STATEMENT OF BASIS

For the issuance of Draft Air Permit # 1016-AOP-R18 AFIN: 10-00004

1. PERMITTING AUTHORITY:

Division of Environmental Quality
5301 Northshore Drive
North Little Rock, Arkansas 72118-5317

2. APPLICANT:

Elemental Environmental Solutions LLC
500 East Reynolds Road
Arkadelphia, Arkansas 71923

3. PERMIT WRITER:

Sterling Powers

4. NAICS DESCRIPTION AND CODE:

NAICS Description: Hazardous Waste Treatment and Disposal
NAICS Code: 562211

5. ALL SUBMITTALS:

The following is a list of ALL permit applications included in this permit revision.

Date of Application	Type of Application (New, Renewal, Modification, Deminimis/Minor Mod, or Administrative Amendment)	Short Description of Any Changes That Would Be Considered New or Modified Emissions
08/02/2024	Modification	• Add Hydrogen Sulfide and Chlorine emissions to the Steel Mixing Bunker and Stabilization Operations units (SN-32, SN-45, and SN-48)
08/22/2024	Minor Modification	• Rename SN-41 to 41A and 41B, Add RTO Backup Control
01/03/2025	Modification	• Change the control method of the Waste Storage Tanks (SN-35) to carbon canisters in series, update waste stream fugitive emissions (SN-34)
02/19/2025	Modification	• Revise SN-41A and B back into SN-41, allow fluorinated waste in SN-41

6. REVIEWER'S NOTES:

Elemental Environmental Solutions LLC (EES) operates a hazardous waste and spent potliner thermal treatment process at its facility located in Gum Springs, Arkansas. This modification proposes the following:

- Add hydrogen sulfide emissions to the Steel Bunker Mixing and Stabilization Pit with Baghouse (SN-32), Stabilization Pit Operations (SN-45) and Stabilization Pit (SN-48); Add chlorine emissions and H_2S continuous monitoring to SN-32, 45, and 48;
- Update the emissions for the Waste Stream Fugitive Emissions (SN-34), and change the control method for the Waste Storage Tanks (SN-35), subjecting them to Subpart VVa, VVb, and Kb;
- Consolidate the two T-Enclosure Buildings into one unit (SN-41) and adds a thermal oxidizer (RTO), as well as Subpart FF conditions to 41 for benzene handling;
- Add continuous gas monitoring and add emission limits for hydrochloric acid and hydrogen fluoride at a limit of less than 10/25 tpy to avoid case-by-case MACT for the RTO; and add plantwide feed rates and emission limits to SN-19, SN-34, SN-35, and SN-40 for benzene, hexachlorobenzene, and hexachlorobutadiene. These HAPs were pre-existing and were speciated due to changes in the Threshold Limit Value (TLV) of benzene.

Permitted emissions will increase by 0.25 tpy PM, 0.2 tpy PM_{10}, 0.1 tpy SO_2, 3.5 tpy VOC, 1.3 tpy CO, 1.6 tpy NOx, 6.06 tpy Hydrogen Sulfide, 6.4 tpy Fluoride Compounds, 0.47 Total Other HAPs, 0.85 tpy Benzene, 1.49 tpy Hexachlorobenzene, 9.83 tpy Hexachlorobutadiene; permitted emissions will decrease by 0.5 tpy Chlorine.

7. COMPLIANCE STATUS:

The following summarizes the current compliance of the facility including active/pending enforcement actions and recent compliance activities and issues.

Facility was last inspected on January 30, 2025. No issues were found.

8. PSD/GHG APPLICABILITY:

a) Did the facility undergo PSD review in this permit (i.e., BACT, Modeling, etc.)? N
If yes, were GHG emission increases significant? N

b) Is the facility categorized as a major source for PSD? N

- *Single pollutant ≥ 100 tpy and on the list of 28 or single pollutant ≥ 250 tpy and not on list*

If yes for 8(b), explain why this permit modification is not PSD.

