STATEMENT OF BASIS

For the issuance of Draft Air Permit # 0429-AOP-R13 AFIN: 24-00014

1. PERMITTING AUTHORITY:

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

2. APPLICANT:

SGL Carbon, LLC
3931 Carbon Plant Road
Ozark, Arkansas 72949

3. PERMIT WRITER:

Amanda Leamons

4. PROCESS DESCRIPTION AND NAICS CODE:

NAICS Description: Carbon and Graphite Product Manufacturing
NAICS Code: 335991

5. SUBMITTALS:

11/8/2012

6. REVIEWER'S NOTES:

SGL Carbon Corporation (SGL) owns and operates a facility in Franklin County that manufactures graphite electrodes for use in electric arc furnaces. The facility submitted an administrative amendment to the permit to add a small natural gas fueled oil heater, rated at 3.0 MMBtu/hr to the list of Insignificant Activities as a Regulation 19, Appendix A, Group A-1 activity. The heater is not subject to 40 CFR Part 60, Subpart Db because it is less than 10 MMBtu/hr. This permit change will not result in permitted emission limit increases.

7. COMPLIANCE STATUS:

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

Currently there are no pending formal enforcement actions, nor are there ongoing non-compliant activities or issues.

8. PSD APPLICABILITY:

a. Did the facility undergo PSD review in this permit (i.e., BACT, Modeling, etc.)? N

b. Is the facility categorized as a major source for PSD? Y
- *Single pollutant ≥ 100 tpy and on the list of 28 or single pollutant ≥ 250 tpy and not on list, or*
- *CO_2e potential to emit ≥ 100,000 tpy and ≥100 tpy/≥250tpy of combined GHGs?*

If yes, explain why this permit modification is not PSD. This was an administrative amendment, no modification to the facility or permit as defined by PSD rules.

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
SN-33	NO_X, CO, PM_{10}	NSPS Subpart IIII and NESHAP Subpart ZZZZ
SN-34	NO_X, CO, PM_{10}	NSPS Subpart IIII and NESHAP Subpart ZZZZ
SN-35	NO_X, CO, PM_{10}	NSPS Subpart IIII and NESHAP Subpart ZZZZ

10. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

11. MODELING:

No modeling was conducted with 429-AOP-R13, below are the modeling results from 429-AOP-R12 Statement of Basis.

Criteria Pollutants

Pollutant	Emission Rate (lb/hr)	NAAQS Standard ($\mu g/m^3$)	Averaging Time	Highest Concentration ($\mu g/m^3$)	% of NAAQS
PM_{10}	47.1	150	24-Hour	60.35	40.2
SO_2	156.2	80	Annual	7.7	9.6
		1300	3-Hour	620.0	47.7
		365	24-Hour	142.8	39.1

Pollutant	Emission Rate (lb/hr)	NAAQS Standard ($\mu g/m^3$)	Averaging Time	Highest Concentration ($\mu g/m^3$)	% of NAAQS
CO	296.0	10,000	8-Hour	2320.7	23.2
		40,000	1-Hour	8679	21.9
NO_x	33.4	100	Annual	3.57	4

Non-Criteria Pollutants:

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	14	1.54	4.0	N
HCN	5	0.55	1.3	N

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	140	17.84	Y
HCN	50	4.64	Y

Other Modeling:

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*)	0.27	Y
	80 parts per billion (8-hour average) residential area	39.0	Y
	100 parts per billion (8-hour average) nonresidential area	39.0	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

12. CALCULATIONS:

SN	Emission Factor Source	Emission Factor & units	Control Equipment Type	Control Equipment Efficiency	Comments
01	Testing for all pollutants except SO_2 – Material Balance for SO_2 Due to lack of emission data, POM was estimated	The process is a batch process with constantly changing emission rates	Thermal Oxidizer	N/A	The emission rates are based on stack testing the thermal oxidizer. Except for POM was estimated by using VOC emission data obtained from 1993 and 2002 stack testing as a guideline; and SO_2 emission was calculated using material balance.
02	Testing	10.2 lb/hr 14.9 tpy	Baghouse	99.5%	Permittee measured the amount captured by the

