STATEMENT OF BASIS

For the issuance of Draft Air Permit # 0882-AR-11 AFIN: 14-00011

1. PERMITTING AUTHORITY:

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

2. APPLICANT:

Albemarle Corporation - West Plant
1550 Highway 371 West
Magnolia, Arkansas 71754

3. PERMIT WRITER:

Jesse Smith

4. NAICS DESCRIPTION AND CODE:

NAICS Description: Natural Gas Liquid Extraction
NAICS Code: 211112

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	Administrative Amendment	N/A
11/13/2024	Deminimis Mod	Replaced previous emergency fire pump engines with newer models with updated emission factors

6. REVIEWER'S NOTES:

The Albemarle Corporation owns and operates a facility near Magnolia, Arkansas, which manufactures bromine and bromine-related compounds. This facility is known as the West Plant. With this permitting action, the facility has replaced the existing fire pump engines (SN-EM-02 and SN-EM-03) with newer models. These sources are now subject to NSPS Subpart IIII and applicable conditions have been added. The insignificant

activities list has also been updated, adding tanks for the tall brine metal extraction process. Permitted emission rates of Total Other HAP have been increased by 0.02 tpy.

7. COMPLIANCE STATUS:

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

The facility was last inspected on June 27, 2024. There were no areas of concern noted at this time. The facility is listed as having recent significant violations on EPA's ECHO database but none under the Clean Air Act.

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*

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
SN-SG-03, SN-SG-06, SN-SG-07	Records keeping	40 CFR 60, Subpart Dc
SN-EM-02, SN-EM-03, SN-EN-01	HAP	40 CFR 63, Subpart ZZZZ
SN-EN-01	VOC, CO, NOx	40 CFR 60, Subpart JJJJ
SN-EM-02, SN-EM-03	VOC, CO, NOx	40 CFR 60, Subpart IIII
SN-GS-01	-	40 CFR 63, Subpart CCCCCC

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.)

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
N/A		

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 Department 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 Department 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?
H_2S	13.94	1.533	1.97	No
Br_2	0.66	0.073	2.60	No

Pollutant	TLV (mg/m^3)	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
HBr	9.93	1.092	0.17	Yes
NH_3	17.42	1.916	1.20	Yes
Cl_2 (HAP)	1.45	0.16	0.91	No
HCl (HAP)	7.46	0.821	0.10	Yes
Ethylene Glycol (HAP)	100	11	0.64	Yes
1,4 Dioxane (HAP)	73.20	8.06	1.88	Yes

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 Department 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?
H_2S	139.4	50.29	Yes
Br_2	6.6	6.30	Yes
Cl_2 (HAP)	14.5	2.21	Yes

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.

Is the facility exempt from the H_2S Standards N
If exempt, explain:_____

Pollutant	Threshold value	Modeled Concentration (ppb)	Pass?
H_2S	20 parts per million (5-minute average*)	0.056 ppm	Y
	80 parts per billion (8-hour average) residential area	19.99 ppb	Y
	100 parts per billion	19.99 ppb	Y

Pollutant	Threshold value	Modeled Concentration (ppb)	Pass?
	(8-hour average) nonresidential area		

*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
GS-01	Tanks 4.0	-	None	-	-
BR-01	Aspen modeling	-	Scrubber	98%	-
BR-03	Mass Balance	-	Scrubber	99%	-
SR-01	AP-42 (flare)	See AP-42 Table 13.5-1.	None	-	-
SG-03	AP-42 (boiler)	See AP-42 Table 1.4-1and 1.4-2.	None	-	-
SG-06	Dusty White of Power Equipment Company (boiler)	-	None	-	Emission data are from Cleaver-Brooks Boiler, Model CB-L2000-1500-200ST
SG-07	Dusty White of Power Equipment Company (boiler)	-	None	-	Emission data are derived from Cleaver-Brooks Boiler, Model CB-L2000-1500-200ST. Emission factor of SO_2 is calculated from the combustion of sweetened field gas, which is 1.343 lb/MM Btu.

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
BD-03	Facility estimate, based upon process analysis.	-	None	-	-
PT-01	EPA ÄProtocol for Equipment Leak Emission Estimates@.	-	-	-	-
EM-01	AP-42 Section 3.3 Vendor Test Data (CO, PM, NO_x)	lb/hp-hr: NO_x 6.58E-03 CO 5.76E-03 VOC 2.51E-03 PM_{10} 3.29E-04 SO_2 2.05E-03	None.	-	VOC emissions based on TOC emission factor, and SO_2 emissions based on SO_x emission factor in AP-42
EM-02 EM-03	AP-42 Section 3.3	lb/hp-hr: NO_x 6.61E-03 CO 5.73E-03 VOC 6.61E-03 PM_{10} 3.30E-04 SO_2 2.05E-03	None.	-	VOC emissions based on TOC emission factor, and SO_2 emissions based on SO_x emission factor in AP-42
EN-01	AP-42, 3.2	<u>lb/MMBtu</u> PM/PM_{10}: 4.83e-2 SO_2: 5.88e-4 HAPs	None	-	0.59 MMBtu/hr 54 HP 500 hr/yr
	NSPS JJJJ	<u>g/bhp-hr</u> VOC: 10.1 CO: 387 NOx: 10.1			

16. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
Amine Unit	H_2S, calculated to SO_2.	2D 15	Annual	To confirm amine unit efficiency and resulting emissions at process flare and at NaHS loading stations.
SG-03, SG-06 &, SG-07	NO_X CO	7E 10	Every 5 years	Permit limit (bubble) @ 98.5 ton/yr.