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
01, 05-16, 18, 20-27, 32, 45, 48	PM_{10}	CAM
Facility	All	NESHAP 40 C.F.R. § 63 Subpart EEE
41, 49, 57A, 57B	HAPs	NSPS 40 C.F.R. § 60 Subpart IIII
33	HAPs	NESHAP 40 C.F.R. § 63 Subpart ZZZZ
19	NO_X, CO & O_2, SO_2	CEMs
34	HAPs	NESHAP 40 C.F.R. § 63 Subpart DD, 40 CFR 60 Subpart Kb, 40 CFR 60 Subpart VVa
35	VOCs, HAPs	40 CFR 60 Subpart VVa 40 CFR 60 Subpart VVb
37	Benzene	40 CFR 61 Subpart FF
40	CO, O_2, SO2 and NO_X	CEMS
40	Mercury	40 CFR Part 61 Subpart E
40	Beryllium	40 CFR Part 61 Subpart C
41	HCl, HF	CEMS
50, 51, 52, 53	HAPs	40 CFR Part 60 Subpart JJJJ

10. UNCONSTRUCTED SOURCES:

Unconstructed Source	Permit Approval Date	Extension Requested Date	Extension Approval Date	If Greater than 18 Months without Approval, List Reason for Continued Inclusion in Permit
N/A				

11. PERMIT SHIELD – TITLE V PERMITS ONLY:

Did the facility request a permit shield in this application? N
(Note - permit shields are not allowed to be added, but existing ones can remain, for minor modification applications or any Rule 18 requirement.)

If yes, are applicable requirements included and specifically identified in the permit? N/A

If not, explain why.

For any requested inapplicable regulation in the permit shield, explain the reason why it is not applicable in the table below.

Source	Inapplicable Regulation	Reason
N/A		

12. COMPLIANCE ASSURANCE MONITORING (CAM) – TITLE V PERMITS ONLY:

List sources potentially subject to CAM because they use a control device to achieve compliance and have pre-control emissions of at least 100 percent of the major source level. List the pollutant of concern and a brief summary of the CAM plan (temperature monitoring, CEMs, opacity monitoring, etc.) and frequency requirements of § 64.

Source	Pollutant Controlled	Cite Exemption or CAM Plan Monitoring and Frequency
01, 05-16, 18, 20-27, 32, 45, 48	PM/PM_{10}	5 opacity exceedances in any 6 month period
19	all	COM limit for more than two consecutive hours, operates outside the range of Continuous Pressure Differential Reading, or fails two consecutive stack tests
41	HCl, HF	Three-hour rolling average

13. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

14. AMBIENT AIR EVALUATIONS:

The following are results for ambient air evaluations or modeling.

a) NAAQS

A NAAQS evaluation is not required under the Arkansas State Implementation Plan, National Ambient Air Quality Standards, Infrastructure SIPs and NAAQS SIP per Ark. Code Ann. § 8-4-318, dated March 2017 and the DEQ Air Permit Screening Modeling Instructions.

b) Non-Criteria Pollutants:

The non-criteria pollutants listed below were evaluated. Based on Division of Environmental Quality procedures for review of non-criteria pollutants, emissions of all other non-criteria pollutants are below thresholds of concern.

1st Tier Screening (PAER)

Estimated hourly emissions from the following sources were compared to the Presumptively Acceptable Emission Rate (PAER) for each compound. The Division of Environmental Quality has deemed the PAER to be the product, in lb/hr, of 0.11 and the Threshold Limit Value (mg/m^3), as listed by the American Conference of Governmental Industrial Hygienists (ACGIH).

Pollutant	TLV (mg/m^3)	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Ammonia	17.41	1.92	19.38	N
Arsenic Compounds	0.01	0.0011	0.03	N
Beryllium Compounds	0.002	2.2E-04	0.03	N
Cadmium Compounds	0.01	0.0011	0.05	N
Chlorine	1.45	0.1595	16.04	N
Chromium Compounds	0.01	0.0011	0.03	N
Fluoride Compounds	2.5	0.275	2.88	N
Hydrogen Fluoride	0.5	0.055	9.9	N
Hydrochloric Acid	2.98	0.3278	26.48	N
Mercury	0.025	0.00275	0.026	Y
Polycyclic Aromatic Hydrocarbons*	0.2	0.022	0.71	N
Lead	0.05	0.0055	0.056	N
Bromine	0.6536	0.0718	4.47	N
Selenium	0.2	0.022	0.47	N
Antimony	0.5	0.055	0.03	Y
Cobalt	0.02	0.0022	0.03	N
Manganese Compounds	0.02	0.0022	0.03	N
Acetaldehyde*	45.0	4.95	0.000922	Y

