San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

June 30, 2022

Mr. Dana Home
California Dairies
2000 N. Plaza Dr.
Visalia, CA 93291

Re: Proposed ATC / Certificate of Conformity (Significant Mod)
Facility Number: S-7063
Project Number: S-1213742

Dear Mr. Home:

Enclosed for your review is the District's analysis of an application for Authority to Construct for the facility identified above. You requested that a Certificate of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. California Dairies proposes to modify three existing boilers (S-7063-8-9, '-9-9, and '-18-6) by installing Selective Catalytic Reduction (SCR) to each, replacing their burners, and removing a current limit of operating only 2 boilers concurrently, in addition to modifying their source testing date requirements.

The notice of preliminary decision for this project has been posted on the District's website (www.valleyair.org). After addressing all comments made during the 30-day public notice and the 45-day EPA comment periods, the District intends to issue the Authority to Construct with a Certificate of Conformity. Please submit your comments within the 30-day public comment period, as specified in the enclosed public notice. Prior to operating with modifications authorized by the Authority to Construct, the facility must submit an application to modify the Title V permit as an administrative amendment, in accordance with District Rule 2520, Section 11.5.

If you have any questions, please contact Mrs. Erin Scott, Permit Services Manager, at (559) 230-5900.

Samir Sheikh
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: (661) 392-5500 FAX: (661) 392-5585

www.valleyair.org www.healthyairliving.com

Printed on recycled paper.

Thank you for your cooperation in this matter.

Sincerely,

Steven D Davidson

Brian Clements
Director of Permit Services

Enclosures

cc: Courtney Graham, CARB (w/enclosure) via email
cc: Laura Yannayon, EPA (w/enclosure) via EPS

San Joaquin Valley Air Pollution Control District

Authority to Construct Application Review

Retrofit Boilers

Facility Name:	California Dairies Inc.	Date:	June 30, 2022
Mailing Address:	2000 N. Plaza Dr. Visalia, CA 93291	Engineer:	Adegoke Oba
		Lead Engineer:	Steven Davidson
Contact Person:	Dana Horne		
Telephone:	559-217-6504		
E-Mail:	dhorne@californiadairies.com		
Application #(s):	S-7063-8-9, '-9-9, and '-18-6		
Project #:	S-1213742		
Deemed Complete:	January 10, 2022		

I. Proposal

California Dairies Inc. (CDI) has requested Authorities to Construct (ATC) permits (S-7063-8-9, '-9-9 and '-18-6) to retrofit three natural gas-fired boilers with a Selective Catalytic Reduction (SCR) system to meet 2.5 ppm NOX @ 3% O2. The burners on each boiler will also be replaced with burners equivalent in maximum heat input which are more suitable to be used in conjunction with the SCR system. CDI requests authorization for the initial source test for all three boilers to be conducted within 60 days of the completion of the third boiler retrofit. In addition, CDI also proposes to remove the current SLC that limits the operation to no more than 2 boilers operating concurrently. PE2 for PM10 will be calculated using the more current emission factor of 0.003 lb/MMBtu in FYI 328 in the Calculations section.

The project results in a Federal Major Modification. Offsets and public notice are required.

Disposition of Outstanding ATCs

PTOs S-7063-8-9, '-9-9, and '-18-6 serve as the base documents. Current PTO S-7063-8-6, '-9-6, and '-18-3 and ATC S-7063-8-9, '-9-9, and '-18-6 are included in **Appendix B**.

California Dairies received their Title V Permit on 07/31/2012. This modification can be classified as a Title V significant modification pursuant to Rule 2520, and can be processed with a Certificate of Conformity (COC). Since the facility has specifically requested that this project be processed in that manner, the 45-day EPA comment period will be satisfied prior to the issuance of the Authority to Construct. California Dairies Company must apply to administratively amend their Title V permit.

II. Applicable Rules

Rule 2201	New and Modified Stationary Source Review Rule (8/15/19)
Rule 2410	Prevention of Significant Deterioration (6/16/11)
Rule 2520	Federally Mandated Operating Permits (8/15/19)
Rule 4001	New Source Performance Standards (4/14/99)
Rule 4002	National Emissions Standards for Hazardous Air Pollutants (5/20/04)
Rule 4101	Visible Emissions (2/17/05)
Rule 4102	Nuisance (12/17/92)
Rule 4201	Particulate Matter Concentration (12/17/92)
Rule 4301	Fuel Burning Equipment (12/17/92)
Rule 4305	Boilers, Steam Generators, and Process Heaters – Phase 2 (8/21/03)
Rule 4306	Boilers, Steam Generators, and Process Heaters – Phase 3 (12/17/20)
Rule 4320	Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr (12/17/20)
Rule 4801	Sulfur Compounds (12/17/92)
CH&SC 41700	Health Risk Assessment
CH&SC 42301.6	School Notice

Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines

III. Project Location

This facility is located at 2000 N Plaza Dr, Visalia, CA. The facility is not located within 1,000 feet of the outer boundary of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

IV. Process Description

CDI operates three 63 MMBtu/hr natural gas-fired boilers S-7063-8, '-9, and '-18 equipped with Ultra NOVA Plus low NOx combustion system Model NVC17-G-40 ultra-low NOx burners and induced FGR. Each boiler will be retrofitted through the installation of an SCR system in each boiler. The burner of each boiler will also be replaced with a Cleaver-Brooks Profire Model NTXLG-630 which is more suitable to be used in conjunction with the SCR system. The SCR system controls the emissions by catalyzing a chemical reaction between the flue gases and a reagent, in this case ammonia. The ammonia is injected upstream of the catalyst, where it reacts and reduces NOx, over the catalyst bed to form nitrogen. Each proposed SCR system is designed to reduce NOx to 2.5 ppm @ 3% O2 while maintaining ammonia slip less than or equal to 10 ppm. During startup and shutdown, each burner will emit a maximum of 20 ppm NO_x and 50 ppm CO.

V. Equipment Listing

Pre-Project Equipment Description:

S-7063-8-6: 63 MMBTU/HR HURST SERIES 400 NATURAL GAS FIRED BOILER WITH AN NOVA PLUS ULTRA LOW NOX COMBUSTION SYSTEM MODEL NVC17-G-40 ULTRA LOW NOX BURNER AND INDUCED FLUE GAS RECIRCULATION (FGR) SYSTEM

S-7063-9-6: 63 MMBTU/HR HURST SERIES 400 NATURAL GAS FIRED BOILER WITH AN NOVA PLUS ULTRA LOW NOX COMBUSTION SYSTEM MODEL NVC17-G-40 ULTRA LOW NOX BURNER AND INDUCED FLUE GAS RECIRCULATION (FGR) SYSTEM

S-7063-18-18: 63 MMBTU/HR HURST SERIES 400 NATURAL GAS FIRED BOILER WITH AN NOVA PLUS ULTRA LOW NOX COMBUSTION SYSTEM MODEL NVC17-G-40 ULTRA LOW NOX BURNER AND INDUCED FLUE GAS RECIRCULATION (FGR) SYSTEM

Proposed Modification:

Retrofit each boiler to meet 2.5 parts per million (ppm) NOX @3% oxygen (O2). Authorize for the initial source test for all three boilers to be conducted within 60 days of the completion of the third boiler retrofit. Removal of the existing specific limiting condition (SLC) stating that no more than two boilers between S-7063-8-9, ‘-9-9, and ‘-18-6 can operate concurrently.

S-7063-8-6: MODIFICATION OF 63.0 MMBTU/HR HURST SERIES 400 NATURAL GAS FIRED BOILER WITH A NOVA PLUS ULTRA LOW NOX COMBUSTION SYSTEM MODEL NVC17-G-40 ULTRA LOW NOX BURNER AND INDUCED FLUE GAS RECIRCULATION (FGR) SYSTEM: RETROFIT BOILER TO MEET 2.5 PPM NOX BY REPLACING EXISTING BURNER WITH A PROFIRE MODEL NTXLG-630 AND INSTALLING AN SCR SYSTEM, AND REMOVE SLC SPECIFYING THAT NO MORE THAN TWO BOILERS (BETWEEN S-7063-8, '-9, AND '-18) CAN OPERATE CONCURRENTLY.

S-7063-9-6: MODIFICATION OF 63.0 MMBTU/HR HURST SERIES 400 NATURAL GAS FIRED BOILER WITH A NOVA PLUS ULTRA LOW NOX COMBUSTION SYSTEM MODEL NVC17-G-40 ULTRA LOW NOX BURNER AND INDUCED FLUE GAS RECIRCULATION (FGR) SYSTEM: RETROFIT BOILER TO MEET 2.5 PPM NOX BY REPLACING EXISTING BURNER WITH A PROFIRE MODEL NTXLG-630 AND INSTALLING AN SCR SYSTEM, AND REMOVE SLC SPECIFYING THAT NO MORE THAN TWO BOILERS (BETWEEN S-7063-8, '-9, AND '-18) CAN OPERATE CONCURRENTLY.

S-7063-18-9: MODIFICATION OF 63.0 MMBTU/HR HURST SERIES 400 NATURAL GAS FIRED BOILER WITH A NOVA PLUS ULTRA LOW NOX COMBUSTION SYSTEM MODEL NVC17-G-40 ULTRA LOW NOX BURNER AND INDUCED

FLUE GAS RECIRCULATION (FGR) SYSTEM: RETROFIT BOILER TO MEET 2.5 PPM NOX BY REPLACING EXISTING BURNER WITH A PROFIRE MODEL NTXLG-630 INSTALLING AN SCR SYSTEM, AND REMOVE SLC SPECIFYING THAT NO MORE THAN TWO BOILERS (BETWEEN S-7063-8, '-9, AND '-18) CAN OPERATE CONCURRENTLY.

