DRAFT

Engineering Evaluation
K2 Pure Solutions Nocal, LP
950 Loveridge Road
Pittsburg, CA 94565-4565
Plant No. 19931
Application No. 734627

Project Description: Installation of Cleaver-Brooks Natural Gas Fired Boiler

BACKGROUND

k2 Pure Solutions (k2) is applying for an Authority to Construct and Permit to Operate a new water-tube boiler for hot water,

S-61 Hot Water Boiler (Low NOx Burner), Make: Cleaver Brooks; Model: NOS-2A-67; Fuel: Natural Gas; Rated at 94.7 MMBtu/hr.

Abated by

A-56 Selective Catalytic Reduction (SCR), Make: R. F. McDonald Co., Model: ECAT-929-0604-30-2.5-5.

S-61 will be installed at 950 Loveridge Road Pittsburg, CA. This facility previously had two boilers, S-50 and S-11; while S-11 was used as the main boiler, S-50 was the backup boiler. S-11 and S-50 have been subject to Permit Condition #24658 which has a combined natural gas usage limit for the two boilers. This limit, 543,120 MMBtu/year, is equal to the maximum annual gas usage of S-11 (62 MMBtu/hr × 8,760 hrs/year). S-50 was removed from service on 10/16/2024. The facility is proposing to use the new boiler (S-61) as the main boiler and S-11 as the backup boiler. Boilers S-61 and S-11 will be subject to a new combined natural gas usage limit of 829,572 MMBtu/year. This new limit is equal to the boiler S-61's maximum annual natural gas usage (94.7 MMBtu/hr × 8,760 hrs/year). Condition #24658 will be modified accordingly, adding S-61 and removing S-50.

The proposed boiler is fueled solely by natural gas (NG). The primary pollutants from NG boilers are the products of combustion, including nitrogen oxides (NO_X), carbon monoxide (CO), hydrocarbon and other organic compounds (precursor organic compounds, POCs), sulfur dioxide (SO_2), and particulate matter (PM_{10} and $PM_{2.5}$). Various toxic air contaminants (TACs) are also emitted during NG combustion.

EMISSIONS SUMMARY

<u>S-61 Emissions from Natural Gas Combustion</u>

Basis:

- Operation hours = (24 hrs/day) × (365 days/year) = 8,760 hours/year
- Boiler maximum heat input = 94.7 MMBtu/hr = 90,190 SCF/hr of NG
- Total fuel throughput = (94.7 MMBtu/hr) × (8,760 hrs/yr) = 829,572 MMBtu/yr = 8,295,720 Therms/yr

- NG Heat capacity = 1,050 Btu/ft^3

Natural gas combustion at S-61 produces the criteria pollutants nitrogen oxides (NO_X), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter (PM_{10} and $PM_{2.5}$) and precursor organic compounds (POCs). The emissions of S-61 are summarized in Table 1.

Table 1. Natural Gas Combustion Emissions for Source S-61

Pollutant	Emission Factors			Emissions Burning Natural Gas			
		lb/MMBtu	Reference	lb/hr	(lb/day)	(lb/yr)	(ton/yr)
NO_X	2.5 ppm @ 3% O_2	0.0033	Vendor	0.3125	7.500	2,737.6	1.369
CO	50 ppm @ 3% O_2	0.0396	Vendor	3.7501	90.003	6,5785.1	16.426
SO_2	0.6 lb/MMscf	0.0006	AP 42 [1]	0.0541	1.299	474.0	0.237
$PM_{10}/PM_{2.5}$ [2]	7.6 lb/MMscf	0.0072	AP 42 [1]	0.6854	16.451	6,004.5	3.002
POC/NPOC [3]	5.5 lb/MMscf	0.0052	AP 42 [1]	0.4960	11.905	4,345.4	2.173

[1] Table 1.4-2: https://www.epa.gov/sites/default/files/2020-09/documents/1.4_natural_gas_combustion.pdf
[2] Filterable + Condensable
[3] Non-Methane VOC only

Cumulative Emission Increase

The cumulative emission increase associated with this application is calculated according to the procedures in Regulation 2-2-607.

Table. 2 summarizes the cumulative increases that will result from this project.

Table 2. Permitted Cumulative Increase

Pollutant	Emissions (tons/yr)			
	Existing	S-61	Offset (SFB at 1:1)	Total
NO_X [1]	2.339	1.369	3.708	0.000
CO	11.291	16.426		27.717
SO_2	1.166	0.237		1.403
PM_{10}	7.492	3.002		10.494
$PM_{2.5}$	0.019	0.000		0.019
POC/NPOC	1.990	2.173		4.163

[1] The facility's existing cumulative increase for NOx is 12.819 tpy; 10.48 tpy has been offset by SFB.

