air pollution control district
SANTA BARBARA COUNTY

Draft

DECISION OF ISSUANCE NO. 116

I. GENERAL INFORMATION

a. ERC Owner/Percent Ownership: E&B Natural Resources Management Corporation

b. Primary Contact Name: Amy Roth
Primary Contact Company: E&B Natural Resources Management Corporation

c. ERC Application Date: June 25, 2019

d. ERC Application Completeness Date: July 22, 2019

e. ERC Stationary Source Name: Russel Ranch Lease
ERC Stationary Source Number: 04639

f. ERC Facility Name: Russel Ranch Lease
ERC Facility Number: 01086

g. ERC Source:
[ ] ATC Permit Required. ATC Number:
[ ] PTO Canceled. PTO Number:
[x] PTO Modification Required. PTO No: 12914-01
[ ] Exempt. Cite:

h. ERC Source Type: Stationary

II. BACKGROUND

This Decision of Issuance (DOI) is for the creation of NO_x, ROC and CO Emission Reduction Credits (ERCs) due to the replacement of fourteen (14) field gas-fired internal combustion engines. Each unit is less than 50 bhp and functions as a well pumping unit. Three of the engines are subject to District permit since these are equipped with an orifice plate; the remainder of the engines are exempt from permit. The engines will be replaced with electric motors. The three engines subject to permit are currently permitted under PTO 12914-R3.
All engines have been in place and operating for the entire baseline period.

III. EMISSION REDUCTION CREDIT QUALIFICATION

a. Total DOI ERCs Approved:

NO_x = 4.694 tpy
ROC = 2.874 tpy
CO = 35.679 tpy

b. Number of Emission Elements: 1

c. Emission Element Data:

c.1 Emission Element Name: Oil and Gas Well Pump Engines

- EE/DOI Number: 01/0116

- Emission Element Description: Fourteen field-gas fired reciprocating internal combustion engines; three are rated greater than 50 bhp and eleven are rated less than 50 bhp. Specific engine data is provided in Attachment 1.

- ERC Baseline: The three-year emissions baseline is January 2016 through December 2018. For the engines which are not subject to permit, ERCs are based on source tested emission factors. For engines subject to permit, ERCs are based on source tested emission factors for pollutants which tested below the permitted emission factor and on an adjusted permitted emission factor for pollutants that source tested above the permitted emission factor. Hours of operation and fuel use during the baseline years were used in conjunction with the emission factors to calculate ERCs.

- Technical Uncertainty Factor Used? [x] Yes [ ] No

  A 20% uncertainty factor was applied to multiple emission factors since the permitted emission factors for these pollutants were exceeded during source testing that was performed specifically for the proposed ERCs. See the *Evaluation Criteria Summary* section below which discusses quantification of the ERCs.

- ERC Due To: [x] Electrification of existing process (14 ICEs)

- For Shutdowns/Reduction in Throughput : NA (existing process remains, no shutdown).

  [ ] BACT Discounted
  [ ] 20 Percent Minimum Discount

- RACT/SIP Discounted [ ] Yes [x] No

- RACT/SIP Applicable Rules: All units are gas-fired reciprocating internal combustion engines. All units are rated below 50 bhp. Engines rated below 50 bhp are not subject to Rule 331.

- Special ERC Restrictions? [ ] Yes [x] No

- ERC Termination Date: None.

- Emission Element 1/116 Total Approved ERCs:

  NO_x = 4.694 tpy
  ROC = 2.874 tpy
  CO = 35.679 tpy

- Are There Emission Element-Specific Conditions? [x] Yes [ ] No

  (1) Well Pumps. Each well site associated with the engines subject to this DOI shall be powered by an electrically driven pump.

  (2) New Wells. All new oil and gas wells at the Russel Ranch lease shall be powered by electrically driven pumps.

  (3) Disposal of Oil and Gas Well Engines. E&B shall permanently remove each well pump engine identified in Attachment 1 from service by physically disconnecting the engine from any fuel gas and process lines. Each engine shall be made inoperable and be removed from its foundation. E&B shall ensure that each engine block is destroyed. Documentation that the engine blocks have been destroyed shall be provided to the District. Such documentation shall include the engine make, model, ID#, serial number, method of destruction, company and person who performed the work and a photograph of the block showing the work done. This provision does not preclude E&B from salvaging components other than the block for subsequent use as replacement parts in existing engines.

  In lieu of destroying the engine blocks, E&B may provide the District a signed declaration along with proof that the engines were sold or otherwise transferred to a new owner who operates the engines outside of the State of California. The declaration shall specify the location of the engines and the identity of the new owner. E&B shall provide the new owner a written notification stating that the engines must not be sold, transferred, or operated in the State of California. A copy of the notification shall be provided to the District.

  (4) Permit to Operate. A permit application to modify PTO 12914-R3 to depermit the engines identified in Attachment 1 shall be submitted to the District.