Post-Project Equipment Description:

S-7063-8-9: 63.0 MMBTU/HR HURST SERIES 400 NATURAL GAS FIRED BOILER WITH A PROFIRE MODEL NTXLG-630 LOW NOX BURNER AND SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM

S-7063-9-9: 63.0 MMBTU/HR HURST SERIES 400 NATURAL GAS FIRED BOILER WITH A PROFIRE MODEL NTXLG-630 LOW NOX BURNER AND SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM

S-7063-18-6: 63.0 MMBTU/HR HURST SERIES 400 NATURAL GAS FIRED BOILER WITH A PROFIRE MODEL NTXLG-630 LOW NOX BURNER AND SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM

VI. Emission Control Technology Evaluation

Emissions from natural gas-fired boilers include NO_X, CO, VOC, PM_{10}, and SO_X. NO_X is the major pollutant of concern when burning natural gas. NO_X formation is either due to thermal fixation of atmospheric nitrogen in the combustion air (thermal NO_X) or due to conversion of chemically bound nitrogen in the fuel (fuel NO_X). Due to the low fuel nitrogen content of natural gas, nearly all NO_X emissions are thermal NO_X. Formation of thermal NO_X is affected by four furnace zone factors: (1) nitrogen concentration, (2) oxygen concentration, (3) peak temperature, and (4) time of exposure at peak temperature.

The Selective Catalytic Reduction (SCR) system controls the emissions by catalyzing a chemical reaction between the flue gases and a reagent, in this case ammonia. The ammonia is injected upstream of the catalyst, where it reacts and reduces NOx, over the catalyst bed to form nitrogen. Each proposed SCR system is designed to reduce NOx to 2.5 ppm @ 3% O2 while maintaining ammonia slip less than or equal to 10 ppm.

VII. General Calculations

A. Assumptions

To streamline emission calculations, PM2.5 emissions are assumed to be equal to PM10 emissions. Only if needed to determine if a project is a Federal major modification for PM2.5 will specific PM2.5 emission calculations be performed.

- The units are fired solely on PUC regulated natural gas
- The maximum operating schedule is 24 hours per day and 365 days per year
- Maximum Startup and shutdown of the units is 4 hours
- Natural Gas Heating Value: 1,000 Btu/scf (District Practice)
- F-Factor for Natural Gas: 8,578 dscf/MMBtu corrected to 60°F (40 CFR 60, Appendix B)

B. Emission Factors

Pre-Project Emission Factors (EF1)

PTOs S-7063-8-6 and '-9-6

Boiler Emission Factors				
Pollutant	**lb/MMscf**	**lb/MMBtu**	**ppmvd**	**Source**
NO_X	8	0.008	7 (@ 3% O_2)	Current Permit
SO_X	2.85	0.00285		Current Permit
PM_{10}	3.0	0.0076		Current Permit
CO	37	0.037	50 (@ 3% O_2)	Current Permit
VOC	5.5	0.0055	13 (@ 3% O_2)	Current Permit

PTO S-7063-18-3

Boiler Emission Factors				
Pollutant	**lb/MMscf**	**lb/MMBtu**	**ppmvd**	**Source**
NO_X	6.2	0.0062	5 (@ 3% O_2)	Current Permit
SO_X	2.85	0.00285		Current Permit
PM_{10}	3.0	0.0076		Current Permit
CO	37	0.037	50 (@ 3% O_2)	Current Permit
VOC	5.5	0.0055	13 (@ 3% O_2)	Current Permit

Post-Project Emission Factors (EF2)

ATCs S-7063-8-9, and '-9-9, S-7063-18-6

Boiler Emission Factors			
Pollutant	**lb/MMBtu**	**ppmvd**	**Source**
NO_X steady state	0.003	2.5 PPM (@ 3% O_2)	Vendor Guarantee
NO_x startup/shutdown	0.02428	20 PPM @ 3% O_2	Vendor Guarantee
SO_X	0.00285		Policy APR – 1720
PM_{10}	0.003		FYI - 328
CO	0.037	50 (@ 3% O_2)	Current Permit
VOC	0.0055	13 (@ 3% O_2)	Current Permit
NH_3	0.00449	10 (@ 3% O_2)	Vendor Guarantee

C. Calculations

1. Pre-Project Potential to Emit (PE1)

The PE1 for each pollutant is calculated with the following equation:

- PE1 = EF (lb/MMBtu) × Heat Input (MMBtu/hr) × Op. Sched. (hr/day or hr/year)

The potential to emit for the operation is summarized in the table below:

PTOs S-7063-8-6 and '-9-6 (each)

PE1				
Pollutant	**EF1 (lb/MMBtu**	**Heat Input (MMBtu/hr**	**Operating Schedule (hr/day)**	**Daily Emissions (lb/day)**
NO_X	0.008	63	24	12.1
SO_X	0.00285	63	24	4.3
PM_{10}	0.0076	63	24	11.5
CO	0.037	63	24	55.9
VOC	0.0055	63	24	8.3

PE1			
Pollutant	**Daily Emissions (lb/day)**	**Operating Schedule (days/year)**	**Annual Emissions (lb/year)**
NO_X	12.1	365	4,417
SO_X	4.3	365	1,570
PM_{10}	4.5	365	4,198
CO	55.9	365	20,404
VOC	8.3	365	3,030

PTO S-7063-18-3

PE1				
Pollutant	**EF1 (lb/MMBtu**	**Heat Input (MMBtu/hr**	**Operating Schedule (hr/day)**	**Daily Emissions (lb/day)**
NO_X	0.0062	63	24	9.4
SO_X	0.00285	63	24	4.3
PM_{10}	0.0076	63	24	11.5
CO	0.037	63	24	55.9
VOC	0.0055	63	24	8.3

PE1			
Pollutant	**Daily Emissions (lb/day)**	**Operating Schedule (days/year)**	**Annual Emissions (lb/year)**
NO_X	9.4	365	3,431
SO_X	4.3	365	1,570
PM_{10}	11.5	365	4,198
CO	55.9	365	20,404
VOC	8.3	365	3,030

SLC*: (S-7063-8-6, ‘-9-6 and ‘-18-3)

PE1		
Pollutant	**Daily Emissions (lb/day)**	**Annual Emissions (lb/year)**
NO_X	24.2	8,834
SO_X	8.6	3,140
PM_{10}	23.00	8,396
CO	111.8	40,416
VOC	16.6	6,060

*SLC states that only 2 out the three units can operate at any given time

2. Post-Project Potential to Emit (PE2)

ATCs S-7063-8-9, ‘-9-9, ‘-18-6 (each)

PE2				
Pollutant	**EF2 (lb/MMBtu**	**Heat Input (MMBtu/hr**	**Operating Schedule (hr/day)**	**Daily Emissions (lb/day)**
NO_X steady state	0.003	63	20	3.8
NO_x startup/shutdown	0.02428	63	4	6.1
NO_X (total)	N/A	N/A	N/A	9.9
SO_X	0.00285	63	24	4.3
PM_{10}	0.003	63	24	4.5
CO	0.037	63	24	55.9
VOC	0.0055	63	24	8.3
NH_3	0.00449	63	24	6.8

PE2			
Pollutant	**Daily Emissions (lb/day)**	**Operating Schedule (days/year)**	**Annual Emissions (lb/year)**
NO_X steady state	3.8	365	1,387
NO_x startup/shutdown	6.1	365	2,227
NO_X	9.9	365	3,614
SO_X	4.3	365	1,570
PM_{10}	4.5	365	1,656
CO	55.9	365	20,404
VOC	8.3	365	3,030
NH_3	6.8	365	2,482

3. Pre-Project Stationary Source Potential to Emit (SSPE1)

Pursuant to District Rule 2201, the SSPE1 is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of Emission Reduction Credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions (AER) that have occurred at the source, and which have not been used on-site.

SSPE1 (lb/year)					
Permit Unit	**NO_X**	**SO_X**	**PM_{10}**	**CO**	**VOC**
S-7063-0-2					
S-7063-3-3	0	0	2,048	0	0
S-7063-4-3	0	0		0	0
S-7063-5-3	0	0		0	0
S-7063-6-3	0	0		0	0
S-7063-7-5	14,016	999	16,347	79,541	1,927
S-7063-8-6	8,834	3,140	8,396	40,808	6,060
S-7063-9-6					
S-7063-18-3					
S-7063-10-6	0	0	2268	0	0
S-7063-12-4	14,016	999	16,347	79,541	1,927
S-7063-13-3	0	0	2,048	0	0
S-7063-14-3	0	0		0	0
S-7063-15-3	0	0		0	0
S-7063-16-3	0	0		0	0
S-7063-17-2	258	0	4	31	6
SSPE1	**37,124**	**5,138**	**47,458**	**199,921**	**9,920**

4. Post-Project Stationary Source Potential to Emit (SSPE2)

Pursuant to District Rule 2201, the SSPE2 is the PE from all units with valid ATCs or PTOs at the Stationary Source and the quantity of ERCs which have been banked since September 19, 1991 for AER that have occurred at the source, and which have not been used on-site.

