell Norfelt Model 28-CE-224 with "ON DEMAND" Pulse Filter Baghouse

Identification: Crusher-GR2 Impactor

**Emission Unit:** GR-1-B(1)  
**Description:** Buell Norfelt Model 24E-188-192D with "ON DEMAND" Pulse Filter Baghouse

Identification: Product loading-loading bins and chutes

**Emission Unit:** GR-1-B(2)  
**Description:** Micropul Model 144S-10-20-TRH with BHA "ON DEMAND" Pulse Filter Baghouse

Identification: Product loading-shaker screen and belt transfer point

**Emission Unit:** GR-2-A  
**Description:** Buell Norfelt Model 32-CE-256 with BHA "ON DEMAND" Pulse Filter Baghouse

Identification: GRI-II ore gallery and ore bin tripper belt

**Emission Unit:** GR-2-B  
**Description:** Micropul Model 100S-10TRHA with BHA "ON DEMAND" Pulse Filter Baghouse

Identification: Product Storage (Bins 1,2 and 3)

**Emission Unit:** GR-3-A  
**Description:** Buell Norfelt Model 40-CE-320 with BHA "ON DEMAND" Pulse Filter Baghouse  
**Identification:** Crusher-GRIII impactor

**Emission Unit:** GR-3-B  
**Description:** Micropul Model 645-10-20TR4 with BHA "ON DEMAND" Pulse Filter Baghouse  
**Identification:** GRIII ore belt transfer tower

**Emission Unit:** GR-3-C  
**Description:** Buel Norfelt Model 8-AE-64 with BHA "ON DEMAND" Pulse Filter Baghouse  
**Identification:** GRIII ore gallery

**Emission Unit:** GR-3-H  
**Description:** Fuller #2FM Unifilter Model B Filter Baghouse  
**Identification:** GRIII Filter Aid Bin

**Emission Unit:** GR-3-U  
**Description:** Buell Norfelt Model 32-CE-256 Filter Baghouse  
**Identification:** GRIII east housekeeping baghouse (screens, elevators and transfer screws)

**Emission Unit:** GR-3-V  
**Description:** Buell Norfelt Model 32-CE-256 Filter Baghouse  
**Identification:** GRIII east housekeeping baghouse (screens, elevators and transfer screws)

**Emission Unit:** RO-1  
**Description:** Micropul Model 320-10-20TRH with BHA "ON DEMAND" Pulse Filter Baghouse  
**Identification:** Crusher-reclaim system 127-8 belts and transfer tower

**Facility:** Tata Chemical (Soda Ash) Partners  
Green River, Wyoming

**Applicable Regulation, Emission Limit and Monitoring Requirements:**

**Regulation or Permit No.:** Permit OP-123-1 applies to all baghouses listed above. Daily recordkeeping is required for differential pressure and fan amps. Also check screw conveyors, airlocks, hoppers and air supply. Method 22 visible emission evaluations will be conducted on regular

workdays (5 days per week, excluding holidays) with the time and location of the evaluation documented. Quarterly documented baghouse inspections. Semi-annual compliance reporting.

Emission Limit:	A-305	7% opacity: 1.51 Lbs./Hr.
Emission Limit:	CH-1	20% opacity: 1.7 Lbs./Hr.
Emission Limit:	CH-2	20% opacity: 1.0 Lbs./Hr.
Emission Limit:	FD-120	7% opacity: 2.0 Lbs./Hr.
Emission Limit:	FD-612	7% opacity: 1.5 Lbs./Hr.
Emission Limit:	FD-613	7% opacity: .5 Lbs./Hr.
Emission Limit:	FD-614	7% opacity: .6 Lbs./Hr.
Emission Limit:	FD-615	7% opacity: 1.0 Lbs./Hr.
Emission Limit:	FD-616	7% opacity: .4 Lbs./Hr.
Emission Limit:	FD-617	7% opacity: .23 Lbs./Hr.
Emission Limit:	GR-1-A	7% opacity: 3.0 Lbs./Hr.
Emission Limit:	GR-1-B(1)	7% opacity: .80 Lbs./Hr.
Emission Limit:	GR-1-B(2)	7% opacity: .6 Lbs./Hr.
Emission Limit:	GR-2-A	7% opacity: 2.95 Lbs./Hr.
Emission Limit:	GR-2-B	7 opacity 3.0 Lbs./Hr.
Emission Limit:	GR-3-A	7% opacity 2.5 Lbs./Hr.
Emission Limit:	GR-3-B	20% opacity 1.0 Lbs./Hr.
Emission Limit:	GR-3-C	20% opacity 1.0 Lbs./Hr.
Emission Limit:	GR-3-U	20% opacity 3.0 Lbs./Hr.
Emission Limit:	GR-3-V	20% opacity 3.0 Lbs./Hr.
Emission Limit:	RO-1	7% opacity 1.4 Lbs./Hr.
Emission Limit:	GR-3-H	20% opacity Nil