Pollutant	TLV (mg/m^3)	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Acrolein*	0.23	0.25	0.0001829	Y
Benzene	0.063	0.007	4.14	N
1,3-Butadiene*	4424.7	486.7	0.000047	Y
Formaldehyde*	15.0	1.65	0.02143	Y
Toluene*	188.0	20.7	0.00492	Y
Xylene*	434.0	47.7	0.000343	Y
Hexachlorobenzene	0.002	0.00022	0.37	N
Hexachlorobutadiene	0.213	0.023	4.7	N
Methanol	262.08	28.82	10.41	Y
Methylene Chloride	210.47	23.15	10.41	Y

*Emergency generators have not been modeled.

2nd Tier Screening (PAIL)

AERMOD air dispersion modeling was performed on the estimated hourly emissions from the following sources, in order to predict ambient concentrations beyond the property boundary. The Presumptively Acceptable Impact Level (PAIL) for each compound has been deemed by the Division of Environmental Quality to be one one-hundredth of the Threshold Limit Value as listed by the ACGIH.

Pollutant	PAIL ($\mu g/m^3$) = 1/100 of Threshold Limit Value	Modeled Concentration ($\mu g/m^3$)	Pass?
Ammonia	200-Annual 3200-1 Hour	4.37=Annual 254.3=1 Hour	Y
Arsenic Compounds	0.1	0.001	Y
Beryllium Compounds	0.02	0.002	Y
Bromine	6.536	0.396	Y
Benzene	0.64	0.953	Y
Cadmium Compounds	0.1	0.00384	Y
Chlorine	14.5	1.72	Y

Pollutant	PAIL ($\mu g/m^3$) = 1/100 of Threshold Limit Value	Modeled Concentration ($\mu g/m^3$)	Pass?
Chromium Compounds	0.1	0.00405	Y
Fluoride Compounds	4.09	4.026	Y
Hydrogen Fluoride	0.55	4.026	Y
Hydrochloric Acid	29.8	4.478	Y
Mercury	0.25	0.00215	Y
Polycyclic Aromatic Hydrocarbons*	2.0	0.0629	Y
Lead	0.5	0.0054	Y
Bromine	6.53	0.3965	Y
Selenium	2.0	0.00396	Y
Cobalt	0.2	0.00168	Y
Hexachlorobenzene	0.02	0.019	Y
Hexachlorobutadiene	2.13	0.9815	Y
Manganese	0.2	0.00235	Y
Formaldehyde	1.5	0.757	Y

c) H_2S Modeling:

A.C.A. §8-3-103 requires hydrogen sulfide emissions to meet specific ambient standards. Many sources are exempt from this regulation, refer to the Arkansas Code for details.

Pollutant	Threshold value	Modeled Concentration (ppb)	Pass?
H_2S	20 parts per million (5-minute average*)	0.19 ppm	Y
	80 parts per billion (8-hour average) residential area	N/A	Y
	100 parts per billion (8-hour average) nonresidential area	29.0 ppb (41.1 mg/m3)	Y

*To determine the 5-minute average use the following equation

$Cp = Cm\ (t_m/t_p)^{0.2}$ where
Cp = 5-minute average concentration
Cm = 1-hour average concentration
t_m = 60 minutes
t_p = 5 minutes