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)
SG-03	Fuel inlet flow	Flow meter	Continuous	Yes-SO_2, CO and NO_X
SG-06	Fuel inlet flow	Flow meter	Continuous	Yes-SO_2, CO and NO_X
SG-07	Fuel inlet flow	Flow meter	Continuous	Yes-SO_2, CO and NO_X
SR-01	Fuel inlet flow	Flow meter	Continuous	Yes-SO_2, CO and NO_X
BR-03	Recirculating scrubbing liquor flow rate, weight percent of the scrubbing liquor	Flow meter, lab analysis	Daily	No

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)
SR-01 SG-03	Purchased gas H_2S	Maximum 6.5 ppm (vol) H_2S	As purchased	No

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
SG-06 SG-07	concentration			
SR-01	H_2S concentration of sweetened gas and resulting SO_2 emissions	22.1 lb/hr SO_2 emissions	Once per day	Yes
SR-01 SG-03 SG-06 SG-07 EM-01 EM-02 EM-03	SO_2 emissions	0.1 lb/hr SO_2, each boiler 22.1 lb/hr SO_2 from flare 2.1 lb/hr SO_2 from non-emergency generators 0.62 lb/hr SO_2 from fire pumps 7-source bubble: 98.1 ton/yr	Once per month	Yes
SR-01 SG-03 SG-06 SG-07 EM-01 EM-02 EM-03	NO_X emissions CO emissions VOC emissions PM_{10} emissions	See permit for lb/hr limits. 7-source bubble: 98.5 tpy, for both NO_X and CO, 20.7 tpy for VOC, and 15.8 tpy for PM_{10}	Once per month	Yes
BR-03	Scrubbing liquor flow rate, scrubbing liquor weight percent	Flow = 25 gpm (min) Weight % = 1.5 (min)	Once per day	No
EM-02 EM-03	Records of maintenance Hours of operation	- 100 hr/yr non-emergency	As performed Monthly	No
GS-01	Gasoline Throughput	10,000 gallon/month	Monthly	No
EN-01	Hours of Operation	500 hours per calendar year	Monthly	No

19. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
BR-01	5%	Department guidance.	Weekly observations.
BR-03	5%	Department guidance.	Weekly observation.
SR-01	20%	Department guidance.	Weekly observation.
SG-03	5%	Department guidance.	Weekly observations.
SG-06	5%	Department guidance.	Weekly observations.
SG-07	5%	Department guidance.	Weekly observations.
BD-03	10%	Department guidance.	Weekly observations.
EM-01	20%	Department guidance.	Weekly observations.
EM-02	20%	Department guidance.	Weekly observations.
EM-03	20%	Department guidance.	Weekly observations.
EN-01	5%	Department guidance.	Weekly observations.

20. DELETED CONDITIONS:

Former SC	Justification for removal
35 – 45	These sources are now subject to NSPS IIII and these NESHAP ZZZZ conditions have been replaced by conditions applicable to that subpart.

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
One (1) 1,800 gallon Diesel Storage Tank	A-3			<0.01			<0.01	<0.01
One (1) 1,000 gallon Diesel Storage Tank	A-3			<0.01			<0.01	<0.01
Two (2) 650 gallon Diesel Storage Tank	A-3			<0.01			<0.01	<0.01

Source Name	Group A Category	Emissions (tpy)						
		PM/PM_{10}	SO_2	VOC	CO	NO_x	HAPs	
							Single	Total
Groundwater Collection Sump	A-11							
4 Recycle Water Storage Tanks	A-13							
Diethylene Glycol Storage Tank	A-3							
Bulk Cargo Containers (totes, containing aqueous ammonia or 35% HCl, less than 550 gallon capacity)	A-13							
Tail Brine Metal Extraction Process (skid mounted)	A-13						0.30	0.30
Tanks for Tail Brine Metal Extraction Process	A-13						0.56	0.56

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 #
0882-AR-10

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Minor Source

Revised 03-11-16

Facility Name: Albermarle Corporation - West Plant
Permit Number: 0882-AR-11
AFIN: 14-00011

			Old Permit	New Permit
$/ton factor	28.14	Permit Predominant Air Contaminant	99.1	99.1
Minimum Fee $	400	Net Predominant Air Contaminant Increase	0	
Minimum Initial Fee $	500			
		Permit Fee $	400	
Check if Administrative Amendment	☐	Annual Chargeable Emissions (tpy)	99.1	

Pollutant (tpy)	Old Permit	New Permit	Change
PM	15.9	15.9	0
PM_{10}	15.9	15.9	0
$PM_{2.5}$	0	0	0
SO_2	98.2	98.2	0
VOC	28.8	28.8	0
CO	99.1	99.1	0
NO_X	99.1	99.1	0
Br_2	10.8	10.8	0
HBr	0.7	0.7	0
NH_3	4.9	4.9	0
H2S	6.7	6.7	0
Cl_2	3.9	3.9	0
Ethylene Glycol	2.8	2.8	0
HCl	0.4	0.4	0
Total Other HAPs	1.21	1.23	0.02