**Control Technology:** Filter Baghouses

**MONITORING APPROACH**

**Indicators:** Documented visual (Method 22) observations on regular workdays (5 days per week, excluding holidays).

Daily recording of differential pressure, fan amps, general operation  
(air pressure, hoppers, screws, airlocks)

**Rationale:**

The baghouses listed above are equipped with magnetelic gauges and fan amp gauges. Differential pressure across the clean and dirty sides of the baghouses is used to determine whether the bags are plugged or if there is leakage through the clean side into the atmosphere. Typically, the baghouses will operate with a differential pressure between 2 and 12 inches of water. Applications where moisture is present may increase the differential pressure

due to the bags being coated or moist. Differential pressures greater than 12 inches indicate the magnehelic gauge impulse lines may be plugged or the bags are caked with material. Lack of differential pressure indicates the magnehelic gauge is plugged or the bags have holes in them and the pressure is the same on both the clean and dirty side.

#### **Measurement:**

Documented Method 22 visual observations will be conducted and daily (5 days per week, excluding holidays). Quarterly inspections will be conducted and documented. The baghouses are equipped with magnehelic gauges and fan amp meters to monitor the baghouse performance. Readings of differential pressure and fan amps are monitored daily and documented on the environmental monitoring forms for each portion of the plant. However, the best measurement technique is a visual observation. The magnehelic gauges are indicators of bag condition. Fan amps are useful in determining the load or how hard the baghouse is working. Repairs are made as soon as visual emissions are observed from baghouses.

#### **Monitoring Devices Required:**

- Magnehelic gauges and amp meters
- Environmental logsheets
- Method 22 visual evaluations.

#### **QA/QC Procedures**

- Documented Method 22 Visible Emission Observations.
- Quarterly baghouse inspections
- Daily operator documentation of fan amps and differential pressure
- Semi-annual Emission Reports

#### **Indicator Range**

As stated above, daily documented visual observations and daily baghouse checks by operators are the most accurate indicators. Any visible emission is outside of the acceptable range and action is taken to repair the baghouses.

#### **QIP (Quality Improvement Plan) Threshold**

No QIP is necessary for baghouses.

### **JUSTIFICATION FOR MONITORING APPROACH**

#### **Background**

Tata Chemical operates 22 baghouses throughout the facility. Baghouses are used to collect dust from ore handling operations such as conveyor belts, screens, crushers, transfer points, coal handling operations (coal unloading and coal bunkers), housekeeping for product screens, screw conveyors and elevators, and finished product handling operations (storage bins, reclaim belts,

shaker screens, loading chutes and transfer points). All of the baghouses utilize bag filters.

### Rationale for Performance Indicators and Operating Ranges

Baghouses are utilized to collect nuisance dust in buildings and off transfer points throughout the facility. They are simple pieces of equipment that operate with the use of fans and supplied air for pulsing or cleaning the bags. Dust collected in the baghouse hoppers is discharged through airlocks and screw conveyors back into the system for reclamation or to dissolvers where it is recovered from the ponds in liquid form. Baghouses either "plume or do not plume" which makes them easy to check or inspect. The primary performance indicator for baghouses is the presence of visible emissions. Additional indicators for proper baghouse operations are differential pressure across the baghouses and fan amp readings to determine how hard the baghouse is working. Additional indicators that baghouses are operating properly are inspection and verification the screw conveyors, airlocks and pulsing systems are working. If properly operating, there are no visible emissions from the baghouse stacks.