15. CALCULATIONS:

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
01, 05, 06, 26, 27, 30, 31	Grain Loading	0.002 gr/acf	Baghouse	99.9%	
07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 18, 20, 21, 22, 23, 24, 25	Grain Loading	0.005 gr/acf	Baghouse	99.9%	
19 and 40	MACT EEE Limits, Stack Testing (SO_2), and Waste Analysis for VOC	SO_2 Max %: 4.0 Max Flow= 15 gal/min SO_2= (0.24 lb SO_2/lb S)(510 lb S supplied/hr)= 122.4 lb/hr SO_2= 241.1 tpy NO_X testing showed max to be much lower (29.62 lb/hr & 129.7 tpy) than permitted, but leaving it the same as last permit.	Afterburner Baghouse	99.9% 99.9%	Throughput higher than 20tph, SO_2= 0.18 lb SO_2/lb S Less than = 0.24
32	AP-42 11.19.2 MSDS AP-42 3.3	Operation lb/ton Screen=0.072 Crusher=0.015 Loading/Unloading= 0.0004 Conveyor= 0.0077 2nd Cut = 0.1% Sodium Beryllium Fluoride Based on Molecular Weight Ratio PM= 0.31 lb/MMBtu PM_{10}= 0.31 lb/MMBtu	Primary Screen= Baghouse Crusher= Building Loading/Unloading= Baghouse	99.9% 80% 99.9% 80%	Portable Baghouse is operated by electric motor 8,760 hr/yr Max weight fraction Fluoride: 5.57E-01 g F / g material feed Beryllium: 6.87E-05 g Be / g material feed

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
		SO_2= 0.29 lb/MMBtu VOC= 0.36 lb/MMBtu CO= 0.95 lb/MMBtu NO_X= 4.41 lb/MMBtu PM/PM10: Outlet loading:0.01 grains/ft^3	Conveyor (7 drop off pts)= building		Air Flow: 40,000 ACFM PM/PM10: 7000 grain/lb H2S: 379.5 scf/lbmol H2S: 2.5 ppmv, 50% of ppmv of the operable limit of the H2S meter (5.0 ppmv)
33	AP-42 Chapter 3.3 for Combustion	<u>lb/MMBtu</u> PM=0.31 PM_{10}=0.31 SO_2=0.29 VOC=0.36 CO=0.95 NO_X=4.41	None	N/A	Calculated at 1,000 hours of operation per year
34	Table 2-9, 2-11 of EPA "Protocol for Equipment Leak & Emission Estimates" Nov, 1995	Light liquid valves: 6.4E-06 kg/hr Liquid Liquid Pumps: 1.9E-05 kg/hr Connectors: 3.05E-06 kg/hr	None	N/A	<u>Max VOC Concentration</u> 500 ppmv Light Liquid Valves= 154 Light Liquid Pumps= 51 Connectors= 411 Screening Value: 500 ppmv
35	Tanks Program	Organic Fuel Max throughput= 47,240,209 gal/yr Worst Case= 100% throughput Methyl Alcohol	Tank Vent	99.99%	22 Tanks Each with 2 carbon tanks in series 1 railcar and two tankers are unloaded per hour, turnover is 37 times per year

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
36	AP-42 Table 11.19.2	Max throughput = 200,000 ton/yr 0.0085 lb PM/ton 0.0035 lb PM_{10}/ton	None	N/A	Half of PM assumed to be PM_{10}
41	AP-42 Boiler Emission factors, natural gas combustion emission factors	PM/PM_{10}: 7.6 lb/MMscf SOX: 0.6 lb/MMscf VOC: 5.5 lb/MMscf CO: 84 lb/MMscf NOX: 0.0969 lb/MMbtu	RTO	98%	Building/Pit Emissions to the RTO 21,000 sfcm 400 ppmv average 700 ppmv maximum RTO Combustion: 3431.37 scf/hr 8760 hours Input duty: 3.5 MMBTU/hr
42	AP-42 11.12.2	0.73 lb/ton PM 0.47 lb/ton PM10	Baghouse Filter Vent	99%	11.3 ton/hr (100 ton/day) # of drops: 2 Annual TP: 29,400 ton/yr
43	AP-42 11.12.2	0.73 lb/ton PM 0.47 lb/ton PM10	Baghouse Filter Vent	99%	25 ton/hr (100 tons/day) # of drops: 2 Annual TP: 9,000 ton/yr
38		PM/PM_{10} 0.01 grains/DSCF Dioxin/Furan 1.05E-10 wt%			
45	AP-42	PM/PM10: 0.01 grains/ft3			PM/PM10: 7000 grain/lb