Facility Potential to Emit

The facility has only one permitted emergency backup generator, S-12. The PTE for S-12 is calculated based on annual hours of operation for non-emergency plus 100 hr/yr for emergency purposes, according to the Air District Policy [1].

The assumption of 100 hours per year of emergency operation is used to determine the applicability of certain District permitting regulations, such as New Source Review and Title V Major Facility Review. The District Policy is not used to determine the quantity of emission offsets required for a project that triggers New Source Review or for PSD. It is also not applicable for purposes of the Toxics New Source Review requirements of District Reg. 2-5 (per Regulation 2-5-111).

[1] BAAQMD Policy: Calculating Potential to Emit for Emergency Backup Power Generators. Approval date June 3, 2019. (Referred to as "District Policy" in this engineering evaluation).

Table 3 below shows the calculated facility-wide potential to emit. More detailed information is in Appendix A.

Table 3. Facility-Wide Potential to Emit Review			
Pollutant	**Emissions (ton/yr)**		
	Existing	**New (S-61)**	**Total**
NO_X	13.891	1.369	15.260
CO	11.653	16.426	28.079
SO_2	1.214	0.237	1.451
PM_{10}	7.530	3.002	10.532
$PM_{2.5}$	0.057	0.000	0.057
POC/NPOC	2.046	2.173	4.219

Toxic Emissions from Natural Gas Combustion

On December 15, 2021, the Air District updated the Toxic Air Contaminant (TAC) trigger levels as shown in Table 2-5-1 of Regulation 2-5. TAC emissions from the proposed boiler are calculated to establish whether the emissions exceed the TAC emission triggers as shown in Table 4 below. As seen, nine of the TAC emissions are above the HRA trigger levels.

Table 4. Toxic Air Contaminant Emissions due to Natural Gas								
TAC	**CAS Number**	**Annual Fuel Usage (MMBtu/yr)**	**Emission Factor [1] (lb/MMBtu)**	**Total Emissions**		**Trigger Levels**		**Triggers? Yes/No**
				Hourly (lb/hr)	**Annual (lb/yr)**	**Acute (lb/hr)**	**Chronic (lb/yr)**	
Acetaldehyde	75-07-0	829,572	4.22E-06	4.00E-04	3.50E+00	2.10E-01	2.90E+01	No
Acrolein	107-02-8	829,572	2.65E-06	2.51E-04	2.20E+00	1.10E-03	1.40E+01	No
Arsenic	7440-38-2	829,572	1.96E-07	1.86E-05	1.63E-01	8.80E-05	1.60E-03	Yes
Benzene	71-43-2	829,572	7.84E-06	7.42E-04	6.50E+00	1.20E-02	2.90E+00	Yes
Beryllium	7440-41-7	829,572	5.88E-09	5.57E-07	4.88E-03	N/A	3.40E-02	No
Cadmium	7440-43-9	829,572	1.08E-06	1.02E-04	8.96E-01	N/A	1.90E-02	Yes
Copper	7440-50-8	829,572	8.33E-07	7.89E-05	6.91E-01	4.40E-02	N/A	No
Ethylbenzene	100-41-4	829,572	9.31E-06	8.82E-04	7.72E+00	N/A	3.30E+01	No
Formaldehyde	50-00-0	829,572	2.17E-04	2.05E-02	1.80E+02	2.40E-02	1.40E+01	Yes
n-Hexane	110-54-3	829,572	6.18E-06	5.85E-04	5.13E+00	N/A	2.70E+05	No
Lead	7439-92-1	829,572	4.90E-07	4.64E-05	4.06E-01	N/A	2.90E-01	Yes
Manganese	7439-96-5	829,572	3.73E-07	3.53E-05	3.09E-01	N/A	3.50E+00	No
Mercury	7439-97-6	829,572	2.55E-07	2.41E-05	2.12E-01	2.70E-04	2.10E-01	Yes
Naphthalene	91-20-3	829,572	5.98E-07	5.66E-05	4.96E-01	N/A	2.40E+00	No
Nickel	7440-02-0	829,572	2.06E-06	1.95E-04	1.71E+00	8.80E-05	3.10E-01	Yes
PAH [2]	1150/1151	829,572	6.60E-09	6.25E-07	5.48E-03	N/A	3.30E-03	Yes
Propylene	115-07-1	829,572	7.17E-04	6.79E-02	5.95E+02	N/A	1.20E+05	No
Selenium	7782-49-2	829,572	1.18E-08	1.12E-06	9.79E-03	N/A	8.00E+00	No
Toluene	108-88-3	829,572	3.59E-05	3.40E-03	2.98E+01	2.20E+0	1.60E+04	No
Vanadium	7440-62-2	829,572	2.25E-06	2.13E-04	1.87E+00	1.30E-02	N/A	No
Xylenes	1330-20-7	829,572	2.67E-05	2.53E-03	2.21E+01	9.70E+0	2.70E+04	No
Ammonia Slip (SCR)	7664-41-7	829,572	2.40E-03	2.27E-01	1.99E+03	1.40E+0	7.70E+03	No