**Appendies B –G are reserved**  
**(modified February 22, 2013)**



**Appendix H**  
QA Plan for GR-3 Calciners



THE STATE OF WYOMING



MIKE SULLIVAN  
GOVERNOR

## Department of Environmental Quality

Herschler Building • 122 West 25th Street • Cheyenne, Wyoming 82002

Administration  
(307) 777-7937

Air Quality Division  
(307) 777-7391

Land Quality Division  
(307) 777-7756  
FAX (307) 634-0789

Solid Waste Management Program  
(307) 777-7752

Water Quality Division  
(307) 777-7781

December 20, 1989

Mr. Rick Casey  
Plant Manager  
General Chemical Corporation  
P.O. Box 551  
Green River, WY 82935-0551

Dear Mr. Casey:

I have reviewed the quality assurance plan submitted for the opacity monitors on your GR3-D and GR3-E calciner.

I find the quality assurance plan to be complete and acceptable to this office. If you should make any changes in the plan, this office must be notified in writing of the changes.

If I may be of any assistance, please feel free to contact me.

Sincerely,

A handwritten signature in cursive script that reads "F. Gerald Blackwell".

F. Gerald Blackwell  
Quality Assurance Coordinator  
Air Quality Division

FGB:md

cc: Lee Gribovicz

THE UNIVERSITY OF CHICAGO

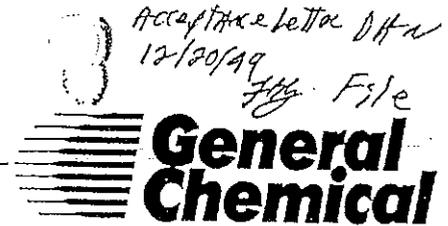
PHYSICS DEPARTMENT

1952

PHYSICS DEPARTMENT

**General Chemical Corporation**  
acting as agent for General Chemical (Soda Ash) Partners

Green River Soda Ash Operations  
P. O. Box 551  
Green River, Wyoming 82935-0551  
(307)-875-3350



November 8, 1989

Mr. F. Gerald Blackwell *FGB*  
Quality Assurance Coordinator  
Air Quality Division  
Wyoming Department of Environmental Quality  
122 West 25th Street  
Cheyenne, Wyoming 82002



Dear Mr. Blackwell:

Enclosed is the quality assurance plan for General Chemical's CEMS for GR-3-D and GR-3-E calciner opacity monitors. The monitors completed Appendix B Performance Spec. 1 testing on October 31 and were placed in service as a CEMS on November 1, 1989.

If you have any questions, please advise.

Very truly yours,

*R. Casey by MDW*

Rick Casey  
Plant Manager  
General Chemical Corporation,  
Acting as Agent for  
General Chemical (Soda Ash) Partners

MDW/

Enclosures

cc: Mr. Lee Gribovicz  
WY DEQ, AQD  
210 Lincoln St.  
Lander, WY 82520



**GENERAL CHEMICAL**  
**CONTINUOUS EMISSION MONITORING SYSTEM**  
**QUALITY ASSURANCE PLAN**  
**FOR GR3-D AND GR3-E CALCINER**  
**OPACITY MONITORS**

**November 8, 1989**

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Company Information

Company Name: General Chemical

Mailing Address: P.O. Box 551  
Green River, WY 82935

Plant Address: West of Green River, WY

Company Contact: Dale Jensen  
Technical Manager

Phone: 1-307-872-3445

Monitor Identification

The CEMS pertaining to this plan consist of instrumentation installed on two gas-fired calciners. These are:

#1 Calciner      source code GR-3-D

#2 Calciner      source code GR-3-E

# 1 Calciner

Manufacturer :      Lear Siegler  
Model :              RM-41  
Emission Detected : Opacity  
Control Unit S/N : 66480  
Transceiver S/N : 480  
Type :                Double Pass  
OPLR :                0.5

# 2 Calciner

Manufacturer :      Lear Siegler  
Model :              RM-41  
Emission Detected : Opacity  
Control Unit S/N : 96502  
Transceiver S/N : 502  
Type :                Double Pass  
OPLR :                0.5

Both monitors were installed in 1977 and have operated on stack since that time but have not been part of a CEMS.