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
					H2S: 379.5 scf/lbmol 2.5 ppmv (50% of meter) Airflow: 12,640 ACFM
48	Vendor-supplied Grain loading factor	Grain loading factor = 0.0028 grain/Dry CSF PM: 0.0028 grains/ft3	Baghouse	99.9%	Blow Capacity: 300,000 ft3/hr 8760 hours/yr 1/7000 lb/grains Air flow: 50,000 ACFM H2S: 2.5 ppmv Chlorine: 0.2 ppmv (50% of the meter) 379.5scf/lbmol
49	AP-42, Tier 3 Emission Factor	PM:0.087 g/HP-hr PM10:0.22 g/HP-hr SOX:2.05E-03 lb/HP-hr VOC: 0.06 g/HP-hr CO: 0.92 g/HP-hr NOX: 2.7 g/HP-hr			687 HP BSFC = 7000 Btu/HP-hr 500 hr/yr
50, 51	AP-42, Manufacturer's Datasheet, Tier 2 Emission Limits	PM:0.04 g/HP-hr PM10:0.04 g/HP-hr SOX:5.88E-04 lb/HP-hr VOC: 0.45 g/HP-hr CO: 1.6 g/HP-hr NOX: 0.47 g/HP-hr	N/A	N/A	2820 HP 1020 btu/scf 18.12 MMBtu/hr 500 hours
52	AP-42, Manufacturer's Datasheet, Tier 2 Emission Limits	PM:7.71E-05 g/HP-hr PM10:7.71E-05 g/HP-hr SOX:5.88E-04 lb/HP-hr VOC: 0.85 g/HP-hr CO: 0.95 g/HP-hr NOX: 1.17 g/HP-hr	N/A	N/A	950 HP 1020 btu/scf 9.92 MMBtu/hr 500 hours

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
53	AP-42, Manufacturer's Datasheet, Tier 2 Emission Limits	PM:7.71E-05 g/HP-hr PM10:7.71E-05 g/HP-hr SOX:5.88E-04 lb/HP-hr VOC: 0.85 g/HP-hr CO: 0.95 g/HP-hr NOX: 1.17 g/HP-hr	N/A	N/A	163 HP 1020 Btu/scf 1.01 MMBtu/hr
54, 55, 56	AP-42, 11.12.2 EF for pneumatic loading of cement elevated	PM: 0.73 lb/ton PM10: 0.47 lb/ton	Filter vent	99%	Hourly Tons Processed: 25 ton/hr SN-54, 55 # of Drops: 2 SN-56 # of Drops: 3
57A, 57B	Tier 4 AP-42 3.3	PM: 3.29E-05 PM10: 3.29E-05 SOX: 2.05E-03 VOC: 2.51E-03 CO: 8.22E-03 NOX: 6.58E-04			Engine Size * EmF 111 HP 500 hr/yr Brake-Specific Fuel Consumption (BSFC): 7000 btu/hp-hr

16. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
19	EEE	EEE See Plantwide		
	SO_2	6C		
	Average VOHAP concentration for off-site material streams	Sampling, Method 305 in 40 CFR part 63, Method 25D in 40 CFR part 60, Method 624 in 40 CFR part 136, Method 625 in 40 CFR part 136, Method 1624 in 40 CFR part 136, Method 1625 in 40 CFR part 136, Method 8260 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication No. SW-846, Third		

SN	Pollutants	Test Method	Test Interval	Justification
		Edition, September 1986, as amended by Update I, November 15, 1992, or Method 8270 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication No. SW-846, Third Edition, September 1986, as amended by Update I, November 15, 1992		

17. MONITORING OR CEMS:

The permittee must monitor the following parameters with CEMS or other monitoring equipment (temperature, pressure differential, etc.)