SN	Emission Factor Source	Emission Factor & units	Control Equipment Type	Control Equipment Efficiency	Comments
					baghouse and multiplied by 0.005 to obtain emission rates.
03	Testing	Based on the record 0.001222 tons of material collected for every ton material blasted	Baghouse	99.5%	Permittee measured the amount captured by the baghouse and multiplied by 0.005 to obtain emission rates.
04	10% of material handled lost to the baghouse	0.01 grains/scf	Baghouse	99.5%	Flow rate=38,600 acfm
05a	Industry std and accepted outlet emission factor	PM/PM_{10} = 0.005 grains/cu. ft. Flowrate (blower)=135,000 acfm SO_2 and CO emissions were based on stack testing	Two Compartment Baghouse	98 %	Emission factor is uncontrolled.
05b and 05b	Stack Testing	PM/PM_{10} = 0.005 grains/cu. ft. Flowrate (blower)=31,000 acfm SO_2 and CO emissions were based on stack testing	None	N/A	Emission factor is uncontrolled
05b	Industry Standard	0.005 grains/cu ft.	Baghouse	98 %	Emission factor is uncontrolled.
05b	Industry Standard	0.005 grains/cu ft.	Baghouse	98 %	Emission factor is uncontrolled.
06	Stack Testing	The process is a batch process with constantly changing emission rates	None	N/A-	Emission rates were escalated from the tested values where 1 furnace was firing by a factor of 1.5 for the expansion.
07	Manufacturer's Warranty – These emissions are added to SN-04 in 429-AOP-R1	0.02 grains/cubic foot	Filter	-	Source operates a maximum of 1,460 hours per year (can handle 8.2 million pounds in that time period).
09a, 09b, 09c, and	Stack test	The process is a batch process with emission rates	None	09a (thermal	stack test

SN	Emission Factor Source	Emission Factor & units	Control Equipment Type	Control Equipment Efficiency	Comments
09d		constantly changing		Oxidizer)	
09a	AP-42	Natural gas combustion factors	None	-	-
14	Testing	6.4 lb/hr 7.4 tpy	Baghouse	99.5%	Permittee measured the amount captured by the baghouse and multiplied by 0.005 to obtain emission rates.
15	Testing	0.3 lb/hr 1.3 tpy	Baghouse	99.5%	Permittee measured the amount captured by the baghouse and multiplied by 0.005 to obtain emission rates.
16	Testing	0.1 lb/hr 0.4 tpy	Baghouse	99.5%	Permittee measured the amount captured by the baghouse and multiplied by 0.005 to obtain emission rates.
17	Estimated	-PM (fugitive emissions) - 1% or stock piles (fugitive emissions is waste/by-product consisting of solid waste carbon and graphite generated in the manufacturing process, stored in roll-off bins or super sacks until hauled to either a customer or to a municipal landfill) -PM (soot)- Estimates are that less than 100 lbs of soot are present on each of the car bottom furnace loads after firing, and no more than 10% of this material becomes airborne	None	NA	-Waste generation (fugitive PM emissions)= 105 lb/hr = 460tpy PM (soot)- a maximum of 16 rebake runs per month or 192 runs per year
18	Estimated	100 % of machined material to the baghouse	Baghouse	99.5%	-
19-26	Stack testing	The process is a batch process with constantly changing emission rates	None	N/A	The measured emission rates have been escalated to account for the facility expansion