## Monitor Calibration

The calibration procedure used is the factory's field service procedure. A copy is enclosed with the plan.

## Calibration Drift Assessment and Adjustment

CEMS instrumentation will be evaluated daily for calibration drift. Calibration data recovered from the CEMS computer system will be evaluated by a program which calculates drift data. This program allows drift calculations for multiple days (up to 31) to be viewed so that drift data exceeding the limits may be determined on a consecutive day basis.

Drift data exceeding 4% opacity (2 x 2% limit of Appendix B Perf. Spec. 1) will be flagged with a single asterisk (\*). Drift data exceeding 8% opacity (4 x 2% limit of Appendix B Perf. Spec. 1) will be flagged with a double asterisk (\*\*).

The zero and/or span will be adjusted whenever the respective drift value deviates by more than 4% opacity. Adjustment of zero and/or span values will be accomplished by cleaning the transceiver lenses and recalibrating, or by adjusting the zero or span potentiometers on the optical density and opacity printed circuit boards as warranted.

The program which evaluates calibration data for drift also performs the calculations needed for an assessment of monitor precision. Only valid span data are used. Data are not used where the span drift exceeds 8% opacity. Precision statistics are calculated each calendar month for each monitor.

## Monitor Maintenance

Maintenance activities are conducted on daily and quarterly intervals. Items covered include those recommended in the instrument manual as well as additional ones determined necessary by past experience.

### Daily:

1. Check reference level mA current on control unit front panel meter. Normal operation (20mA) is indicated within the green area of the meter face.
2. Check zero compensation offset. This value should be between -0.02 and +0.02 optical density units.
3. Check for any illuminated fault indicators.
4. Review previous 24 hr. computer printouts checking for fault indications. Also observe emission levels and evaluate these in terms of levels to be expected from normal operation.
5. Inspect zero and span data for excessive drift or abnormal values.

### Quarterly:

1. Inspect air purge equipment (blowers, shutters, hoses, etc.)
2. Clean prefilter canisters.
3. Change transceiver and retroreflector air purge paper element cartridges.
4. Clean transceiver and retroreflector lenses.
5. Check transceiver and retroreflector alignment.
6. Activate calibration sequence and check zero compensation offset. Check "Zero" and "Span" mode mA readings on the control unit meter face against calibration values.
7. Check all indicator lights for proper operation.
8. Clean the instrumentation as needed.

Monitor Maintenance, cont'd.

CEMS Spare Parts Inventory

Spare parts for the monitoring system are listed below. At least one of each item is available on-site.

Air Purge Blower Assy.  
Opacity PCB  
3-Mode Alarm PCB  
Cal Timer/Power Supply PCB  
Receiver/Auto Zero PCB  
Optical Density PCB  
Shutter PCB  
Transceiver PCB  
Paper Filter Elements  
Incandescent Lamps  
Zero Reflector Motor  
Zero Reflector  
Span Solenoid  
Photodiode Detector Assy.  
Trigger Unit Assy.  
J-Box Meter  
Indicator Lamps  
Desiccant Cartridge

Various electronic components are on hand for repair and replacement on-site.

## Corrective Action Procedures

This section details actions to be taken to correct a malfunctioning CEMS.

1. Determine malfunctioning component part of CEMS (e.g., wiring, monitors, data logger, data processor, etc.)
2. After the component has been isolated, the cause of the problem will be diagnosed. If the problem cannot be determined by plant personnel, the equipment vendor will be contacted for help. If the problem still cannot be isolated, on-site service of the equipment vendor will be requested if feasible. If on-site service is not possible, the equipment will be returned to the vendor for repair.
3. Repair of the problem will be completed following diagnosis. Normally, repairs will be completed by plant personnel.
4. The equipment will be returned to service following repair. If a monitor has been repaired, a dynamic calibration will be performed to ensure its integrity.