(5) Life of DOI. This DOI remains active for the life of the ERCs. This is defined as (a) the ERCs are being used by a project as approved by the District, or (b) the ERCs remain unused in an active ERC Certificate.

(6) Use of the DOI. This DOI is valid for one year from the date stamped below if unused or one year from the date of initial use. "Use" for the purposes of this DOI means commencement of verifiable work efforts necessary to replace an engine.

- Attachments [x] Yes [ ] No

Attachment 1 (*ERC Calculations*)

d. Evaluation Criteria Summary: This application was submitted pursuant to the criteria listed in Rule 806. The ERCs meet the basic qualification criteria of being surplus, quantifiable, permanent and enforceable.

Surplus - In order for the ERCs to be valid, they must be surplus to the District's Clean Air Plan. The 2007 CAP does not require any current or future control requirements for gas-fired reciprocating IC engines rated below 50 bhp. The ERCs associated with the engine are considered surplus.

Quantifiable - Attachment 1 provides the District-approved ERC calculations. The baseline period for quantifying actual emissions is January 2016 through December 2018. Source testing was performed in accordance with District-approved methodologies by a third-party source test contractor specifically for the purpose of calculating the ERCs for all engines. Emission factors (lb/MMBtu) determined from source testing were used in the ERC calculations for each pollutant for the eleven engines not subject to permit. For the permitted engines, each was assigned pollutant emission factors during the permitting of the engines. These emission factors are listed in PTO 12914-R3. During the source testing of these engines, the source tested emission factor for multiple pollutants exceeded the permitted emission factor. For these pollutants, the permitted emission factors were adjusted down by a 20% uncertainty factor to calculate ERCs. For the pollutants which source tested below the permitted emission factor, the source tested emission factor was used. The pollutants and the corresponding adjusted permitted emission factors are identified in Table 2 of Attachment 1.

Engine operating hours and fuel use are used in conjunction with the emission factors to calculate the ERCs. Engine operating hours during the baseline period were obtained from engine operating logs required to be maintained by the source per PTO 12914-R3 for the three engines subject to permit. Well production records from the Division of Oil, Gas and Geothermal Resources (DOGGR) provided the operating hours for the engines not subject to permit. Engine fuel use rates were determined by two separate methods; a 72-hour fuel consumption test performed on each engine and fuel use records made during engine source testing. The lesser of these fuel use rates was used in conjunction

with the annual average hours of operation during the baseline period to determine the total fuel use for each engine during the baseline period. Total fuel use was then applied to the emission factors to calculate the ERCs.

Permanent - In order to assure the permanence of the ERCs, E&B is required to install and use an electrically powered pump at the associated well sites for all future operations. In addition, to avoid any shift-in-load, a condition has been included that requires all new wells at the Russel Ranch lease to be equipped with electric powered oil well pumps. These requirements are conditions of approval under this DOI and will be added to the facility operating permit.

Enforceable - PTO 12914-R3 will be revised to remove the subject engines from permit. The DOI also requires that the engine blocks be permanently disabled from future use.

e. Recommendation: Based on the ERC application, the contents of this DOI and the Attachment to this DOI, approval of the ERCs is recommended.

J. Menno
Evaluator

December 2019
Date

AIR POLLUTION CONTROL OFFICER

DATE

Attachments:

Attachment 1. Emission Reduction Credit Calculations

ATTACHMENT 1

E&B Resources
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Table 1.0 Baseline Operating Data

					DOGGR Data				72 hr Fuel Metering		Source Test Fuel Metering			
ENG #	APCD Device ID #	BHP	Engine Description	Location	2018 Days On	2017 Days On	2016 Days On	Average Hours/year[1]	Flowrate[2] (Mcf/hr)	MMBtu/scf[3]	Mcf/day[4]	Mcf/hr	MMBtu/scf[5]	Baseline MMBtu/yr[6]
W-5	111115	41.8	WAUK 195 GKU	RRU 54-31	363	351	354	8544	0.157	1184.85	3.67	0.153	1270	1657.773
MM-1	111119	48	M&M HD 800	RT 86X-5	325	125	361	6488	0.582	1184.85	7.93	0.331	1228	2633.623
MM-5	112310	46.3	M&M 336	RRU 41-8	357	347	365	8552	0.295	1184.85	3.43	0.143	1228	1502.349
MM-605		46	M&M 605	RT 76X-5	363	363	363	8712	0.457	1184.85	4.60	0.192	1201	2005.430
K-1		20	KABOTA DG972	RRU 55-8	0	114	267	3048	0.063	1180.03	1.57	0.065	1201	226.594
K-2		20	KABOTA DG972	RT 88-5	357	358	365	8640	0.279	1184.85	2.27	0.094	1228	1002.048
K-3		20	KABOTA DG972	RT 77-5	0	214	0	1712	0.094	1180.03	1.43	0.060	1228	125.556
K-4		20	KABOTA DG972	RRU 43-8	284	270	365	7352	0.214	1184.85	2.10	0.088	1228	789.972
K-5		20	KABOTA DG972	RRU 37-5	363	364	365	8736	0.127	1184.85	1.90	0.079	1270	878.332
K-6		20	KABOTA DG972	RT 78-5	0	61	0	488	0.059	1180.03	1.50	0.063	1228	33.975
K-7		20	KABOTA DG972	RRU 64-31	0	269	61	2640	0.071	1180.03	1.53	0.064	1201	202.569
K-8		20	KABOTA DG972	RRU 43-31	365	360	365	8720	0.185	1184.85	4.70	0.196	1270	1911.400
K-12		20	KABOTA DG972	RT 81X-8	306	0	0	2448	0.329	1184.85	5.07	0.211	1201	620.677
K-13		20	KABOTA DG972	RRU 13-5	357	328	365	8400	1.040	1184.85	1.73	0.072	1270	770.467