[1] August 2020 report by the Air District titled: BAAQMD TAC Emission Factor Guidelines Appendix A
https://www.baaqmd.gov/~/media/files/ab617-community-health/facility-risk-reduction/documents/tac_emission_factor_guidance_appendixa_august_2020-pdf.pdf?la=en

[2] (as benzo(a)pyrene-equiv.)

Grain Loading

The grain loading rate calculation is required for determining the compliance of this application with BAAQMD Regulation 6, Rule 1 (refer to "Statement of Compliance" section, below).

[0.682 lb PM_{10}/hr × 7000 grain/lb] / [60 min/hr ×24,111 DSCFM] = 0.003 grain/dscf

Assumptions:

- 0.0072 lb PM_{10}/MMBtu × 94.7 MMBtu/hr = 0.682 lb PM_{10}/hr
- 7000 grain/lb standard conversion factor (AP-42 Appendix A, Page A-19)
- Per data form, S-61 has maximum flow of 46,357 acfm at temperature 559°F dry exhaust; that is equivalent to 24,111 DSCFM:

DSCFM = ACFM × [(460°R + 70°F) / (460°R + temp)] × (Actual P/14.7 psi) × (1-Bwo)

Where: ACFM = 46,357 cfm, temp = 559°F, Actual P = 14.7 psi, Bw = 0 (fraction of water vapor)

STATEMENT OF COMPLIANCE

Regulation 1: General Provisions and Definitions

The facility is subject to Regulation 1, Section 301, which prohibits discharge of air contaminants resulting in public nuisance. The facility is expected to comply with this requirement.

Regulation 2, Rule 1: Permits – General Requirements

California Environmental Quality Act (CEQA):

The Air District Regulation 2, Rule 1, Section 310 specifies that all proposed new and modified sources subject to the Air District permit requirements must be reviewed in accordance with CEQA requirements, except for ministerial projects or projects exempt from CEQA under Section 2-1-312. Because S-61 is subject to BACT for CO, PM, and POC, the Air District does not consider this project approval to be Ministerial.

K2 Pure Solutions Nocal, LP will be using S-61 as the main boiler, replacing the current function of the existing boiler S-11 (62 MMBtu/hr capacity). When S-61 is installed, S-11 will be used only as backup with the annual natural gas usage for S-61 and S-11 combined being capped by the maximum fuel usage of S-61. Boiler S-61 is fueled exclusively by natural gas.

The Air District's Regulation 2-1-312 sets forth specific types of projects, which have been determined by the Air District to be categorically exempt from CEQA. Section 312.11 states that "permit applications for a new or modified source or sources or for process changes, which will satisfy the 'No Net Emission Increase' provisions of District Regulation 2, Rule 2 and for which there is no possibility that the project may have any significant environmental effect in connection with any environmental media or resources other than air quality" are exempt from the CEQA review. Section 312.11.3 further states that "a proposed new source or stationary source at a small facility for which full offsets are provided from a small facility bank established by the APCO pursuant to Regulation 2-4-414, and for which there will be no other significant environmental effect" is an example of projects that are exempt from CEQA review. This source is located at a small facility which has facility-wide NOx emissions greater than 10 tons per

year but less than 35 tons per year including emissions from this project. Full NOx offsets will be provided from the Air District's Small Facility Bank. The facility also completed the District CEQA Appendix H, Environmental Information Form, for this project. Based on all of the information before the District and the District's review of the information submitted, the Air District has determined that there is no possibility that the project may have any significant environmental effect. Thus, the Air District concludes that the permit application is exempt from CEQA because it is categorically exempt from CEQA.

Public Notification:

A new or modified source located within 1,000 feet of the outer boundary of a K-12 school, or within an Overburdened Community as defined in Section 2-1-243, and results in the increase in emissions of a toxic air contaminant in Table 2-5-1 of *Regulation 2, Rule 5 New Source Review of Toxic Air Contaminants,* requiring a Health Risk Assessment (HRA), shall prepare and distribute a public notice in accordance with subsections 412.1 and 412.2 of *Regulation 2, Rule 1 General Requirements*.