SSPE2 (lb/year)					
Permit Unit	**NO_X**	**SO_X**	**PM_{10}**	**CO**	**VOC**
S-7063-0-2					
S-7063-3-3	0	0	2,048	0	0
S-7063-4-3	0	0		0	0
S-7063-5-3	0	0		0	0
S-7063-6-3	0	0		0	0
S-7063-7-5	14,016	999	16,347	79,541	1,927
S-7063-8-9	3,614	1,570	1,656	20,404	3,030
S-7063-9-9	3,614	1,570	1,656	20,404	3,030
S-7063-18-6	3,614	1,570	1,656	20,404	3,030
S-7063-10-6	0	0	2,268	0	0
S-7063-12-4	14,016	999	16,347	79,541	1,927
S-7063-13-3	0	0	2,048	0	0
S-7063-14-3	0	0		0	0
S-7063-15-3	0	0		0	0
S-7063-16-3	0	0		0	0
S-7063-17-2	258	0	4	31	6
SSPE2	**39,132**	**6,708**	**44,030**	**220,325**	**12,950**

5. Major Source Determination

Rule 2201 Major Source Determination:

Pursuant to District Rule 2201, a Major Source is a stationary source with a SSPE2 equal to or exceeding one or more of the following threshold values. For the purposes of determining major source status the following shall not be included:

- any ERCs associated with the stationary source
- Emissions from non-road IC engines (i.e. IC engines at a particular site at the facility for less than 12 months), pursuant to the Clean Air Act, Title 3, Section 302, US Codes 7602(j) and (z)
- Fugitive emissions, except for the specific source categories specified in 40 CFR 70.2

Rule 2201 Major Source Determination (lb/year)						
	NO_X	**SO_X**	**PM_{10}**	**$PM_{2.5}$**	**CO**	**VOC**
SSPE1	37,124	5,138	47,458	47,458	199,921	9,920
SSPE2	39,132	6,708	44,030	44,030	220,325	12,950
Major Source Threshold	20,000	140,000	140,000	140,000	200,000	20,000
Major Source?	Yes	No	No	No	Yes	No

Note: PM2.5 assumed to be equal to PM10

As seen in the table above, the facility is an existing Major Source for NO_X and becoming a new major source for CO. No other pollutants exceed the major source thresholds as a result of this project.

Rule 2410 Major Source Determination:

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(iii). Therefore the PSD Major Source threshold is 250 TPY for any regulated NSR pollutant.

PSD Major Source Determination (tons/year)						
	NO_2	**VOC**	**SO_2**	**CO**	**PM**	**PM_{10}**
Estimated Facility PE before Project Increase	18.6	5.0	2.6	100.0	23.7	23.7
PSD Major Source Thresholds	250	250	250	250	250	250
PSD Major Source?	No	No	No	No	No	No

As shown above, the facility is not an existing PSD major source for any regulated NSR pollutant expected to be emitted at this facility.

6. Baseline Emissions (BE)

The BE calculation (in lb/year) is performed pollutant-by-pollutant for each unit within the project to calculate the QNEC, and if applicable, to determine the amount of offsets required.

Pursuant to District Rule 2201, BE = PE1 for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, located at a Major Source.

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to District Rule 2201.

a. BE NO_X

Clean Emissions Unit, Located at a Major Source
As shown in Section VII.C.5 above, the facility is a major source for NO_X emissions.

Pursuant to Rule 2201, a Clean Emissions Unit is defined as an emissions unit that is "equipped with an emissions control technology with a minimum control efficiency of at least 95% or is equipped with emission control technology that meets the requirements for achieved-in-practice BACT as accepted by the APCO during the five years immediately prior to the submission of the complete application.

This project (S1213742) was deemed complete on January 10, 2022. Five years immediately prior to the submission of the complete application of this project (January 10, 2017), BACT Guideline 1.1.2 (boilers with heat input greater than 20.0 MMBtu/hr fired on natural gas) would have been the applicable BACT Guideline. However, the Guideline had been rescinded at the time. A review of several projects that were finalized between 2016 and 2017 showed that BACT was satisfied by meeting Rule 4320 emission limits which was 7 ppm NO_X at 3% O_2 per Table 1.B(a) All three units in this project were compliant with this standard at this time. Therefore all three units qualify as clean emissions units.

Therefore, BE = PE1.

As shown in Section VII.C.1:

PTOs S-7063-8-6 and '-9-6 (each)

PE1 = 4,417 lb NO_x/year

PTO S-7063-18-3

PE1 = 3,431 lb NO_x/year

b. BE SO_X

All Units - Located at a Non-Major Source
As shown in Section VII.C.5 above, the facility is not a major source for SO_X emissions.

Therefore Baseline Emissions BE=PE1.

As shown in Section VII.C.1:
BE = PE1 = 1,570 lb SO_x/year

c. BE PM_{10}

All Units - Located at a Non-Major Source
As shown in Section VII.C.5 above, the facility is not a major source for PM_{10} emissions.

Therefore Baseline Emissions BE=PE1.

As shown in Section VII.C.1:
BE = PE1 = 4,198 lb PM10/year

d. BE CO

Clean Emissions Unit, Located at a Major Source
Pursuant to Rule 2201, a Clean Emissions Unit is defined as an emissions unit that is "equipped with an emissions control technology with a minimum control efficiency of at least 95% or is equipped with emission control technology that meets the requirements for achieved-in-practice BACT as accepted by the APCO during the five years immediately prior to the submission of the complete application.

This project (S1213742) was deemed complete on January 10, 2022. Five years immediately prior to the submission of the complete application of this project (January 10, 2017), BACT Guideline 1.1.2 (boilers with heat input greater than 20.0 MMBtu/hr fired on natural gas) would have been the applicable BACT Guideline. However, the Guideline had been rescinded at the time. A review of several projects that were finalized between 2016 and 2017 showed that BACT was satisfied by meeting Rule 4320 emission limits which was 400 ppm CO at 3% O_2 per Section 5.2. All three units in this project were compliant with this standard at this time. Therefore all three units qualify as clean emissions units.

Therefore Baseline Emissions BE=PE1.

As shown in Section VII.C.1:
BE = PE1 = 20,404 lb CO/year

e. BE VOC

All Units - Located at a Non-Major Source
As shown in Section VII.C.5 above, the facility is not a major source for VOC emissions.

Therefore Baseline Emissions BE=PE1.

As shown in Section VII.C.1:
BE = PE1 = 3,030 lb VOC/year

7. SB 288 Major Modification

40 CFR Part 51.165 defines a SB 288 Major Modification as any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act. Since this facility is a major source for NO_x, the project's PE2 is compared to the SB 288 Major Modification Thresholds in the following table in order to determine if further SB 288 Major Modification calculation is required.

As calculated in the Calculation section above:

SB 288 Major Modification Thresholds			
Pollutant	**Project PE2 (lb/year)**	**Threshold (lb/year)**	**SB 288 Major Modification Calculation Required?**
NO_x	39,132	50,000	No

Since none of the SB 288 Major Modification Thresholds are surpassed with this project, this project does not constitute an SB 288 Major Modification and no further discussion is required.

8. Federal Major Modification / New Major Source

Federal Major Modification

District Rule 2201 states that a Federal Major Modification is the same as a "Major Modification" as defined in 40 CFR 51.165 and part D of Title I of the CAA.

As defined in 40 CFR 51.165, Section (a)(1)(v) and part D of Title I of the CAA, a Federal Major Modification is any physical change in or change in the method of operation of a

major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act. The significant net emission increase threshold for each criteria pollutant is included in Rule 2201.

The determination of Federal Major Modification is based on a two-step test. For the first step, only the emission *increases* are counted. In step 1, emission decreases cannot cancel out the increases. Step 2 allows consideration of the project's net emissions increase as described in 40 CFR 51.165 and the Federal Clean Air Act Section 182 (e), as applicable.

Step 1: Project Emissions Increase

For modified existing emissions units, according to 40 CFR 51.165(a)(2)(ii)(C), the project's emission increase for each pollutant is equal to the sum of the differences between the projected actual emissions (PAE) and the baseline actual emissions (BAE). Please note that in step 1, since the District is classified as extreme non-attainment for ozone, no NOx and VOC emission decreases associated with the proposed project shall be accounted for.

Project Emissions Increase = ∑(PAE – BAE)
As described in 40 CFR 51.165(a)(1)(xxviii)(B), when using historical data and company's expected business activity to determine PAE, the portion of the emissions after the project that the existing unit could have accommodated (Unused Baseline Capacity, UBC) before the project (during the same 24-month baseline period used to determine BAE) and that are unrelated to the particular project (including emissions increases due to product demand growth) are to be excluded.

Otherwise, according to 40 CFR 51.165(a)(1)(xxvii)(B)(4), when determining PAE, in lieu of using the method described in 40 CFR 51.165 (a)(1)(xxviii)(B)(1)-(3), *Projected Actual Emissions*, the owner/operator may elect to use emissions unit's Potential to Emit. If appropriate projected actual emissions are not provided by the applicant, then the emissions unit's Potential to Emit is used to calculate the emissions increase.

Since the project proponent has not provided information required to calculate PAE, the District will use the PE2 to calculate the emissions increase:

Project Emissions Increase = ∑(PE2 – BAE)

<u>Baseline Actual Emissions (BAE)</u>

For emission units (other than electric utility steam generating units), according to according to 40 CFR 51.165(a)(1)(xxxv)(B), the BAE are calculated as the average, in tons/year, at which the emissions unit actually emitted during any 24-month period selected by the operator within the previous 10-year period.