## Data Recording, Calculations, and Reporting

The two monitors utilize a single data processing system. This system also includes the powerhouse CEMS. The CEMS measurement and calibration data are output in the form of 4-20 mA signals. Instrument status states are indicated by contact closures. A Moore Concentrator system multiplexes the signals at GR-3 and sends them to the powerhouse where they are received by an ESC data logger. The signals are converted to voltage levels in the range of 0.20 to 1.00 VDC. The analog signals are digitized and are sampled along with the contact closure (digital) signals every two seconds. When calibration occurs, the data logger recognizes a change of state in the appropriate contact closure and handles the resulting calibration data separately from the emission data (monitors are set to auto cal at least once per 24 hrs.). The data logger microprocessor calculates the emission values and sums these values to generate 6-minute and hourly averages as required.

The data logger is polled once every 24 hours by a remotely located computer which provides printed reports and permanent storage for the emissions and calibration data. The data logger has sufficient memory for storage of 10 days worth of data should a problem develop with the computer system. A spare data logger is also available on-site.

Six-minute opacity averages are the sum of the individual measurements for the period divided by the number of measurements.

The 24-hr. calibration drift is calculated as follows:

zero drift = measured zero opacity - reference zero opacity (0.0)  
span drift = measured span opacity - ref. span opacity (value of  
internal span filter)

Calculations for precision assessment are as follows:

$$\% \text{ Diff.} = \frac{\text{measured span opacity} - \text{ref. span opacity}}{\text{ref. span opacity}} \times 100$$

$$\text{Avg. \% Difference} = \frac{\text{sum of per cent differences}}{\text{no. of valid precision checks}}$$

Std. deviation of per cent differences uses n-1 weighting

Upper and lower 95% probability limits:

upper limit = avg. % difference + 1.96 x std. deviation  
lower limit = avg. % difference - 1.96 x std. deviation

Data Recording, Calculations, and Reporting cont'd.

Equations for relative accuracy for opacity monitors are the same as those used for the calibration error test described in Appendix B, Performance Spec. 1, Section 9. In summary the procedures are:

- a. calculate the arithmetic differences between the audit filter value and the monitor response
- b. calculate the mean of the differences
- c. calculate the std. deviation of the differences
- d. calculate the 2.5% error confidence coefficient (one-tailed)
- e. calculate the relative accuracy

Emissions data are reported quarterly to the Wyoming DEQ AQD District Engineer using the AQD's reporting format. Quality assurance data are reported quarterly to the Wyoming DEQ AQD Quality Control Supervisor.

### Accuracy Audit Procedure

Relative accuracy audits will be performed quarterly on the opacity instrumentation. The audit will be conducted using a portable audit device with adjustable retroreflector that secures to the transceiver. The monitor will be challenged with low, mid, and high range neutral density filters in sequence a total of five times. These filters will be returned to the manufacturer on an annual basis for re-certification against a source traceable to NBS.

PRELIMINARY

RM41 COMPREHENSIVE FIELD CALIBRATION

I. The purpose of this procedure is to calibrate the RM41 Visible Emission Monitoring System on site.

II. Equipment needed:

- a. Digital Multimeter
- b. Test Fixture P/N 89000036
- c. Lens Cloth - Untreated
- d. Clean Black Felt Cloth
- e. P.C. Board Extender P/N 80030039

III. Customer Data:

Company Name: \_\_\_\_\_

Address: \_\_\_\_\_

Installation: \_\_\_\_\_

RM41 S/N: \_\_\_\_\_

Date: \_\_\_\_\_

By: \_\_\_\_\_

8

RM41 COMPREHENSIVE FIELD CALIBRATION

1.0 RM41 Transceiver Calibration

- 1.0.1 Prior to making adjustments, insure that a clean stack or a clean environment exists at the correct separation. The transceiver calibration may be accomplished off-stack using the RM41 test fixture (P/N 89000036).
- 1.0.2 Insure that the line supply is 115 vac  $\pm$  10%.
- 1.0.3 The transceiver must have been operating for at least 30 minutes before adjustments are made.

1.1 Insure cleanliness of the following:

- 1.1.1 Retroreflector (NOTE: to clean properly, remove the aperture plate).
- 1.1.2 Zero Point Reflector.
- 1.1.3 Main Objective Lens (NOTE: clean with untreated lens cloth).