This application proposes a new source of TAC's which is not located within 1,000 feet of the outer boundary of the nearest K-12 school (with more than 12 children enrolled) but is located within an Overburdened Community and requires an HRA. Therefore, public notification pursuant to Reg. 2-1-412 is triggered and will be conducted.

Emission Offsets:

The offset requirements for precursor organic compounds (POC) and nitrogen oxides (NOx) are found in Regulation 2, Rule 2, Section 302. Under Section 2-2-302, POC and NOx emission offsets are required for new or modified sources at a facility which emits or will be permitted to emit 10 tons per year (TPY) or more on a pollutant specific basis. If the facility has the potential to emit less than 35 tons of POC or NO_X per year, the emission offsets may be provided by the District's Small Facility Banking (SFB) account at a ratio of 1.0 to 1.0 for any un-offset cumulative increase in emissions at the facility. If the facility has the potential to emit more than 35 tons/year of POC or NOx, the site is responsible for providing the required offsets at a ratio of 1.15 to 1.0.

Based on cumulative increase (Table 2), this project triggers offset for NO_X which will be provided by SFB, at ratio 1.0:1.0.

Regulation 2, Rule 2: Permits – New Source Review

Best Available Control Technology (BACT): Per Regulation 2, Rule 2, Section 301 BACT is required for new or modified sources with potential emissions of 10.0 pounds per day or more of POC, NPOC, NO_X, PM_{10}, or SO_2.

BACT - Natural Gas Combustion: Criteria pollutant emissions from boiler S-61 burning natural gas are above 10 lbs per highest day for CO, PM10, and POC, triggering BACT. The BAAQMD BACT/TBACT Handbook for Boilers ≥ 50 MMBtu/hr heat input (Document 17.3.1, Rev 5, Dated 8/4/2010) specifies BACT for POC, CO, and PM10 as follows:

Pollutant	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. n/d 2. n/s	1. n/d[f] 2. Good Combustion Practice[a]

CO	1. 10 ppmv @ 3% O_2 Dry [f] 2. 50 ppmv @ 3% O_2 Dry [a, c, e]	1. Oxidation Catalyst [f] 2. Good Combustion Practice in Conjunction with SCR System or Ultra Low NO_x Burners and FGR [a, c, e]
PM_{10}	1. n/d 2. Natural Gas or Treated Refinery Gas Fuel [a,c]	1. n/d 2. Fuel Selection[a,c]

a. BAAQMD
b. SCAQMD. Cost effectiveness evaluations shall be based on emissions from firing primary fuels but not emergency backup fuels.
c. BACT limits apply to all fuels except for emergency backup fuel oil used during natural gas curtailment. For emergency backup fuel oil:
BACT(1) for NOx and CO (achieved using LNB+FGR+SCR and GCP) is 25 ppmvd NOx @3%O2, 100 ppmvd CO @3%O2, and 5 ppmvd NH3 @ 3%O2
BACT(2) for NOx and CO (achieved using ULNB+FGR and GCP) is 40 ppmvd NO_x @3%O2 and 100 ppmvd CO @#%O2
BACT(2) for SO2 and PM10 is the use of low sulfur fuel with < 0.05 wt% S
BACT(2) for POC is GCP
d. NOx determination by Continuous Emission Monitor (3-hr average), or BAAQMD approved equivalent.
e. CO determination by Continuous Emission Monitor (3-hr average), or BAAQMD approved equivalent.
f. The BACT(1) CO limit does not apply to boilers smaller than 250 MMBTU/hr unless an oxidation catalyst is found to be cost effective for TBACT or POC Control.

BACT 2 for PM10 has been specified as use of Natural Gas.

BACT 2 for POC has not been specified, however typical technology has been specified as good combustion practice.

For CO, BACT 1 and 2 are 10 ppmv and 50 ppmv (both at 3% O2), respectively. Achieved in practice have been Oxidation Catalyst and Good Combustion Practice in Conjunction with SCR System OR Ultra Low NO_X Burner and FGR. According to note f: the BACT (1) CO limit does not apply to boilers smaller than 250 MMBtu/hr unless an oxidation catalyst is found to be cost effective for TBACT or POC Control.

Control Technology Review
Several control technologies can reduce CO emissions from boilers like S-61. These technologies have been divided into three categories: Clean Fuels, Good Combustion Practices, and Post-Combustion Technologies.

Clean Fuel Technology: S-61 is designed as a dual-fired boiler, capable of firing both natural gas and diesel fuel however it will burn NG exclusively. The use of NG will improve combustion efficiency, lowering CO emissions. The use of natural gas fuel is achieved in practice for this boiler. The applicant has confirmed that this boiler will not use diesel fuel.