SN	Parameter or Pollutant to be Monitored	Method (CEM, Pressure Gauge, etc.)	Frequency	Report (Y/N)
19	Various AFS systems	CEM	Continuous	N
	CO Concentration	CEM	Continuous	N
	PM Concentration	COM	Continuous	N
	NO_X Concentration	CEM	Continuous	N
	SO_2 Concentration	CEM	Continuous	N
32, 45, 48	H2S Concentration	ppm meter	Continuous	N
40	Various AFS systems	CEM	Continuous	N
	CO Concentration	CEM	Continuous	N
	PM Concentration	COM	Continuous	N
	NO_X Concentration	CEM	Continuous	N
	SO_2 Concentration	CEM	Continuous	N
41	Outlet and Inlet Temp of RTO	CEM	Continuous	N
	HCl concentration	CEM	Continuous	N
	HF concentration	CEM	Continuous	N
48	PM Concentration	COM	Continuous	N

18. RECORDKEEPING REQUIREMENTS:

The following are items (such as throughput, fuel usage, VOC content, etc.) that must be tracked and recorded.

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
19	Kiln Feed Rate	30 tons/hr on a 1 hour rolling average each	Monthly	N
32	H_2S concentration	2.5 ppm	continuous	N

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
33	Maintenance/Malfunction	N/A	Monthly	N
33	Hours of Operation	1,000 Hours per year	Monthly	N
34, 35	Compliance with Subpart VVa	Within 180 days of initial start up	Per new equipment	N
	Calibration drift assessment	Negative drift above 10%	End of each monitoring day	N
	Pressure Relief Devices In Gas/Vapor Service	Each pressure relief device with no detectable emissions / 500 ppm above background	No later than 5 calendar days after the pressure release	N
		A new rupture disk shall be installed after each pressure release	No later than 5 calendar days after pressure release	N
	Standards for Valves in Gas/Vapor or Light Liquid Service	A new valve must be monitored	Within 30 days after the end of the first start up period	N
		A valve for which a leak is not detected for 2 successive months	Quarterly monitoring	(CEDRI)
		A valve for which a leak is detected	Monthly monitoring	(CEDRI)
		Repair of detected leaks	Within 15 calendar days after the leak is detected	(CEDRI)
	Standards for Pumps/Valves/Connectors in Heavy Liquid Service	Repair of detected leaks	Within 15 calendar days after the leak is detected	(CEDRI)
	Requirements of 60.486a	Instrument identification, operator identification, equipment identification, date of monitoring, instrument reading	Each monitoring event	(CEDRI)
	Requirements of 40 CFR 60.482-1a to 11a	Equipment with detected leaks must be marked until no leaks for 2 successive months, repaired equipment after it has been repaired	each leak event	N
		A detected leak log for each event must contain: the instrument and operator identification number (except for pumps), the date of the leak and each repair, repair	Kept per event for 2 years	N

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
		methods applied, maximum instrument reading measured by Method 21, repair delayed and the reason, the signature of the permittee whose decision it was that the repair needed a process shutdown, the expected date of successful repair of the leak if a leak is not repaired within 15 calendar days, dates of process unit shutdowns that occur while the equipment is unrepaired, and the date of a successful repair of a leak		
		A log for all equipment subject to 60.482 shall contain: a list of identification numbers for equipment subject, dates and compliance test data as per 40 CFR 60.486a		N
35	Throughput	47,240,209 gal/yr	Monthly	N
	Compliance with Subpart VVb	Within 180 days of initial start up	Per new equipment	N
	Calibration drift assessment	Negative drift above 10%	End of each monitoring day	N
	Pressure Relief Devices In Gas/Vapor Service	Each pressure relief device with no detectable emissions / 500 ppm above background	No later than 5 calendar days after the pressure release	N
		A new rupture disk shall be installed after each pressure release	No later than 5 calendar days after pressure release	N
	Standards for Valves in Gas/Vapor or Light Liquid Service	A new valve must be monitored	Within 30 days after the end of the first start up period	N
		A valve for which a leak is not detected for 2 successive months	Quarterly monitoring	(CEDRI)