1.2 Field Adjustments - Transceiver P.C. Board (P/N 80030061, DWG. 80030050)

- 1.2.1 Assure that the control unit is in "operate"; that the "CAL", "ZERO" and "SPAN" lights are not illuminated.
- 1.2.2 Switch the transceiver mode switch to "ALIGN" and check the alignment bulls-eye. If adjustment is required, refer to Section 5.1 of the instrument manual.
- 1.2.3 Return the transceiver mode switch to "OPER".
- 1.2.4 Remove the "REF", "CLEAR", and "OPAQUE" access port covers.
- 1.2.5 Read 20 ma on the J-box or test fixture ammeter with the meter switch in the "REF" position. Adjust the "REF" potentiometer as needed.
- 1.2.6 Read 0 ma on the J-box or test fixture ammeter with the meter switch in the "TRANS" position and a black felt cloth blocking the light path. Adjust the "OPAQUE" potentiometer as needed.
- 1.2.7 Read 20 ma on the J-box or test fixture ammeter with the meter switch in the "TRANS" position, and the black cloth removed from the light path. Adjust the "CLEAR" potentiometer as needed.

- 1.2.8 Repeat steps 1.2.5, 1.2.6, and 1.2.7 until all readings can be made with no further adjustments.
- 1.2.9 Replace all access port covers.
- 1.3 Adjustment of the Zero Point Reflector (refer to Fig. 5-1 on page 5-2 of the instrument manual).
  - 1.3.1 Swing open the transceiver at the hinge point.
  - 1.3.2 Switch the transceiver mode switch to "ZERO" (NOTE: this will cause the zero point reflector to move into the light path).
  - 1.3.3 Loosen the three coarse adjustment screws on the back of the zero point reflector.
  - 1.3.4 Rotate the back plate of the reflector until the transmittance output on the J-box or test fixture ammeter is  $20 \text{ ma} \pm .5 \text{ ma}$ .
  - 1.3.5 Tighten the three coarse adjustment screws.
  - 1.3.6 Loosen the locking nut on the fine adjustment and continue adjustment of the transmittance output to exactly 20 ma. Tighten the fine adjustment locking nut.
  - 1.3.7 Switch the transceiver mode switch to "OPER".
  - 1.3.8 Close the transceiver and secure the cam locks.
  - 1.3.9 After completion of all the steps from 1.0 to 1.3.8, the J-box meter should read 20 ma with the mode switch in "ZERO" and "OPER" and the meter switch in "TRANS" with a clear stack. The J-box meter should also read 20 ma with the meter switch in the "REF" position. Transceiver calibration is now complete.
  - 1.3.10 Insure that the transceiver mode switch is in the "OPER" position.
- 2.0 RM41 Control Unit Calibration.
  - 2.0.1 Prior to making adjustments at the control unit, insure that the transceiver is properly set up, the main objective lens, reflector, and zero point reflector are clean, and that the transceiver has been operating for a minimum of 30 minutes.
  - 2.0.2 The control unit may be calibrated with the transceiver on stack or set up in a clean environment with a test fixture (P/N 89000036) connected to the control unit J-9 by ribbon cable.

- 2.0.3 Insure that the transceiver mode switch is in the "OPER" position.
- 2.0.4 Reference all voltage measurements to TP2 (red) of the cal timer and power supply P.C. board (P/N 80030027, DWG. 80030026).

2.1 OPLR Setting

2.1.1 Determine OPLR:

$$OPLR = \frac{L_2}{2 \times L_1}$$

Where:  $L_1$  = I.D. at measurement point  
 $L_2$  = I.D. at stack exit

Record OPLR: \_\_\_\_\_

2.1.2 Power down the control unit, extract the opacity P.C. board (P/N 80030021, DWG. 80030020) and set R6 as follows:

$$400 \times OPLR = OHMS \text{ read across R6}$$

Record: \_\_\_\_\_

Adjust R6 as needed.