Good Combustion Practices: CO being product of an incomplete combustion, increasing the combustion efficiency will reliably control CO emissions. This can be achieved by raising the combustion temperature, operating the burner at a lean fuel-to-air ratio, and increasing the air/fuel ratio during

combustion. Utilizing these techniques to maximize CO reduction may increase both the combustion temperature and the atmospheric nitrogen present during combustion. Both will increase the NO_X generation which is not desirable. Because of that, the Air District has combined the good combustion practices, that improve CO control, with the NO_X control techniques to keep both CO and NOx below the BACT limits.

This boiler will have a low NO_X burner and SCR to control NO_X at no greater than 2.5 ppmvd@3% O2. Controlling both NO_X and CO during combustion is doable by properly maintaining the boiler/SCR and regular burner tune-ups. Regular tune-ups ensure proper air fuel ratio for the burner. Good combustion practice and performing regular burner tune-ups are achieved in practice BACT for the proposed boiler.

Post-Combustion Technologies
The most effective and prevalent post combustion technology to abate CO/POC is an oxidation catalyst. The catalyst is used to lower the heat of reaction, enhancing the rate of CO/POC oxidation.

Achieved in Practice BACT
In order to determine the most stringent emission limitation or control technique for boilers or steam generators, San Joaquin Valley Air Pollution Control District did a comprehensive review of the emission limits in the Federal New Source Performance Standards (NSPS), State and local air District rules and regulations, BACT determinations conducted at Federal, State and local level, and source test data for boilers operating in the San Joaquin Valley Air Pollution Control District (SJVAPCD). This analysis forms the basis for determining Achieved in Practice (AIP) BACT standards for boilers and steam generators. [2]

Based on the review of Federal, State and Local BACT/LAER guidelines, the following standards were found to be the most stringent standards for the natural gas burning boilers, to this date. All ppmvd limits are referenced @3%O2.

Category	NOx	SOx	PM10	CO	VOC
Natural gas fired boiler >5 and ≤20 MMBtu/hr	7 ppmvd (SCAQMD Rule 1146, SMAQMD BACT Guideline)	Use of natural gas (multiple air districts)	Use of natural gas (multiple air districts)	50 ppmvd for fire-tube 100 ppmvd for water tube (multiple air districts)	Use of natural gas (multiple air districts)
Natural gas fired >20 MMBtu/hr	5 ppmvd (SCAQMD Rule 1146, SCAQMD BACT guideline)	--same as above--	--same as above--	--same as above--	--same as above--

For the natural gas fired boilers > 20 MMBtu/hr, BACT for PM10 and VOC are use of natural gas. S-61 using natural gas exclusively, meets BACT conditions for PM10 and POC.

Some air districts' BACT for CO are 50 ppmvd and 100 ppmvd for the fire-tube and the water-tube boilers, respectively. However, BAAQMD's BACT guideline for natural gas boilers, rated more than 50 MMBtu/hr, has 50 ppmvd limits for CO and does not have a separate limit for water-tube boilers. Nevertheless, S-61 being a gas firing water tube boiler still meets the 50 ppmvd BACT limit for CO.

[2] San Joaquin Valley Unified Air Pollution Control District BACT Guideline 111/112 (November 30, 2022): https://ww2.valleyair.org/media/4y3p5sdv/bact-guidelines-evaluation-111-and-112.pdf

Technological Feasibility / Cost-effectiveness BACT

Oxidation catalysts are a technologically feasible way to reduce CO/POC emissions from the proposed boiler.

Cost-effectiveness for an oxidation catalyst has previously been reviewed at the Air District for a 42 MMBtu/hr natural gas water-tube boiler (A/N 30509). According to that study conducted in 2021, an oxidation catalyst was estimated to cost between $27,820 and $52,368 per ton of CO reduction, which was higher than $17,500. This number is expected to be even higher now in 2026. The Air District therefore does not consider the use of an oxidation catalyst to be cost effective for the proposed boiler.

BACT Determination

Boiler S-61, burning natural gas exclusively and with good combustion practice, meets the BACT requirements for both the Bay Area Air District and San Joaquin Valley Air Pollution Control District.

CO limit of 50 ppmvd@3%O2, along with using SCR for controlling NO_X at 2.5 ppmvd@3%O2 and using good combustion practices, is achieved in practice for the water-tube boiler S-61. This CO meets the BACT criteria for the Bay Area Air District and San Joaquin Valley Air Pollution Control District.