Pursuant to SJVAPCD Policy APR-1150, Implementation of Rule 2201 for SB288 Major Modifications and Federal Major Modifications, the BAE must be adjusted to include

fugitive emissions to the extent quantifiable and emissions associated with startups, shutdowns, and malfunctions, and exclude any non-compliant operation emissions. CDI proposes to use the period of Nov 2019 – October 2021 as the baseline period for the BAE. Daily fuel consumption of each unit was provided for this period, yielding the emissions that are summarized below:

November 2019 to October 2020 = 3,500 lbs. NO_x
November 2020 to October 2021 = 3,540 lbs. NO_x

As stated above, BAE are calculated as the average in ton/year for the 24-month period selected. Therefore, the average throughput used for emission calculations will be (3,500 + 3,540) lbs. NO_x/yr / 2 = 3,520 lbs. NO_x/year.

Calculations can be found in **Appendix I.**

Project Emissions Increase

Project Emissions Increase = ∑(PE2 – BAE)
∑PE2 = 3,614 lbs NO_x + 3,614 lbs NO_x + 3,614 lbs NO_x

Project Emissions Increase = (10,842 – 3,520) lbs NO_x
= 7,322 lbs NO_x

In conclusion, the project's combined total emission increases summarized in the following table and are compared to the Federal Major Modification Thresholds in the following table.

Federal Major Modification Thresholds for Emission Increases			
Pollutant	**Total Emissions Increases (lb/yr)**	**Thresholds (lb/yr)**	**Federal Major Modification?**
NO_x*	7,322	0	Yes

*If there is any emission increases in NO_x or VOC, this project is a Federal Major Modification and no further analysis is required.

Since there is an increase in NO_x emissions, this project constitutes a Federal Major Modification. Consequently, as discussed below in the offset section of this evaluation, pursuant to Section 7.4.2.1 of District Rule 2201, NOx Emission Reduction Credits (ERCs) used to satisfy the offset quantity required under District Rule 2201 must surplus at the time of use (ATC issuance).

Separately, Federal Offset Quantity is calculated below.

Federal Offset Quantity Calculation

The Federal Offset Quantity (FOQ) is only calculated for the pollutants for which a project is a Federal Major Modification or a New Major Source as determined above.

Pursuant to 40 CFR 51.165(a)(3)(ii)(J), the federal offset quantity is the sum of the annual emission changes for all new and modified emission units in a project calculated as the potential to emit after the modification (PE2) minus the actual emissions (AE) for each emission unit times the applicable federal offset ratio.

FOQ = ∑(PE2 – AE) x Federal offset ratio

Actual Emissions

As described in 40 CFR 51.165(a)(1)(xii), actual emissions (AE), as of a particular date, shall equal the average rate, in tons per year, at which the unit actually emitted the pollutant during a consecutive 24-month period which precedes the particular date and which is representative of normal source operation. The reviewing authority shall allow the use of a different time period upon a determination that it is more representative of normal source operation.

For modified existing units S-7063-8-6, S-7063-9-6, and S-7063-18-3, Actual Emissions (AE) are calculated below as the average emissions using the fuel records provided by CDI from November 2019 to October 2021. Calculations can be found in **Appendix I.**

Permit No.	11/2019 – 10/2020 Actual Emissions (lb/year)	11/2020 – 10/2021 Actual Emissions (lb/year)	Actual Emissions (lb/yr)
S-7063-8-6	1,304.3	1,551.4	**1,428**
S-7063-9-6	668.7	1,215.8	**942**
S-7063-18-3	1,526.6	772.8	**1,150**

Federal Offset Ratio

According the CAA 182(e), the federal offset ratio for VOC and NOx is 1.5 to 1 (due to the District extreme non-attainment status for ozone). Otherwise, the federal offset ratio for PM2.5, PM10, and SOx is 1.0 to 1.

Federal Offset Quantity (FOQ)

This project only includes modified units:

Therefore,

$FOQ = \sum(PE2 - AE)_{\text{All Modified Units}}$ x Federal offset ratio

NOx **Federal Offset Ratio** **1.5**

Permit No.	Post-Project Potential to Emit (PE2) (lb/year)	Actual Emissions (lb/year)	Emissions Change (lb/yr)
S-7063-8-6	3,614	1,428	2,186
S-7063-9-6	3,614	942	2,672
S-7063-18-3	3,614	1,150	2,464
		∑(PE2 – AE) (lb/year):	**7,322**
		Federal Offset Quantity (lb/year): ∑(PE2 – AE) x 1.5	**10,983**
		Federal Offset Quantity (tons/year): ∑(PE2 – AE) x 1.5 ÷ 2,000	**5.5**

9. Rule 2410 – Prevention of Significant Deterioration (PSD) Applicability Determination

Rule 2410 applies to any pollutant regulated under the Clean Air Act, except those for which the District has been classified nonattainment. The pollutants which must be addressed in the PSD applicability determination for sources located in the SJV and which are emitted in this project are: (See 52.21 (b) (23) definition of significant)

- NO2 (as a primary pollutant)
- SO2 (as a primary pollutant)
- CO
- PM
- PM10

I. Project Emissions Increase - New Major Source Determination

The post-project potentials to emit from all new and modified units are compared to the PSD major source thresholds to determine if the project constitutes a new major source subject to PSD requirements.

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(i). The PSD Major Source threshold is 250 TPY for any regulated NSR pollutant.

PSD Major Source Determination: Potential to Emit (tons/year)						
	NO_2	**VOC**	**SO_2**	**CO**	**PM**	**PM_{10}**
Total PE from New and Modified Units	19.6	6.5	3.4	110.2	22	22
PSD Major Source threshold	250	250	250	250	250	250

New PSD Major Source?	No	No	No	No	No	No

As shown in the table above, the potential to emit for the project, by itself, does not exceed any PSD major source threshold. Therefore Rule 2410 is not applicable and no further analysis is required.

10. Quarterly Net Emissions Change (QNEC)

The QNEC is calculated solely to establish emissions that are used to complete the District's PAS emissions profile screen. Detailed QNEC calculations are included in **Appendix E.**

VIII. Compliance Determination

Rule 2201 New and Modified Stationary Source Review Rule

A. Best Available Control Technology (BACT)

1. BACT Applicability

Pursuant to District Rule 2201, Section 4.1, BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis. Unless specifically exempted by Rule 2201, BACT shall be required for the following actions*:

a. Any new emissions unit with a potential to emit exceeding two pounds per day,
b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an Adjusted Increase in Permitted Emissions (AIPE) exceeding two pounds per day, and/or
d. Any new or modified emissions unit, in a stationary source project, which results in an SB 288 Major Modification or a Federal Major Modification, as defined by the rule.

*Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

a. New emissions units – PE > 2 lb/day

As discussed in Section I above, there are no new emissions units associated with this project. Therefore BACT for new units with PE > 2 lb/day purposes is not triggered.

b. Relocation of emissions units – PE > 2 lb/day

As discussed in Section I above, there are no emissions units being relocated from one stationary source to another; therefore, BACT is not triggered.

c. Modification of emissions units – AIPE > 2 lb/day

AIPE = PE2 – HAPE

Where,

AIPE = Adjusted Increase in Permitted Emissions, (lb/day)
PE2 = Post-Project Potential to Emit, (lb/day)
HAPE = Historically Adjusted Potential to Emit, (lb/day)

HAPE = PE1 x (EF2/EF1)

Where,

PE1 = The emissions unit's PE prior to modification or relocation, (lb/day)
EF2 = The emissions unit's permitted emission factor for the pollutant after modification or relocation. If EF2 is greater than EF1 then EF2/EF1 shall be set to 1
EF1 = The emissions unit's permitted emission factor for the pollutant before the modification or relocation

AIPE = PE2 – (PE1 ∗ (EF2 / EF1))

Pursuant to District Policy APR 1350, Best Available Control Technology (BACT) Requirements for Modifications to Existing Emission Units, BACT is required if the AIPE exceeds 2.0 lb in any one day. The phrase in "any one day" indicates that if there is an AIPE in any single day of the year that exceeds 2.0 lb/day, BACT is required. The previous SLC for units S-7063-8, '-9, and '-18 meant that there was at least "one day" where one of the units would not be operating. When one of the units does not operate for "one day", PE for the unit is zero.

Thus, for the purposes of calculating AIPE, PE1 = 0 lb/day for each unit.

<u>S-7063-8-9 and '-9-9 (each)</u>

<u>NOx:</u>

As shown in Section VII.C2 above, there are two emissions factors (EF2) based on steady state as well as startup and shutdown. A weighted average of the two emission factors will be taken based on a maximum startup and shutdown of 4 hours per day and maximum stead state of 20 hours per day:

AIPE = PE2 – (PE1 ∗ (EF2 / EF1))
$EF2_{weighted}$ = (.003*20/24)+(0.02428*4/24)) = 0.006547

EF1 = 0.008
PE2 = 9.9
PE1 = 0

AIPE = 9.9 – (0 * (0.006547/0.008))
AIPE = 9.9

As demonstrated above, the AIPE is greater than 2.0 lb/day for NO_x emissions. Therefore BACT is triggered.

VOC:

AIPE = PE2 – (PE1 ∗ (EF2 / EF1))
= 8.3 – (0 * (0.0055/0.0055))
= 8.3

As demonstrated above, the AIPE is greater than 2.0 lb/day for VOC emissions. Therefore BACT is triggered.

SOx:

AIPE = PE2 – (PE1 ∗ (EF2 / EF1))
= 4.3 – (0 * (0.00285/0.00285))
= 4.3

As demonstrated above, the AIPE is greater than 2.0 lb/day for SO_x emissions. Therefore BACT is triggered.

PM10:

AIPE = PE2 – (PE1 ∗ (EF2 / EF1))
= 4.5 – (0 * (0.003/0.0076))
= 4.5

As demonstrated above, the AIPE is greater than 2.0 lb/day for PM10 emissions. Therefore BACT is triggered.