2.1.3 Note and record the range switch (S-1) setting on the opacity P.C. board.

<u>POSITION</u>	<u>FULL-SCALE OPACITY</u>
1	10%
2	20%
3	30%
4	50%
5	100%

Record range switch setting:

Position: \_\_\_\_\_

Full-Scale Opacity: \_\_\_\_\_

2.1.4 Replace the opacity P.C. board and apply power to the control unit.

2.2 Receiver with Auto Zero P.C. Board (P/N 80030033, DWG. 80030032).

2.2.1 Switch the transceiver or test fixture mode switch to "ZERO"  
 Wait for completion of mode change.

2.2.2 Reverify 20 ma at the J-box or test fixture ammeter with the meter switch in "REF" and "TRANS". Leave the switch in "TRANS".

- 2.2.3 Verify  $+10.00$  vdc  $\pm .1$  v at TP4.  
Adjust R1 as needed.
- 2.2.4 Verify  $-10.00$  vdc  $\pm .1$  v at TP3.  
Adjust R1E as needed.
- 2.2.5 Open transceiver, block light path with a black felt cloth,  
and reverify 0 ma at the J-box or test fixture meter.
- X 2.2.6 Verify 0.00 vdc  $\pm 10$  mv at TP4.  
Adjust R5 as needed. This voltage must not be negative.
- 2.2.7 Remove cloth from the light path, and reverify  $+10.00$  vdc  
 $\pm .1$  v at TP4. Adjust R1 as needed.
- 2.2.8 Put the control unit in zero cal by depressing the "OPERATE/CAL"  
button. The "CAL" and "ZERO" should come on and the "OPERATE"  
light should go off.
- 2.2.9 Switch the front panel "MEASUREMENT" switch to the "COMP" position.
- 2.2.10 Adjust R55 for zero units of compensation as read on the front  
panel meter.
- 2.2.11 Return the control unit to operate by depressing the "OPERATE/CAL"  
button. The "CAL" and "ZERO" lights should go out and the  
"OPERATE" light should go on.

(NOTE: The transceiver will continue to be in the zero mode  
due to the setting of the transceiver or test fixture  
mode switch)

- 2.3 Zero Verification - Optical Density P.C. Board (P/N 80030037, DWG. 80030036).
  - 2.3.1 Verify that the mode switch on the transceiver or test fixture  
is in the "ZERO" position.
  - 2.3.2 Verify 0.00 vdc  $\pm 10$  mv at TP1.  
Adjust R11 as needed.
  - 2.3.3 If an optical density recorder is used, verify the customer's  
specified current loop offset by lifting the wire at TB2-3 on  
the back of the control unit and inserting an ammeter in the  
current loop.  
Adjust R27 as needed.

2.4 Zero Verification - Opacity P.C. Board (P/N 80030021, DWG. 80030020).

- 2.4.1 Verify 0.00 vdc  $\pm$  10 mv at TP1.  
Adjust R9 as needed.
- 2.4.2 Verify 0.00 vdc  $\pm$  10 mv at TP2.  
Adjust R41 as needed.
- 2.4.3 Verify customer's specified current loop offset by lifting the wire at TB2-7 and inserting an ammeter.  
Adjust R24 as needed.

2.5 Zero Verification - Integrator P.C. Board Option (P/N 80030249, DWG. 80030248).

- 2.5.1 Verify 0.00 vdc at TP1.  
Adjust R3 as needed.
- 2.5.2 Switch integration interval switch (SW-1) to position "1".  
Wait 2 minutes (2 integration periods).
- 2.5.3 Verify 0.00 vdc  $\pm$  10 mv at TP3.  
Adjust R41 as needed.  
  
(NOTE: If adjustment of R41 is needed, power down the control unit, extract the integrator P.C. Board, and use card extender P/N 80030039 for access to R41).
- 2.5.4 Verify customer's specified current loop offset by lifting the wire at TB2-2 and inserting an ammeter.  
Adjust R9 as needed.

2.6 Span Verification - Optical Density P.C. Board (P/N 80030037, DWG. 80030036).

- 2.6.1 Switch the transceiver or test fixture mode switch to "SPAN".
- 2.6.2 Switch the optical density range switch (S-1) to position "4: (.9 range).
- 2.6.3 Verify correct voltage at TP1 as follows:  
Volts at TP1 = (5 x Optical Density of Span Filter)  
Adjust R7 as needed.
- 2.6.4 If an optical density recorder is used, verify the correct current loop value as follows:
  - 2.6.4.1 Lift the wire at TB2-3 and insert an ammeter.