SN	Emission Factor Source	Emission Factor & units	Control Equipment Type	Control Equipment Efficiency	Comments
27	OEM Rating	0.03 grains/scf	Baghouse	99.9%	-
Emergency Fire Pump Engine (Insignificant Activity A-13)	AP-42	PM=0.31 lb/MMBtu PM_{10}=0.31 lb/MMBtu SO2=0.95 lb/MMBtu VOC=0.36 lb/MMBtu CO=0.29 lb/MMBtu NOx=4.41 lb/MMBtu	None	N/A	Emergency Fire Pump Engine manufactured January1980 and installed in 1981 40CFR Part 63 Subpart ZZZZ is not applicable
29, 30, 31, 32	AP-42, Table 13.4-1	PM/PM_{10}=0.0195 lb/gal TDS=12,000 PPM	Mist Eliminator	50% (estimated for Mist Eliminator efficiency)	Cooling Towers Throughput: SN-29 = 475 gal/min SN-29 =1800 gal/min SN-29 = 1800 gal/min SN-29 = 260 gal/min
33	AP-42, Table 3.4-1 and NSPS Subpart IIII, § 89.112, Table 1	AP-42: SO_2=0.00205 lb/hp-hr lb/MMBtu	None	N/A	Emergency generator-96 HP (72 KW) (Baldor IDLC60-3J Permit Opertation Limit=500 hr/yr
	AP-42, Table 3.3-1 and NSPS Subpart IIII, § 89.112, Table 1	NSPS: PM/ PM_{10}=0.00066 lb/hp-hr VOC=0.00772 lb/hp-hr CO=0.00821 lb/hp-hr NO_X=0.00772 lb/hp-hr			
	AP-42	HAPs: AP-42, Table 3.3-2 (HAPs emissions below de minimis level, not limited in the permit)			
34 and 35	AP-42, Table 3.4-1 and	AP-42 Table 3.4-1 (10/1966) Based on fuel with 15ppm sulfur (0.0015%) SO_2=0.00015 lb/MMBtu	None	N/A	Calculations are based on 500 hr/yr operation. Emergency Generators Engines 1528 Hp (1140 KW) From Equipment Spec Max Fuel Usage=77.9 Gal/hr 77.9 gal/hr X 137,000 Btu/gal Diesel Fuel =106723 MMBtu/hr
	NSPS Subpart IIII, § 89.112, Table 1 for engine kW>560, Tier	NSPS: PM/ PM_{10}=0.2 g/kW-hr VOC=6.4 g/kW-hr CO=3.5 g/kW-hr NO_X=6.4 g/kW-hr			

SN	Emission Factor Source	Emission Factor & units	Control Equipment Type	Control Equipment Efficiency	Comments
	2				
	AP-42 Table 3.4-3 and 3.3-4	HAPs: AP-42, Tables 3.4-3 and 3.3-4 (10/966) For POM, total PAH is used			

13. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
01	PM/PM_{10} SO_2 VOC CO NO_X POM	5 6C 25A 10 7E As Approved by Department	Once every 5 years	test for emission verification
09a	PM/PM_{10} SO_2 VOC CO NO_X POM	5 6C 25A 10 7E As Approved by Department	Once every 5 years	test for emission limit verification
09b, 09c, 09d	PM/PM_{10} SO_2 VOC CO NO_X	5 6C 25A 10 7E	Once every 5 years	test for emission limit verification
19 thru 26	SO_2 VOC CO NO_X	6C 25A 10 7E	(Similar furnaces, will choose to conduct tests only on two furnaces)	test for emission verification

SN	Pollutants	Test Method	Test Interval	Justification
06	PM/PM_{10} SO2 VOC CO NO_X HCN H_2S	5 6C 25A 10 7E	N/A	test for emission limit verification
29, 30, 31, and 32	TDS	----	Once per quarter	Test for Total Dissolved Solids

14. 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)
01&09	Oxidizer Outlet Temperature	Recorder	Continuously	N
01	Bake Furnace Outlet Temperature	Manual Recording, strip chart or data base in a microprocessor	No less than every 2 hours	N

15. 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)
Plantwide	Sulfur Dioxide Emissions material balance	124.6 tons per 12 month period	Monthly/Annual	Y
09a	Temperature	>705 °C (when autoclaves is open) the permittee maintain recorders demonstrating that autoclave was closed when temperature e	As required	N