CO:

AIPE = PE2 – (PE1 ∗ (EF2 / EF1))
= 55.9 – (0 * (0.037/0.037))
= 55.9

As demonstrated above, the AIPE is greater than 2.0 lb/day for CO emissions. Therefore BACT is triggered.

S-7063-18-6

NOx:

As shown in Section VII.C2 above, there are two emissions factors (EF2) based on steady state as well as startup and shutdown. A weighted average of the two emission factors will be taken based on a maximum startup and shutdown of 4 hours per day and maximum stead state of 20 hours per day:

AIPE = PE2 – (PE1 ∗ (EF2 / EF1))
$EF2_{weighted}$ = 0.006547
EF1 = 0.0062
$EF2_{weighted}$ > EF1
PE2 = 9.9
PE1 = 0

Thus, $EF2_{weighted}$/EF1 = 1

AIPE = 9.9 – (0 * 1)
AIPE = 9.9

As demonstrated above, the AIPE is greater than 2.0 lb/day for NO_x emissions. Therefore BACT is triggered.

VOC:

AIPE = PE2 – (PE1 ∗ (EF2 / EF1))
= 8.3 – (0 * (0.0055/0.0055))
= 0

As demonstrated above, the AIPE is greater than 2.0 lb/day for VOC emissions. Therefore BACT is triggered.

SOx:

AIPE = PE2 – (PE1 ∗ (EF2 / EF1))
= 4.3 – (0 * (0.00285/0.00285))
= 4.3

As demonstrated above, the AIPE is greater than 2.0 lb/day for SO_x emissions. Therefore BACT is triggered.

PM10:

AIPE = PE2 – (PE1 ∗ (EF2 / EF1))
= 4.5 – (0 * (0.003/0.0076))
= 4.5

As demonstrated above, the AIPE is greater than 2.0 lb/day for PM10 emissions. Therefore BACT is triggered.

CO:

AIPE = PE2 – (PE1 ∗ (EF2 / EF1))
= 55.9 – (0 * (0.037/0.037))
= 55.9

As demonstrated above, the AIPE is greater than 2.0 lb/day for CO emissions. Additionally, SSPE2 for CO exceeds 200,000 lbs/year. Therefore BACT triggered.

d. SB 288/Federal Major Modification

As discussed in Sections VII.C.7 and VII.C.8 above, this project does constitute a Federal Major Modification for NO_X emissions. Therefore BACT is triggered for S-7063-18-6 which has an increase in NO_x emissions.

2. BACT Guideline

BACT Guideline 1.1.2 (boilers with heat input greater than 20.0 MMBtu/hr fired on natural gas) has been rescinded. Therefore a project specific BACT analysis will be performed for this project. (**See Appendix C**)

3. Top-Down BACT Analysis

Per Permit Services Policies and Procedures for BACT, a Top-Down BACT analysis shall be performed as a part of the application review for each application subject to the BACT requirements pursuant to the District's NSR Rule.

Pursuant to the attached Top-Down BACT Analysis (see **Appendix C**), BACT has been satisfied with the following:

NO_X: Meet NO_X emissions of 2.5 ppm or less
SO_X: Use of PUC quality natural gas fuel
PM_{10}: Use of PUC quality natural gas fuel
CO: Meet CO emissions of 400 ppm or less
VOC: Use of PUC quality natural gas fuel

d. SB 288/Federal Major Modification

As discussed in Sections VII.C.7 and VII.C.8 above, this project does constitute a Federal Major Modification for NO_X emissions. Therefore BACT is triggered for S-7063-18-6 which has an increase in NO_x emissions.

2. BACT Guideline

BACT Guideline 1.1.2 (boilers with heat input greater than 20.0 MMBtu/hr fired on natural gas) has been rescinded. Therefore a project specific BACT analysis will be performed for this project. (**See Appendix C**)

3. Top-Down BACT Analysis

Per Permit Services Policies and Procedures for BACT, a Top-Down BACT analysis shall be performed as a part of the application review for each application subject to the BACT requirements pursuant to the District's NSR Rule.

Pursuant to the attached Top-Down BACT Analysis (see **Appendix C**), BACT has been satisfied with the following:

NO_X: Meet NO_X emissions of 2.5 ppm or less

B. Offsets

1. Offset Applicability

Pursuant to District Rule 2201, Section 4.5, offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the SSPE2 equals or exceeds the offset threshold levels in Table 4-1 of Rule 2201.

The SSPE2 is compared to the offset thresholds in the following table.

Offset Determination (lb/year)					
	NO_X	**SO_X**	**PM_{10}**	**CO**	**VOC**
SSPE2	39,132	6,708	44,030	220,325	12,950
Offset Thresholds	20,000	54,750	29,200	200,000	20,000
Offsets Triggered?	Yes	No	Yes	Yes	No

2. Quantity of District Offsets Required

As demonstrated above, District offsets are triggered for NOx, PM10, and CO under NSR.

Surplus at the Time Of Use Emission Reduction Credits
As demonstrated above, this project does trigger Federal Major Modification or New Major Source requirements for NO_x emissions and federal offset quantities are required for this project for NO_x. Pursuant to Section 7.4.2.1 of District Rule 2201, emission reduction credits used to satisfy federal offset quantities for VOC must be creditable and surplus at the time of use (ATC issuance).

The applicant has stated that the facility plans to use ERC certificate N-1579-2 to satisfy the federal offset quantities for VOC required for this project. Pursuant to the ERC surplus analysis in **Appendix G**, the District has verified that the credits from the ERC certificate(s) provided by the applicant are sufficient to satisfy the federal offset quantities for VOC required for this project.

District Offset Quantities Calculation

As demonstrated above, the facility has an SSPE1 for NO_x, PM10, and CO and greater than the offset thresholds. Therefore offset calculations will be required for this project.

The quantity of offsets in pounds per year for NO_x, PM10, and CO are calculated as follows for sources with an SSPE1 greater than the offset threshold levels before implementing the project being evaluated.

Offsets Required (lb/year) = (Σ[PE2 – BE] + ICCE) x DOR, for all new or modified emissions units in the project,

Where,
PE2 = Post-Project Potential to Emit, (lb/year)
BE = Baseline Emissions, (lb/year)
ICCE = Increase in Cargo Carrier Emissions, (lb/year)
DOR = Distance Offset Ratio, determined pursuant to Rule 2201, Section 4.8

BE = PE1 for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, Located at a Major Source.

otherwise,

BE = HAE

As calculated in Section VII.C.6 above, the BE from these units are equal to the PE1 since the units are Clean Emissions Units.

Also, there are three emissions unit associated with this project and there are no increases in cargo carrier emissions. Therefore offsets can be determined as follows:

NO_x Offsets Required (lb/year) = ([PE2 – BE] + ICCE) x DOR

PE2 (NO_X) = 10,842 lb/year
BE (NO_X) = 8,834 lb/year
ICCE = 0 lb/year
DOR = 1.5

NO_x Offsets Required (lb/year) = ([10,842 – 8,834] + 0) x 1.5
= 3,012 lb-NO_X/year

As demonstrated in the calculation above, the amount of offsets required is 3,012 lb-NO_X/year.

Calculating the appropriate quarterly emissions to be offset is as follows:

Quarterly offsets required (lb/qtr) = (3,012 lb-NO_X/year) ÷ (4 quarters/year)
= 753 b-NO_X/qtr

PM10 Offsets:

Offsets Required (lb/year) = ([PE2 – BE] + ICCE) x DOR

As calculated in Section VII.C.6 above, the BE from these units are equal to the PE1 since the units are Clean Emissions Units. Per section VII.C.5 calculations, PE2 < PE1 for each unit. There are also no increases in cargo carrier emissions.

Thus:

([PE2 – BE] + ICCE) < 0

Therefore, no offsets are required and no further discussion is required.

CO Offsets:

Pursuant to section 4.6.1 of Rule 2201, increases in CO in attainment areas are exempt from offsetting if the applicant demonstrates to the satisfaction of the APCO, that the Ambient Air Quality Standards are not violated in the areas to be affected and such emissions will be consistent with Reasonable Further Progress and will not cause or contribute to a violation of Ambient Air Quality Standards. As shown below in section VII.F, Ambient Air Quality Standards are not violated; therefore, offsets are not required for CO.

District and Federal Offset Quantities

As discussed above, District offsets are triggered and required for NO_x under NSR. In addition, as demonstrated above, this project does trigger Federal Major Modification requirements for NO_x emissions.

Since District offsets and federal offsets are required, the facility must provide offset amounts equal to the greatest value between the District offset quantity and the federal offset quantity.

Comparison of District vs Federal VOC Offset Quantity			
	DOQ	**FOQ**	**FOQ ≥ DOQ**
NO_x	3,012	7,322	**Yes**

As demonstrated above, the federal offset quantity required is greater than the District offset quantity. Therefore, pursuant to Section 7.4.1.2 of District Rule 2201, the facility must comply with the required federal offset quantities. In addition, emission reduction credits used to satisfy federal offset quantities for NO_x must be creditable and surplus at the time of use (ATC issuance).

Surplus at the Time Of Use Emission Reduction Credits

The applicant has stated that the facility plans to use ERC certificate N-1579-2 to satisfy the federal offset quantities for VOC required for this project. Pursuant to the ERC surplus analysis in **Appendix G**, the District has verified that the credits from the ERC certificate provided by the applicant are sufficient to satisfy the federal offset quantities for NO_x required for this project.