The use of a clean burning fuel like NG, proper maintenance of the boiler/SCR and regular burner tune-ups are parts of the achieved in practice and control technologies for BACT CO. To ensure this is achieved, the Air District will impose annual NOx and CO source testing.

PSD BACT Review

Since the facility will not have the potential to emit more than 100 tons per year of any criteria pollutant, this facility is not a "Major Facility" as defined in Regulation 2-1-203 and is not subject to PSD permitting requirements under Regulation 2-2-304.

Regulation 2, Rule 5: Permits – New Source Review of Toxic Air Contaminants

Health Risk Assessment: The Air District's regulation concerning toxic air contaminant emissions is codified in Regulation 2, Rule 5, New Source Review of Toxic Air Contaminants (TAC). The TAC emissions from new and modified sources are subject to risk assessment review, if the emissions of any individual TAC exceed either the acute or chronic emission thresholds, defined in Table 2-5-1. As shown in Table 4, the proposed emissions from the operation of S-61 exceed the acute/chronic trigger levels, and therefore a health risk assessment is required for this application.

A health risk assessment (HRA) was completed for this permit application. This analysis estimates the incremental health risk resulting from toxic air contaminant (TAC) emissions from operation of a hot water boiler (S-61) at this facility. There are no other projects permitted within five years at this facility. Results from this HRA indicate that the project cancer risk is estimated at **0.048 in a million**, the project chronic hazard index (HI) is estimated at **0.021,** and the project acute HI is estimated at **0.0036**. In accordance with the District's Regulation 2-5-301, the proposed new source (S-61) does not require TBACT because the estimated source risk does not exceed a cancer risk of 1.0 in a million, and/or chronic HI of 0.20. Since the estimated project cancer risk does not exceed 6.0 in a million, and project HIs do not exceed 1.0, this proposed project complies with the District's Regulation 2-5-302 project risk requirements, for projects located in an Overburdened Community, as defined in Regulation 2-1-243. This facility has 29 existing sources. This HRA represents an analysis of TAC emissions from a new source, S-61 only. Therefore, this project HRA results do not represent a site-wide HRA.

DRAFT

Regulation 6, Rule 1: Particulate Matter – General Requirements

Section 6-1-301: Except as provided in Sections 6-1-303, 304 and 306, a person shall not emit from any source for a period or aggregate period of more than three minutes in any hour, a visible emission that is as dark or darker than No. 1 on the Ringelmann Chart, or of such opacity as to obscure an observer's view to an equivalent or greater degree.

Section 6-1-302: Except as provided in Sections 6-1-303, 304 and 306, a person shall not emit from any source for a period or aggregate period of more than three minutes in any hour an emission equal to or greater than 20% opacity.

Section 6-1-305: No person shall emit particles from any operation in sufficient number to cause annoyance to any other person where the particles are large enough to be visible as individual particles at the emission point, or of such size and nature as to be visible individually as incandescent particles. This Section shall only apply if such particles fall on real property other than the property of the person responsible for the emission.

S-61 is expected to comply with the above standards with proper maintenance and tune-ups of the proposed boiler.

Section 6-1-310 TSP Concentration Limits: 6-1-310.1 No person shall emit TSP from any source in excess of 343 mg per dscm (0.15 gr per dscf) of exhaust volume.

The emission rate from S-61 results in an outlet grain loading of 0.003 grains/dscf, which is less than the limit of 0.15 grains/dscf and therefore complies with Regulation 6-1-310.1.

Section 6-1-311 TSP Weight Limits: 311.1 No person shall emit TSP from any source at a rate in excess of the limit indicated for the source's Process Weight Rate in Table 6-1-311.1. This section shall not apply to gas-, liquid- or solid-fuel fired indirect heat exchangers.

This subsection does not apply to S-61 boiler; as it does not apply to gas-, liquid- or solid-fuel fired indirect heat exchangers, including boilers.

Per limited exemption, in Section 6-1-114.1, subsections *6-1-310.2* and *6-1-311.2* are not applicable to S-61.

Regulation 9, Rule 1: Inorganic Gaseous Pollutants – Sulfur Dioxide
The proposed boiler is subject to and will comply with Regulation 9, Rule 1, "Inorganic Gaseous Pollutants, Sulfur Dioxide", by restricting fuel use to natural gas only. Based on the AP 42 emission data, combustion of natural gas is expected to produce SO_2 concentrations of 0.5 ppmv (0.0006 lb/MMBtu). This meets the requirement of a maximum outlet concentration of 300 ppmv of SO_2 prescribed in Regulation 9, Rule 1-302.

Regulation 9, Rule 7: Inorganic Gaseous Pollutants - Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional and Commercial Boilers, Steam Generators, and Process Heaters.
Boilers are subject to the requirements of BAAQMD Regulation 9, Rule 7, "Inorganic Gaseous Pollutants, NOx and CO from Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters."