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
		was not recorded.		
Plantwide	Weight of electrodes leaving the lengthwise graphitization (LWG) process per 12-month period.	47,433 metric tons of electrodes	Monthly	N
Cooling Towers (SN-29, SN-30, SN-31, and SN-32)	Total Dissolved Solids	12,000 ppm	quarterly	N
01	Opacity	20%	Daily	N
02, 03, 04, 05a, 05b, 05c, 14, 15, 18, and 27	Opacity	5%	daily	N
06	Opacity	10%	weekly	N
09b, 09c, and 09d	Opacity	5%	weekly	N
19-26	Temperature	Outlet temperature (the temperature when the outlet is switched to the carbon bake incinerator and the temperature when it is switched from the carbon bake incinerator)	As needed	N
01	Electrode Loading Capacity (metric tons loaded weight)	1,822	daily	N
06*	Electrode Loading Capacity (metric tons	55.5 metric tons for each furnace with a maximum of two furnaces	daily	N

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
	loaded weight)	in firing phase at any given time 276 metric tons per five furnaces at cooling phase		
09a, 09b, 09c, and 09d	Electrode Loading Capacity (metric tons loaded weight)	19 (Existing Autoclave) 22 (High Pressure Autoclave)	daily	N
19 through 26	Electrode Loading Capacity (metric tons loaded weight)	323 metric tons per each furnace	daily	N
33	Hours of Operation	500 hours	Monthly	N
34	Hours of Operation	500 hours	Monthly	N
35	Hours of Operation	500 hours	Monthly	N

16. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
01	20%	§19.705 of Regulation 19 and 40 CFR Part 52, Subpart E	Operation Parameters
02, 03, and 04	5%	§19.705 of Regulation 19 and 40 CFR Part 52, Subpart E	Baghouse Operation Parameters
(05a, 05b, and 05c)*	5%	§19.705 of Regulation 19 and 40 CFR Part 52, Subpart E	*Combined opacity limit
09	5%	§19.705 of Regulation 19 and 40 CFR Part 52, Subpart E	Operation Parameters
(09b, 09c, 09d)*	5%	§18.501 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311	Operation Parameters

SN	Opacity	Justification for limit	Compliance Mechanism
14, 15, 17, 18, and 27	5%	§19.705 of Regulation 19 and 40 CFR Part 52, Subpart E	Baghouse Operation Parameters

17. DELETED CONDITIONS:

Former SC	Justification for removal
No conditions removed.	

18. GROUP A INSIGNIFICANT ACTIVITIES

Source Name	Group A Category	Emissions (tpy)						
		PM/PM_{10}	SO_2	VOC	CO	NO_x	HAPs	
							Single	Total
48 HP Boiler	A-1	0.053	0.004	0.038	0.581	0.692		
Oil Heater	A-1	0.15	0.012	0.109	1.663	1.980	0.036	0.037
Total	A-1	0.203	0.016	0.147	2.244	2.672	0.036	0.037

19. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

List all active permits voided/superseded/subsumed by the issuance of this permit.

Permit #
0429-AOP-R12

20. CONCURRENCE BY:

The following supervisor concurs with the permitting decision.

Karen Cerney, P.E.

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Major Source

Revised 08-20-12

Facility Name: SGL Carbon
Permit Number: 429-AOP-R13
AFIN: 24-00014

$/ton factor		22.97	Annual Chargeable Emissions (tpy)	554.3
Permit Type	AA		Permit Fee $	0

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)	0
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	☑	153	153	0	0	153
PM_{10}	☐	153	153	0		
SO_2	☑	217.2	217.2	0	0	217.2
VOC	☑	59.7	59.7	0	0	59.7
CO	☐	680.2	680.2	0		
NO_X	☑	96.8	96.8	0	0	96.8
HCN	☑	5.7	5.7	0	0	5.7
POM	☐	8.68	8.68	0		
H2S	☑	21.9	21.9	0	0	21.9
benzene	☐	0.005	0.005	0		
toluene	☐	0.002	0.002	0		
xylene	☐	0.002	0.002	0		
formaldehyde	☐	0.0005	0.0005	0		
acetaldehyde	☐	0.0002	0.0002	0		
acrolein	☐	0.00004	0.00004	0		