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
		A valve for which a leak is detected	Monthly monitoring	(CEDRI)
		Repair of detected leaks	Within 15 calendar days after the leak is detected	(CEDRI)
	Standards for Pumps/Valves/Connectors in Heavy Liquid Service	Repair of detected leaks	Within 15 calendar days after the leak is detected	(CEDRI)
	Requirements of 60.486b	Instrument identification, operator identification, equipment identification, date of monitoring, instrument reading	Each monitoring event	(CEDRI)
	Requirements of 40 CFR 60.482-1b to 11b	Equipment with detected leaks must be marked until no leaks for 2 successive months, repaired equipment after it has been repaired	each leak event	N
		A detected leak log for each event must contain: the instrument and operator identification number (except for pumps), the date of the leak and each repair, repair methods applied, maximum instrument reading measured by Method 21, repair delayed and the reason, the signature of the permittee whose decision it was that the repair needed a process shutdown, the expected date of successful repair of the leak if a leak is not repaired within 15 calendar days, dates of process unit shutdowns that occur while the equipment is unrepaired, and the date of a successful repair of a leak	Kept per event for 2 years	N

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
		A log for all equipment subject to 60.482 shall contain: a list of identification numbers for equipment subject, dates and compliance test data as per 40 CFR 60.486a		N
36	Throughput	200,000 tons/yr	Monthly	N
37	Items in §61.356	1.1 ton/yr or 11 ton/yr Benzene in waste stream	As needed	N
41	Visual inspection of all fixed-roof enclosures with closed-vent systems for gaps and cracks in roof, seals, and access doors	Repairs within 45 calendar days after identification	Inspected initial and quarterly thereafter	N
	Visual inspection of each closed-vent system and control device	First effort repairs within 5 calendar days after detection, completed repairs no later than 15 days after detection	Inspected initially and quarterly thereafter	N
	Inspection of data recorded by monitoring equipment	Manufacturer's specs	Daily	N
	DE of RTO	98%	Initial and every 5 years	Y
	Temperature Monitoring System Accuracy	Minimum outlet not less than 1400^{o}F	Monthly reports until CEMS is operational, And thereafter verified twice a year by testing	Y
	Inspection/maintenance program of the RTO	By manufacturer's specs	By manufacturer's specs	N
42	Throughput	29,400 tons/yr	Monthly	N
43	Throughput	9,000 tons/yr	Monthly	N
44	Throughput	17,500 tons/yr	Monthly	N
49	Hours of Operation	500 Hours per year	Monthly	N
54 55 56	Tons Processed	125 tons/yr 1800 tons/yr 5880 tons/yr	Monthly	N
57A, 57B	Hours of Operation	500 hours/yr	Monthly	N

19. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
32, 38, 49, 50, 51, 52, 53, 54, 55, 56, 57A, 57B	5%	§18.501	Inspector Observation
48	5%	CAM	Daily
01, 05, 06, 09, 10, 11, 18, 20, 21, 22, 26, 27	7%	CAM	Weekly
07, 08, 12, 13, 14, 15, 16, 23, 24, 25, 39	10%	CAM	Weekly
19 and 40	20%	Guidance	Continuous
33	20%	Guidance	Inspector Observation
41	5%	Guidance	Weekly

20. DELETED CONDITIONS:

Former SC	Justification for removal
N/A	

21. GROUP A INSIGNIFICANT ACTIVITIES:

The following is a list of Insignificant Activities including revisions by this permit.

Source Name	Group A Category	Emissions (tpy)						
		PM/PM_{10}	SO_2	VOC	CO	NO_x	HAPs	
							Single	Total
Five Diesel Fuel Storage Tanks 4000, 200, 200, 2500, 2000, and 1000 gallon capacity	3			0.002				
Diesel Fuel Storage Tank (849 gal)	3			2.24E-04				
Laboratory Dust Collector and Vent	5	0.0001		0.22			0.22	0.22
Lime Handling Fugitives (SN-29)	13	0.003						
Cooling Tower (300 gpm)	13	PM=0.22 PM_{10}=0.03						
Cooling Tower (7500 gpm)	13	PM=0.23 PM_{10}=0.03						
Cooler Conveyor Dust Collector	13	0.0001						
Leachate Tanks	13			0.0001				
Loading Silos	13	PM= 0.19 PM_{10}=0.09						
Air Duct Systems	13	0.0001						
Initial Size Reduction System	13	0.0001						
Loadout Inline Dust Collector (SN-31)	13	0.08					2.97E-05	7.61E-05
Hot Water Heater #1	13	0.01	0.01	0.01	0.1	0.12	2.09E-03	2.18E-03
Hot Water Heater #2	13	0.01	0.01	0.01	0.1	0.12	2.09E-03	2.18E-03
Drum Sampling	13			0.7			0.7	0.7
Aluminum Oxide Tank w/BV	13	0.033						
Activated Carbon Tank w/BV	13	0.003						
Reagent #1 Tank (32.5% Urea solution)	13			0.15				
Bulk Solid Railcar Unloading	13	0.1		0.1			0.1	0.1
Fourteen Carbon Drums at Loading Bays				*				
Total		**0.4594**	**0.02**	**1.1923**	**0.2**	**0.24**	**1.024211**	**1.0244**