Notes:

1. Based upon DOGGR Well producing days and E&B Data during the 3 year period from January 2016 through December 2018.
2. Average of measured Mscf per day divided by 24 hours per day.
3. Measured HHV per quarterly Analysis
4. Measured fuel rate during source test (average of three runs).
5. HHV of fuel as sampled during source test
6. Baseline Average MMBtu/yr based upon annual average DOGGR days on and the lesser of the observed fuel consumption rates (72 hour test vs source test data). ICE's K-1, K-6 & K-8 exhibited lower fuel consumption rates during the 72-hr test. All other ICEs displayed lower fuel consumption rates during source testing.

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Table 2: Emission Factors

ENG #	Description	BHP	NOx	ROC	CO
			lb/MMBtu		
MM-5	M&M 336	46.3	0.6281	*0.0968*	*1.2800*
W-5	WAUK 195 GKU	41.8	0.6435	*0.0968*	*1.2800*
MM-1	M&M HD 800	48	0.6191	*0.0968*	0.5892
MM-605	M&M 605	46	0.5697	1.0525	5.2589
K-1	KABOTA DG972	20	0.3343	0.1469	13.5130
K-2	KABOTA DG972	20	0.5658	0.4697	16.4817
K-3	KABOTA DG972	20	0.3927	0.1343	4.6752
K-4	KABOTA DG972	20	1.2870	1.3000	3.0413
K-5	KABOTA DG972	20	1.0743	0.4412	7.8780
K-6	KABOTA DG972	20	0.1563	0.2131	0.9873
K-7	KABOTA DG972	20	0.2150	0.3771	13.0305
K-8	KABOTA DG972	20	0.4858	0.4145	10.8493
K-12	KABOTA DG972	20	0.7788	0.2437	1.6855
K-13	KABOTA DG972	20	0.6063	0.1481	0.6365

Notes:

1. Italized values are the permitted emission factors for each pollutant adusted by a 20% uncertainty factor. These pollutants source tested above the permitted emission factors. The non-italized values are the source tested values. These source tested below the permitted emission factors. Only MM-5, W-5 and MM-1 are subject to permit.
2. The permitted pollutant emission factor for ROC is 0.121 lb/MMBtu and 1.600 lb/MMBtu for CO.
3. All emission factors for engines not subject to permit are source tested emission factors.

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Table 3: Emission Reduction Credits

ENG #	Description	Location	Emissions - Tons/Year		
			NOx	ROC	CO
MM-5	M&M 336	RRU 54-31	0.521	0.080	1.061
W-5	WAUK 195 GKU	RT 86X-5	0.847	0.127	1.686
MM-1	M&M HD 800	RRU 41-8	0.465	0.073	0.443
MM-605	M&M 605	RT 76X-5	0.571	1.055	5.273
K-1	KABOTA DG972	RRU 55-8	0.038	0.017	1.531
K-3	KABOTA DG972	RT 88-5	0.283	0.235	8.258
K-3	KABOTA DG972	RT 77-5	0.025	0.008	0.294
K-5	KABOTA DG972	RRU 43-8	0.508	0.513	1.201
K-6	KABOTA DG972	RRU 37-5	0.472	0.194	3.460
K-6	KABOTA DG972	RT 78-5	0.003	0.004	0.017
K-7	KABOTA DG972	RRU 64-31	0.022	0.038	1.320
K-12	KABOTA DG972	RRU 43-31	0.464	0.396	10.369
K-12	KABOTA DG972	RT 81X-8	0.242	0.076	0.523
K-13	KABOTA DG972	RRU 13-5	0.234	0.057	0.245
Emission Reduction Credits ton/year			4.694	2.874	35.679

1. ERCs are based on the baseline MMBtu/yr (Table 1) and the lb/MMBtu emission factor (Table 2).