Required District and Federal Offset Quantities Summary

The applicant has proposed to use the following emission reduction certificates:

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
ERC # N-1579-2	2,746	2,746	2,746	2,746

As discussed above, the facility has sufficient credits to fully offset the quarterly NO_X emissions increases associated with this project. The offset amounts required for each unit is summarized in the table below:

Permit No.	Offsets required (lb- NOx/year)
S-7063-8-9	2,186
S-7063-9-9	2,672
S-7063-18-6	2,464

To adjust the quarterly amount of offsets required, the fractional amount of offsets required in each quarter will be summed and redistributed to each quarter based on the number of days in each quarter. The redistribution is based on the Quarter 1 having the fewest days and the Quarters 3 and 4 having the most days. The redistribution method is summarized in the following table:

Redistribution of Required Quarterly Offsets (where X is the annual amount of offsets, and X ÷ 4 = Y.z)				
Value of z	**Quarter 1**	**Quarter 2**	**Quarter 3**	**Quarter 4**
0.0	Y	Y	Y	Y
0.25	Y	Y	Y	Y+1
0.5	Y	Y	Y+1	Y+1
0.75	Y	Y+1	Y+1	Y+1

Therefore the appropriate quarterly emissions to be offset are as follows:

S-7063-8-9

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	**Total Annual**
546	546	547	547	**2,186**

S-7063-9-9

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	**Total Annual**
668	668	668	668	**2,672**

S-7063-18-6

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	**Total Annual**
616	616	616	616	**2,464**

Proposed Rule 2201 Offset Permit Conditions

The following permit conditions will be added to the Authorities to Construct:

S-7063-8-9

- {GC# 4447 - edited} Prior to operating equipment under this Authority to Construct, permittee shall surrender NO_X emission reduction credits for the following quantity of emissions: 1st quarter - 546 lb, 2nd quarter - 546 lb, 3rd quarter - 547 lb, and fourth quarter - 547 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 8/15/19) for the ERC specified below. [District Rule 2201]

S-7063-9-9

- {GC# 4447 - edited} Prior to operating equipment under this Authority to Construct, permittee shall surrender NO_X emission reduction credits for the following quantity of emissions: 1st quarter - 668 lb, 2nd quarter -668 lb, 3rd quarter - 668 lb, and fourth quarter - 668 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 8/15/19) for the ERC specified below. [District Rule 2201]

S-7063-18-6

- {GC# 4447 - edited} Prior to operating equipment under this Authority to Construct, permittee shall surrender NO_X emission reduction credits for the following quantity of emissions: 1st quarter - 616 lb, 2nd quarter - 616 lb, 3rd quarter - 616 lb, and fourth quarter - 616 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 8/15/19) for the ERC specified below. [District Rule 2201]
-

All three units

- {GC# 1983} ERC Certificate Number N-1579-2 (or a certificate split from this certificate) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]

3. ERC Withdrawal Calculations

The applicant must identify the ERC Certificate(s) to be used to offset the increase of NO_x emissions for the project. As indicated in previous section, the applicant is proposing to use ERC certificate # N-1579-2 to mitigate the increases of NO_x emissions associated with this project. See **Appendix H** for detailed ERC Withdrawal Calculations.

C. Public Notification

1. Applicability

Pursuant to District Rule 2201, Section 5.4, public noticing is required for:

a. New Major Sources, Federal Major Modifications, and SB 288 Major Modifications,
b. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
c. Any project which results in the offset thresholds being surpassed,
d. Any project with an SSIPE of greater than 20,000 lb/year for any pollutant, and/or
e. Any project which results in a Title V significant permit modification

a. New Major Sources, Federal Major Modifications, and SB 288 Major Modifications

As demonstrated in Section VII.C.7 of this evaluation, this project is a Federal Major Modification. Therefore, public noticing is required for this project for SB 288 Major Federal Major Modification purposes.

b. PE > 100 lb/day

Applications which include a new emissions unit with a PE greater than 100 pounds during any one day for any pollutant will trigger public noticing requirements. There are no new emissions units associated with this project. Therefore public noticing is not required for this project for PE > 100 lb/day.

c. Offset Threshold

Public notification is required if the pre-project Stationary Source Potential to Emit (SSPE1) is increased to a level exceeding the offset threshold levels. The following table compares the SSPE1 with the SSPE2 in order to determine if any offset thresholds have been surpassed with this project.

Offset Thresholds				
Pollutant	**SSPE1 (lb/year)**	**SSPE2 (lb/year)**	**Offset Threshold**	**Public Notice Required?**
NO_X	37,132	39,132	20,000 lb/year	No
SO_X	5,138	6,708	54,750 lb/year	No
PM_{10}	47,458	44,030	29,200 lb/year	No
CO	199,921	220,325	200,000 lb/year	Yes
VOC	9,920	12,950	20,000 lb/year	No

As demonstrated above, the offset threshold was surpassed for CO with this project; therefore public noticing is required for offset purposes.

d. SSIPE > 20,000 lb/year

Public notification is required for any permitting action that results in a SSIPE of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE = SSPE2 – SSPE1. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table.

SSIPE Public Notice Thresholds					
Pollutant	**SSPE2 (lb/year)**	**SSPE1 (lb/year)**	**SSIPE (lb/year)**	**SSIPE Public Notice Threshold**	**Public Notice Required?**
NO_x	37,132	39,132	2,008	20,000 lb/year	No
SO_x	5,138	6,708	1,570	20,000 lb/year	No
PM_{10}	47,458	44,030	-3,428	20,000 lb/year	No
CO	199,921	220,325	20,404	20,000 lb/year	Yes
VOC	9,920	12,950	3,030	20,000 lb/year	No

As demonstrated above, the SSIPEs for CO were greater than 20,000 lb/year; therefore public noticing for SSIPE purposes is required.

e. Title V Significant Permit Modification

As shown in the Discussion of Rule 2520 below, this project constitutes a Title V significant modification. Therefore, public noticing for Title V significant modifications is required for this project.

2. Public Notice Action

As discussed above, public noticing is required due to the following:

- This project results in a Federal Major Modification for NO_X emissions
- Offset thresholds were surpassed for CO with this project
- SSIPE for CO exceeds 20,00 lb/year
- This project constitutes a Title V significant modification

Therefore, public notice documents will be submitted to the California Air Resources Board (CARB) and a public notice will be electronically published on the District's website prior to the issuance of the ATC for this equipment.

D. Daily Emission Limits (DELs)

DELs and other enforceable conditions are required by Rule 2201 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. The DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. DELs are also required to enforce the applicability of BACT.

Units S-7063-8-9, '-9-9, and '-18-6:

Proposed Rule 2201 (DEL) Conditions:

- *Except for startup and shutdown, emissions from combustion of natural gas in the boiler shall not exceed any of the following limits: 2.5 ppmvd NOx @ 3% O2 or 0.003 lb-*

NOx/MMBtu (referenced as NO2), 0.00285 lb-SOx/MMBtu, 0.003 lb-PM10/MMBtu, 50 ppmvd CO @ 3% O2 or 0.1108 lb-CO/MMBtu, 13 ppmvd VOC @ 3% O2 or 0.0055 lb-VOC/MMBtu, or 10 ppmvd NH3 @ 3% O2 or 0.00449 lb-NH3/MMBtu. [District Rules 2201, 4305, 4306, and 4320]

- *During startup and shutdown, emissions from the natural gas-fired unit shall not exceed 20 ppmvd NOx @ 3% O2 or 0.02428 lb-NOx/MMBtu. [District Rules 2201, 4305, 4306, and 4320]*

- *{4355} The unit shall only be fired on PUC-regulated natural gas. [District Rules 2201 and 4320]*

- *Emissions from the natural gas-fired unit shall not exceed 10 ppmvd NH3 @ 3% O2 or 0.00449 lb-NH3/MMBtu. [District Rule 2201]*

E. Compliance Assurance

1. Source Testing

District Rule 4305 requires NO_X and CO emission testing not less than once every 12 months. Gaseous fuel fired units demonstrating compliance on two consecutive compliance source tests may defer the following source test for up to thirty-six months. The District Source Test Policy (APR 1705) requires annual testing for all pollutants controlled by catalysts. The control equipment will include a SCR system and ammonia slip is an indicator of how well the SCR system is performing.

Therefore, source testing for NO_X, CO, and ammonia will be required within 60 days of initial operation and at least once every 12 months thereafter. Upon demonstrating compliance on two consecutive source tests, the following source test may be deferred for up to thirty-six months. Source testing for Rule 4305 also satisfies any source testing requirements for Rule 2201. The following condition will be added to the ATCs:

- Source testing for ammonia slip shall be conducted utilizing BAAQMD Method ST-1B. [District Rule 2201]
- Source testing to measure startup NOx and CO emissions shall be conducted within 60 days of initial startup of the third boiler retrofitted among S-7063-8, S-7063-9, and S-7063-18. [District Rule 2201]
- Source testing to measure steady state NOx, CO and NH3 emissions shall be conducted within 60 days of initial startup of the third boiler retrofitted among S-7063-8, S-7063-9, and S-7063-18. [District Rule 2201]

2. Monitoring

District Rule 4305 requires the owner of any unit equipped with NO_X reduction technology shall either install and maintain continuous emissions monitoring equipment for NO_X, CO, and oxygen, as identified in Rule 1080 (Stack Monitoring), or install and maintain APCO-

approved alternate monitoring plan. Since the boiler will be equipped with a low NO_X burner and a selective catalytic reduction system, this requirement applies.

The applicant proposed to utilize pre-approve alternate monitoring plan "A" (Periodic Monitoring NO_X, CO, and O_2 Emissions Concentrations) to meet the requirements of District Rule 4305. Monitoring for Rule 4305 also satisfies the monitoring requirements for Rule 2201. No additional monitoring is required.