*Emissions are routed back to the tanks at SN-35, emissions are therefore accounted for.

22. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

The following is a list of all active permits voided/superseded/subsumed by the issuance of this permit.

Permit #
1016-AOP-R17

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Major Source

Revised 03-11-16

Facility Name: Elemental Environmental Solutions LLC
Permit Number: 1016-AOP-R19
AFIN: 10-00004

$/ton factor	28.14	Annual Chargeable Emissions (tpy)	799.55
Permit Type	Modification	Permit Fee $	2432.36

Minor Modification Fee $	500
Minimum Modification Fee $	1000
Renewal with Minor Modification $	500
Check if Facility Holds an Active Minor Source or Minor Source General Permit	☐
If Hold Active Permit, Amt of Last Annual Air Permit Invoice $	0
Total Permit Fee Chargeable Emissions (tpy)	86.438
Initial Title V Permit Fee Chargeable Emissions (tpy)	

HAPs not included in VOC or PM: *Chlorine, Hydrazine, HCl, HF, Methyl Chloroform, Methylene Chloride, Phosphine, Tetrachloroethylene, Titanium Tetrachloride*

Air Contaminants: *All air contaminants are chargeable unless they are included in other totals (e.g., H2SO4 in condensible PM, H2S in TRS, etc.)*

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
PM		72.25	72.45	0.2	0.2	72.45
PM_{10}		71.9	71.9	0		
$PM_{2.5}$				0		
SO_2		242.3	242.3	0	0	242.3
VOC		39.7	39.7	0	0	39.7
CO		110.1	110.1	0		
NO_X		225.2	225.2	0	0	225.2
Lead	☑	0.212	0.22	0.008	0.008	0.22

Arsenic Compounds	☑	0.09	0.09	0	0	0.09
Beryllium Compounds	☑	0.09	0.09	0	0	0.09
Cadmium Compounds	☑	0.22	0.22	0	0	0.22
Chlorine	☑	41.65	41.15	-0.5	-0.5	41.15
Hydrochloric Acid	☑	0	52.2	52.2	52.2	52.2
Hexachlorobenzene	☑	0	1.49	1.49	1.49	1.49
Hexachlorobutadiene	☑	0.00E+00	9.83E+00	9.83	9.83	9.83
Chromium Compounds	☑	0.09	0.09	0	0	0.09
Dioxin and Furans	☑	0.00000035	0.00000035	0	0	0.00000035
Fluoride Compounds	☑	0.09	6.49	6.4	6.4	6.49
Hydrogen Fluoride	☑	0	9.9	9.9	9.9	9.9
Manganese Compounds	☑	0.09	0.09	0	0	0.09
Mercury	☑	0.12	0.12	0	0	0.12
Nickel Compounds	☑	0.09	0.09	0	0	0.09
Polycyclic Aromatic Hydrocarbons**	☐	2.99	2.99	0		
Bromine	☑	11.61	11.61	0	0	11.61
Selenium Compounds	☑	0.21	0.21	0	0	0.21
Total Other HAPs	☐	6.62E+01	6.67E+01	0.47		
Benzene	☑	8.98	9.83	0.85	0.85	9.83
Cyanide	☑	0.01	0.01	0	0	0.01
Ammonia	☑	70.11	70.11	0	0	70.11
H_2S	☑	0	6.06	6.06	6.06	6.06