The "Limited Exemption, Natural Gas Curtailment and Testing" provisions under Regulation 9-7-113 is not applicable to S-61 because it burns natural gas exclusively.

Based on the manufacturer's emission rates (NO_X: 2.5 ppmvd @ 3% O2 and CO: 50 ppmvd @ 3% O2), S-61 is expected to comply with the following limits. Therefore, Regulation 9-7-307.6 is satisfied.

9-7-307.6: *Requires NO_X and CO emission limits of 5 and 400 ppmv (dry at 3% oxygen), respectively, for a boiler with a rated heat input of 75 MMBtu/hour or more.*

9-7-503 Records: This rule requires any person operating a source subject to Regulation 9 Rule 7 to keep records of the following items and retain them for a minimum of 24 months from the date of entry:

9-7-503.4 The results of any testing required by Sections 9-7-403 or 506.

Recordkeeping permit conditions will be imposed to ensure S-61 is in compliance with the applicable requirements in 9-7-503.

Regulation 9-7-506 requires periodic emission testing every calendar year for sources subject to emission limits set forth in Section 9-7-307.6. Testing must be conducted in accordance with Sections 9-7-601, -602, or using a portable analyzer in accordance with 9-7-606.

Annual source testing permit conditions will be imposed to ensure that S-61 is in compliance with this requirement.

New Source Performance Standards (NSPS): NSPS for Small Industrial-Commercial-Institutional Steam Generating Units, 40 CFR, Part 60, Subpart Dc, applies to units installed after 6-9-1989 and have a heat input capacity between 10 MM BTU/hour and 100 MM BTU/hour. This boiler is rated 94.7 MMBtu/hr, therefore, the requirement of this subpart applies.

§60.48c in the NSPS requires the owner or operator to submit an initial notification to the EPA with the following information: within 30 days after commencing construction, the date of original construction or reconstruction and anticipated startup, the design heat input rating, and the types of fuels burned and annual fuel consumption anticipated by the boiler; within 15 days after startup, the actual date of initial startup. NSPS also requires fuel usage records to be kept on a monthly basis per § 60.48c(g)(2). In addition, the NSPS General Provisions found in 40 CFR 60 Subpart A apply to S-61. The facility is expected to comply with the NSPS requirements after commencing construction of S-61.

National Emission Standards for Hazardous Air Pollutants (NESHAPs): 40 CFR Part 63 Subpart JJJJJJ applies to existing and new industrial boilers, institutional boilers, and commercial boilers located at area sources of hazardous air pollutants. Area sources are facilities that emit or have the potential to emit less than 10 tons per year of a single hazardous air pollutant, or less than 25 tons per year of combined hazardous air pollutants. Gas-fired boilers, which burn gaseous fuel exclusively, are not covered under the subpart per § 63.11195(e). [See 40 CFR § 63.11237 (definition of "Gas-fired boiler")]. Therefore, NESHAPs are not triggered for S-61.

Permit Condition

Permit Condition 24658 will be modified as shown below, and a new Condition Number 101035 will be assigned to this revised set of conditions for S-61 and S-11, Steam Boilers.

For S-11 & S-61~~50~~ (Boilers)

(Revisions: A# 24505, A# 25669, A# 734627)

1. The owner/operator shall operate the boiler, S-11, on hydrogen and natural gas fuels exclusively~~, and the boiler, S-50, on natural gas only~~.
   (Basis: Cumulative Increase)

2. The owner/operator of S-61 shall operate the boiler, S-61, on natural gas fuel exclusively. (Basis: Cumulative Increase).

3. The owner/operator shall not combust more than 829,572 MMBtu of gaseous fuel (natural gas and hydrogen) at sources S-61 and S-11 combined ~~operate the boilers for more than a combined total of 543,120 MMBtu~~ in any consecutive 12-month period.
(Basis: cumulative increase)

4. The owner/operator shall equip each boiler, S-61 and S-11, with a selective catalytic reduction (SCR) system with ammonia injection. ~~The SCR system shall be kept in good operating condition at all the times the boiler is in operation.~~ The boilers, and SCR Systems, or other approved systems shall be installed, maintained, and operated in accordance with the manufacturer specifications and/or best modern practices.
(Basis: Cumulative Increase, BACT)

5. The owner/operator shall ensure ammonia injection commences as soon as the SCR catalyst bed reaches the minimum operating temperature as specified by the manufacturer.
(Basis: Cumulative Increase)