3. Recordkeeping

Recordkeeping is required to demonstrate compliance with the offset, public notification and daily emission limit requirements of Rule 2201. The following condition(s) are listed on the permit to operate:

- The permittee shall maintain records of the date and time of flue gas recirculation valve(s) settings, the observed setting, and the firing rate at the time of the flue gas recirculation valve(s) setting measurements. The records must also include a description of any corrective action taken to maintain the flue gas recirculation valve(s) setting within the acceptable range. [District Rules 2201, 4305, 4306, and 4320]

- Permittee shall maintain daily records of the type and quantity of fuel combusted by the boiler. [District Rule 2201 and 40 CFR 60.48c(g)(1)]

4. Reporting

No reporting is required to demonstrate compliance with Rule 2201.

F. Ambient Air Quality Analysis (AAQA)

Section 4.14 of District Rule 2201 requires that an AAQA be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. The District's Technical Services Division conducted the required analysis. Refer to **Appendix D** of this document for the AAQA summary sheet.

The proposed location is in an attainment area for NO_X, CO, and SO_X. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for NO_X, CO, or SO_X.

The proposed location is in a non-attainment area for the state's PM_{10} as well as federal and state $PM_{2.5}$ thresholds. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for PM_{10} and $PM_{2.5}$.

G. Compliance Certification

Section 4.15.2 of this Rule requires the owner of a New Major Source or a source undergoing a Federal Major Modification to demonstrate to the satisfaction of the District that all other Major Sources owned by such person and operating in California are in compliance or are

on a schedule for compliance with all applicable emission limitations and standards. As discussed in Section VIII above, this facility is a major source and this project constitutes a Federal Major Modification, therefore this requirement is applicable. CDI has submitted a compliance certification and it is included in **Appendix F.**

H. Alternate Siting Analysis

The current project occurs at an existing facility. The applicant proposes to retrofit three natural gas-fired boilers (S-7063-8, S-7063-9 and S-7063-18) to meet 2.5 ppm NOX @ 3% O2 and remove the SLC limiting 2 of the three boilers from operating at any given time.

Since the project will modify existing equipment to be used at the same location, the existing site will result in the least possible impact from the project. Alternative sites would involve the relocation and/or construction of various support structures on a much greater scale, and would therefore result in a much greater impact.

Rule 2410 Prevention of Significant Deterioration

As shown in Section VII.C.9 above, this project does not result in a new PSD major source or PSD major modification. No further discussion is required.

Rule 2520 Federally Mandated Operating Permits

This facility is subject to this Rule, and has received their Title V Operating Permit. A significant permit modification is defined as a "permit amendment that does not qualify as a minor permit modification or administrative amendment."

Minor permit modifications are not Title I modifications as defined in section 111 or 112 of the Federal Clean Air Act, where the term modification means any physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted. The emissions units associated with this project are new sources of emissions. Therefore, the project constitutes a significant modification to the Title V Permit.

As discussed above, the facility has applied for a Certificate of Conformity (COC); therefore, the facility must apply to modify their Title V permit with an administrative amendment, prior to operating with the proposed modifications. Continued compliance with this rule is expected. The facility shall not implement the changes requested until the final permits are issued. The following conditions, previously stated in this evaluation, will be added to the ATCs to ensure compliance:

• *{1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201]*

• *{1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520]*

Rule 4001 New Source Performance Standards (NSPS)

This rule incorporates NSPS from Part 60, Chapter 1, Title 40, Code of Federal Regulations (CFR); and applies to all new sources of air pollution and modifications of existing sources of air pollution listed in 40 CFR Part 60. 40 CFR Part 60, Subpart Dc applies to Small Industrial-Commercial-Industrial Steam Generators between 10 MMBtu/hr and 100 MMBtu/hr (post-6/9/89 construction, modification or, reconstruction). The existing 63.0 MMBtu/hr boilers (S-7063-8-9, '-9-9, and '-18-6) are within the heat input range; therefore, this subpart applies to the emissions units.

60.42c – Standards for Sulfur Dioxide

Since coal will not be combusted by the boilers, the requirements of this section are not applicable.

60.43c – Standards for Particulate Matter

The boilers will not be fired on coal, mixtures of coal with other fuels, wood, mixtures of wood with other fuels, or oil; therefore the process heater is not subject to the requirements of this section.

60.44c – Compliance and Performance Tests Methods and Procedures for Sulfur Dioxide.

Since the boilers in this project is not subject to the sulfur dioxide requirements of this subpart, testing to demonstrate compliance is not required.

60.45c – Compliance and Performance Test Methods and Procedures for Particulate Matter

Since the boilers in this project is not subject to the particulate matter requirements of this subpart, testing to demonstrate compliance is not required.

60.46c – Emission Monitoring for Sulfur Dioxide

Since the boilers in this project is not subject to the sulfur dioxide requirements of this subpart, no monitoring is required.

60.47c – Emission Monitoring for Particulate Matter

Since the boilers in this project is not subject to the particulate matter requirements of this subpart, no monitoring is required.

60.48c – Reporting and Recordingkeeping Requirements

Section 60.48c (a) states that the owner or operator of each affected facility shall submit notification of the date of construction or reconstruction, anticipated startup, and actual startup, as provided by §60.7 of this part. This notification shall include:

(1) The design heat input capacity of the affected facility and identification of fuels to be combusted in the affected facility.

The design heat input capacity and type of fuel combusted at the facility will be listed on each unit's equipment description. No conditions are required to show compliance with this requirement.

(2) If applicable, a copy of any Federally enforceable requirement that limits the annual capacity factor for any fuel mixture of fuels under §60.42c or §40.43c.

This requirement is not applicable since the boilers are not subject to §60.42c or §40.43c.

(3) The annual capacity factor at which the owner or operator anticipates operating the affected facility based on all fuels fired and based on each individual fuel fired.

The facility has not proposed an annual capacity factor; therefore one will not be required.

(4) Notification if an emerging technology will be used for controlling SO_2 emissions. The Administrator will examine the description of the control device and will determine whether the technology qualifies as an emerging technology. In making this determination, the Administrator may require the owner or operator of the affected facility to submit additional information concerning the control device. The affected facility is subject to the provisions of §60.42c (a) or (b)(1), unless and until this determination is made by the Administrator

This requirement is not applicable since the boilers will not be equipped with an emerging technology used to control SO_2 emissions.

Section 60.48c (g) states that the owner or operator of each affected facility shall record and maintain records of the amounts of each fuel combusted during each day unless an applicable alternative is provided per Sections 60.48(g)(2) or 60.48(g)(3). Section 60.48(g) (2), which allows monthly records, applies because only natural gas will be burned. Therefore, monthly fuel records will be required. The following conditions will remain on the ATC permit and PTO:

- The permittee shall maintain monthly records of the natural gas combusted by this unit. [District Rule 2201, 40 CFR 60.48c (g)(2)]

Section 60.48c (i) states that all records required under this section shall be maintained by the owner or operator of the affected facility for a period of two years following the date of such record. District Rules 4306 and 4320 are more stringent and requires that records be kept for five years. Therefore, compliance is expected with this section.

Compliance with the requirements of this Rule is expected.

Rule 4002 National Emission Standards for Hazardous Air Pollutants (NESHAPs)

This rule incorporates NESHAPs from Part 61, Chapter I, Subchapter C, Title 40, CFR and the NESHAPs from Part 63, Chapter I, Subchapter C, Title 40, CFR; and applies to all sources of hazardous air pollution listed in 40 CFR Part 61 or 40 CFR Part 63.

40 CFR Part 63, Subpart DDDDD – National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters

This subpart applies to industrial, commercial, and institutional boilers and process heaters as defined in §63.7575 that is located at major sources of HAP. A major source of HAP emissions is a facility that has the potential to emit any single HAP at a rate of 10 tons/year or greater or any combinations of HAPs at a rate of 25 tons/year or greater. An area source of HAP emissions is a facility is not a major source of HAP emissions.
Since the facility is not a major HAP source, the proposed unit is not subject to the requirements of this regulation, and no further discussion is required.

40 CFR Part 63, Subpart JJJJJJ – National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources

This subpart applies to industrial, commercial, and institutional boilers as defined in §63.11237 that is located at an area sources of HAP. §63.11195(e) states a gas-fired boiler, as defined in Subpart JJJJJ, is not subject to any requirements of this subpart. The proposed boiler is only fired on natural gas fuel. Therefore, the proposed unit is not subject to the requirements of this regulation, and no further discussion is required.

Rule 4101 Visible Emissions

Rule 4101 states that no person shall discharge into the atmosphere emissions of any air contaminant aggregating more than 3 minutes in any hour which is as dark as or darker than Ringelmann 1 (or 20% opacity). As the boilers are fired solely on natural gas, visible emissions are not expected to exceed Ringelmann 1 or 20% opacity. Also, based on past inspections of the facility continued compliance is expected.

Rule 4102 Nuisance

Rule 4102 prohibits discharge of air contaminants which could cause injury, detriment, nuisance or annoyance to the public. Public nuisance conditions are not expected as a result of these operations, provided the equipment is well maintained. Therefore, compliance with this rule is expected.

California Health & Safety Code 41700 (Health Risk Assessment)

District Policy APR 1905 – *Risk Management Policy for Permitting New and Modified Sources* specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite.

District policy APR 1905 also specifies that the increase in emissions associated with a proposed new source or modification of an existing source shall not result in an increase in cancer risk greater than the District's significance level (20 in a million) and shall not result in acute and/or chronic risk indices greater than 1.