2.6.4.2 Determine and record the current loop value for the unit's span filter:

$$\text{ma} = \left( \frac{\text{Span Filter Optical Density}}{.9} \times 16 \right) + 4$$

(NOTE: this example is for a 4-20 ma current loop)

Record Current: \_\_\_\_\_

2.6.4.3 Adjust R23 as needed.

2.6.5 Return optical density range switch to customer's specified setting.

2.7 Span Verification - Opacity P.C. Board (P/N 80030021, DWG. 80030020)

2.7.1 Determine span filter opacity corrected to stack exit as follows:

2.7.1.1 Determine and record single pass density of filter:

$$\text{Single Pass Density} = \text{Span Filter Density} \times \text{OPLR}$$

Record Density: \_\_\_\_\_

2.7.1.2 Look up the single pass density in the log tables at the back of the RM41 manual to determine the filter opacity.

Record Opacity: \_\_\_\_\_

2.7.2 Verify the correct negative voltage at TP1 for the unit's span filter as follows:

$$\text{Voltage at TP1} = \text{Opacity} \times 10$$

(NOTE: Use opacity recorded in 2.7.1.2)

Record Voltage: \_\_\_\_\_

Adjust R4 as needed.

2.7.3 Verify the correct current loop output for the span filter as follows:

2.7.3.1 Determine % opacity for span filter:

$$\text{Opacity (from 2.7.1.2)} \times 100 = \% \text{ Opacity}$$

Record % Opacity for Span Filter: \_\_\_\_\_

2.7.3.2 Determine current loop output:

$$ma = \left( \frac{\% \text{ Opacity}}{\text{Full Scale \% Opacity}} \times 16 \right) + 4$$

- (NOTE: a) % opacity from 2.7.3.1  
b) Full scale % opacity from 2.1.3  
c) Example for 4-20 ma current loop )

Record Current Loop ma: \_\_\_\_\_

2.7.3.3 Lift the wire at TB2-7 and insert an ammeter.  
Adjust R<sub>20</sub> as needed.

2.7.4 Block the light path with a black cloth and verify an up scale reading on the recorder.

2.7.5 Remove the black cloth and return the transceiver or test fixture mode switch to "OPER".

2.8 Span Verification - Integrator P.C. Board Option (P/N 80030249, DWG. 80030248)

2.8.1 Verify that the range switch (S-2) on the integrator P.C. board is in the same % opacity position as the range switch (S-1) on the opacity board:

(NOTE: the switch position numbering on the integrator P.C. board is not the same as on the opacity P.C. board.)

<u>POSITION</u>	<u>FULL SCALE % OPACITY</u>
5	10%
4	20%
3	30%
2	50%
1	100%

Record Switch Position: \_\_\_\_\_ % Opacity: \_\_\_\_\_

2.8.2 Switch the transceiver or test fixture mode switch to "SPAN".

2.8.3 Switch the integration interval switch (SW-1) to position "0". This puts the integrator P.C. board in the "real time" mode.

2.8.4 Verify the correct current loop output for the span filter by lifting the wire at TB2-2 and inserting an ammeter. This value should be the same as in step 2.7.3.2. Adjust R<sub>29</sub> as needed.

- 2.8.5 Switch the integration interval switch (SW-1) to position "1" for one-minute integration. Wait at least 2 minutes (2 integration periods).
- 2.8.6 Verify the correct negative voltage for the span filter at TP3. This value should be the same as in step 2.7.2. Adjust R7 as needed.
- 2.8.7 Verify the correct current loop output by lifting the wire at TB2-2 and inserting an ammeter. This value should be the same as in step 2.7.3.2. Adjust R28 as needed.
- 2.8.8 Return the integration interval switch to the customer's specified setting.
- 2.8.9 Return the unit to the operate mode. Calibration is now complete.

2.9 This RM41 Field Calibration procedure is a revision and condensation of previously printed procedures and information from the RM41 instrument manual.