6. The owner/operator shall ensure emissions do not exceed an ammonia (NH3) slip of 5 ppmv@3%O2 from the SCR system abating S-61. If deemed necessary to demonstrate compliance with Regulation 2, Rule 5, the Air District may require a source test to determine compliance with this emission limit.
(Basis: Regulation 2, Rule 5)

7. The owner/operator shall ensure that the following emission limits are not exceeded from S-11 ~~the boilers~~ under all operating scenarios:

   a. NOx = 7 ppmvd @ 3% O2.
   b. CO = 50 ppmvd @ 3% O2
   c. NH3 = 10 ppmvd @ 3% O2

   (Basis: Cumulative Increase, BACT)

8. The owner/operator shall ensure that the following emission limits are not exceeded from S-61 under all operating scenarios:
   a. NOx = 2.5 ppm @ 3%O2.
   b. CO = 50 ppm @ 3%O2.
   (Basis: Cumulative Increase, BACT)

~~9. The owner/operator shall maintain the monthly records of hydrogen and natural gas combustion and hourly operation of the boilers, S-11 & S-50, in a District approved log. These logs shall be kept for at least 2 years and be made available to the District staff upon request.
(Basis: Cumulative Increase, Recordkeeping)~~

10. The owner/operator shall perform a District approved source test annually to demonstrate compliance with the emission limits of part 7 for S-114. A source test protocol shall be submitted and approval obtained from the Source Test Section of the District before conducting the

source test. The Source Test Section shall be notified at least 7 days in advance of the test date. A copy of the source test shall be submitted to the District within 30 days of the test, and a copy kept on-site for a period of 2 years from the date of the test.
(Basis: BACT, Recordkeeping)

11. Not later than 60 days from the startup of S-61 and at least once every calendar year thereafter, the owner/operator shall conduct Air District approved source tests to determine compliance with the limits in Part 8 for S-61. The owner/operator shall submit the source test results to the Air District's Source Test Section no later than 30 days after source test completion.
(Basis: BACT, Cumulative Increase.)

12. The owner/operator shall install and maintain a non-resettable totalizing fuel meter for natural gas usage at S-61, unless the permit holder applies for and receives written approval from the Air District to use an alternative method for measuring the cumulative annual fuel usage.
(Basis: Cumulative Increase)

13. The owner/operator shall maintain records of the following:

    a. Total monthly natural gas and hydrogen usage for each boiler and a summary of natural gas and hydrogen usage in MMBtu for both boilers for each consecutive rolling twelve-month period.
    b. Documentation verifying annual boiler tune-ups.
    c. Copies of the results of all monitoring and source testing events conducted at the boiler.

    The owner/operator shall retain these records for at least two years from date of entry and shall make these records available to District staff upon request.
    (Basis: Cumulative Increase; Regulation 9, Rule 7)

RECOMMENDATION

The Air District has reviewed the material contained in the permit application for the proposed project and has made a preliminary determination that the project is expected to comply with all applicable requirements of District, state, and federal air quality-related regulations. The preliminary recommendation is to issue an Authority to Construct/Permit to Operate for the equipment listed below. However, the proposed source which triggers an HRA will be located within an Overburdened Community, which triggers the public notification requirements of Air District Regulation 2-1-412. After the comments are received and reviewed, the Air District will make a final determination on the permit.

S-61 Hot Water Boiler (Low NOx Burner), Make: Cleaver Brooks; Model: NOS-2A-67; Fuel: Natural Gas; Rated at 94.7 MMBtu/hr.

Abated by

A-56 Selective Catalytic Reduction (SCR), Make: R. F. McDonald Co., Model: ECAT-929-0604-30-2.5-5

DRAFT

_____ 8/14/2026
Sadegh Sadeghipour Date
Air Quality Engineer

Appendix A

1 – The facility Potential to Emit, Existing:

A/N	Source #	Rated	NOX	CO	SO2	PM	POC			
		bhp	tpy	tpy	tpy	tpy	tpy			
21184	S-12	2,328	0.536	0.181	0.024	0.019	0.028		50	Hours
			1.072	0.362	0.048	0.038	0.056		100	Hours
Emissions,	**Existing**		12.819	11.291	1.166	7.492	1.990			
PTE,	**Existing**		13.891	11.653	1.214	7.530	2.046			

Note: "Emissions, Existing" are those from Power BI which are the same as cumulative increase for the facility's last application prior to A/N 27929 for NOX, POC, and CO. PM10 and SO2 emissions are slightly different because Power BI assumes 0.064 tpy and 0 tpy for A/N 27929 but according to A/N 27929's evaluation, these emissions should be 0.18 tpy and -0.667 tpy, respectively.

DRAFT