According to the Technical Services Memo for this project, the total facility prioritization score including this project was greater than one. Therefore, an HRA was required to determine the short-term acute and long-term chronic exposure from this project.

The resulting prioritization score, acute hazard index, chronic hazard index, and cancer risk for this project is shown below.

Health Risk Assessment Summary	
	Worst Case Potential
Prioritization Score	0.21
Cancer Risk	NA[1]
Acute Hazard Index	0.00
Chronic Hazard Index	0.00
T-BACT Required?	No

Discussion of T-BACT

BACT for toxic emission control (T-BACT) is required if the cancer risk exceeds one in one million. As demonstrated above, T-BACT is not required for this project because the HRA indicates that the risk is not above the District's thresholds for triggering T-BACT requirements; therefore, compliance with the District's Risk Management Policy is expected.

In accordance with District policy APR 1905, no further analysis is required, and compliance with District Rule 4102 requirements is expected.

See **Attachment E**: Health Risk Assessment Summary

The following permit conditions are required to ensure compliance with the assumptions made for the risk management review:

- The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]

Rule 4201 Particulate Matter Concentration

Section 3.1 prohibits discharge of dust, fumes, or total particulate matter into the atmosphere from any single source operation in excess of 0.1 grain per dry standard cubic foot. All three boilers are currently in compliance with this Rule. The revised PM10 emission factor proposed in this project for all three boilers is less than the current emission factor for each boiler. Therefore continued compliance with this Rule is expected.

District Rule 4301 Fuel Burning Equipment

This rule specifies maximum emission rates in lb/hr for SO_2, NO_2, and combustion contaminants (defined as total PM in Rule 1020). This rule also limits combustion contaminants to $\leq$ 0.1 gr/scf. According to AP 42 (Table 1.4-2, footnote c), all PM emissions from natural gas combustion are less than 1 μm in diameter.

District Rule 4301 Limits			
Pollutant	**NO_2**	**Total PM**	**SO_2**
ATC S-7063-8-9 (lb/hr)	0.41	0.19	0.18
ATC S-7063-9-9 (lb/hr)	0.41	0.19	0.18
ATC S-7063-18-6 (lb/hr)	0.41	0.19	0.18
Rule Limit (lb/hr)	140	10	200

Rule 4305 Boilers, Steam Generators and Process Heaters – Phase 2

The three units (S-7063-8-9, '-9-9, '-18-6) are subject to Rule 4305, *Boilers, Steam Generators and Process Heaters – Phase 2.* In addition, the units are also subject to District Rule 4320.

Since emissions limits of Rule 4320 and all other requirements are equivalent or more stringent than District Rule 4305 requirements, compliance with District Rule 4320 requirements will satisfy requirements of District Rule 4305.

Therefore, compliance with District Rule 4305 requirements is expected and no further discussion is required.

Rule 4306 Boilers, Steam Generators and Process Heaters – Phase 3

The three units (S-7063-8-9, '-9-9, '-18-6) are subject to District Rule 4306, *Boilers, Steam Generators and Process Heaters – Phase 3.*

In addition, the units are also subject to District Rule 4320.

Since emissions limits of District Rule 4320 and all other requirements are equivalent or more stringent than District Rule 4306 requirements, compliance with District Rule 4320 requirements will satisfy requirements of District Rule 4306.

Therefore, compliance with District Rule 4306 requirements is expected and no further discussion is required.

Rule 4320 Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr

Pursuant to Section 2.0 of District Rule 4320, the three units (S-7063-8-9, '-9-9, '-18-6) are subject to District Rule 4320. The following table details compliance with the requirements of this rule for these boilers.

Section 5.1 Requirements

Section 5.1 requires an operator of a unit(s) subject to this rule shall comply with all applicable requirements of the rule and one of the following, on a unit-by-unit basis:

5.1.1 Operate the unit to comply with the emission limits specified in Sections 5.2 and 5.4; or

5.1.2 Pay an annual emissions fee to the District as specified in Section 5.3 and comply with the control requirements specified in Section 5.4; or

5.1.3 Comply with the applicable Low-use Unit requirements of Section 5.5

The units will comply with 5.1.1 as shown in sections 5.2 and 5.4

Section 5.2 NO_X and CO Emission Limits

Section 5.2, NOx and CO emission limits: The boilers are subject to the emission limits listed in Table 1, Category B. All ppmv emission limits specified in this section are referenced at dry stack gas conditions and 3.0 percent (%) by volume stack gas oxygen.

District Rule 4320 Tier 1 Emissions Limits		
Category	**NO_X Limit**	**CO**
B. Units with a total rated heat input > 20.0 MMBtu/hr, except for Categories C through G units.	a) Standard Schedule 7 ppmv or 0.008 lb/MMBtu	400 ppmv
	b) Enhanced Schedule 5 ppmvd or 0.0062 lb/MMBtu	

Additionally, the boilers will become subject to Tier 2 NOx Emission Limits according to the compliance schedule shown in the table below:

District Rule 4320 Tier 2 Emissions Limits				
Category	**NO_X Limit**	**Emission Control Plan**	**Authority to Construct**	**Compliance Deadline**
B. Units with a total rated heat input > 20.0 MMBtu/hr, except for Categories C through E units				
2. All other units with a total rated heat input > 20.0 MMBtu/hour and ≤ 75 MMBtu/hour	2.5 ppmv or 0.003 lb/MMBtu	May 1, 2022	May 1, 2022	December 31, 2023

Each boiler will be equipped with an SCR system to achieve a NOx emissions limit of 2.5 ppmv and a CO emissions limit of 50 ppmv. The boilers will achieve both the Tier 1 and Tier 2 NOx emission limits, as well as the CO emission limits of Section 5.2.
The following condition will be included on the ATCs:

- Except for startup and shutdown, emissions from combustion of natural gas in the boiler shall not exceed any of the following limits: 2.5 ppmvd NOx @ 3% O2 or 0.003 lb-NOx/MMBtu (referenced as NO2), 0.00285 lb-SOx/MMBtu, 0.003 lb-PM10/MMBtu, 50 ppmvd CO @ 3% O2 or 0.1108 lb-CO/MMBtu, 13 ppmvd VOC @ 3% O2 or 0.0055 lb-VOC/MMBtu, or 10 ppmvd NH3 @ 3% O2 or 0.00449 lb-NH3/MMBtu. [District Rules 2201, 4305, 4306, and 4320]

- During startup and shutdown, emissions from the natural gas-fired unit shall not exceed 20 ppmvd NOx @ 3% O2 or 0.02428 lb-NOx/MMBtu. [District Rules 2201, 4305, 4306, and 4320]

Section 5.4 Particulate Matter Control Requirements

Section 5.4 of the rule requires one of four options for control of particulate matter: 1) combustion of PUC-quality natural gas, commercial propane, butane, or liquefied petroleum gas, or a combination of such gases, 2) limit fuel sulfur content to no more than five (5) grains of total sulfur per one hundred (100) standard cubic, 3) install and properly operate an emission control system that reduces SO2 emissions by at least 95% by weight; or limit exhaust SO2 to less than or equal to 9 ppmv corrected to 3.0% O2 or 4) refinery units, which require modification of refinery equipment to reduce sulfur emissions, shall be in compliance with the applicable requirement in Section 5.4.1 no later than July 1, 2013.

The process heater is being fired exclusively on PUC natural gas. Therefore, this requirement has been satisfied.

Section 5.6 Startup and Shutdown Provisions

Section 5.6 states that on and after the full compliance deadline in Section 5.0, the applicable emission limits of Sections 5.2 Table 1 and 5.5.2 shall not apply during start-up or shutdown provided an operator complies with the requirements specified in Sections 5.6.1 through 5.6.5.

Section 5.6.1 states that the duration of each start-up or each shutdown shall not exceed two hours, except as provided in Section 5.6.3. Each start-up and shutdown is limited to two hours. Therefore Section 5.6.3 will not apply. The following condition will be included on each ATC in order ensure compliance:

- The duration of each start-up or shutdown shall not exceed two hours. [District Rules 2201 and 4320]

Section 5.6.2 states that the emission control system shall be in operation and emissions shall be minimized insofar as technologically feasible during start-up or shutdown.

The applicant has proposed maximum startup and shutdown emission factors which would ensue that the emissions are minimized as technologically feasible by the manufacturer guarantee. Compliance with this requirement is expected.
Sections 5.6.4 states that Permit to Operate (PTO) modifications for the sole purpose of adding conditions to comply with the provisions of this rule may be exempt from Best Available Control Technology (BACT) and emission offset requirements if the PTO modifications meet the requirements of Rule 2201 (New and Modified Stationary Source Review Rule) Section 4.2 (BACT Exemptions) and Rule 2201 Section 4.6 (Emission Offset Exemptions).

These units are not being modified solely for Rule 4320 compliance, therefore this section does not apply.

Section 5.6.5 states that for existing facilities, a replacement unit installed for the sole purpose of complying with the requirements of this rule shall be considered to be an emission control technique and may be exempt from the Best Available Control Technology (BACT) and Offsets requirements of District Rule 2201 (New and Modified Stationary Source Review Rule) provided that all other requirements of Rule 2201 are met.

These units are not replacement units, therefore this section does not apply.

Section 5.7 Monitoring Provisions

Section 5.7 requires either use of an APCO approved Continuous Emissions Monitoring System (CEMS) for NOx, CO, and oxygen, or implementation of an APCO-approved Alternate Monitoring System.

In order to satisfy the requirements of District Rule 4320, the applicant has previously proposed to use pre-approved alternate monitoring scheme A (pursuant to District Policy SSP-1105), which requires that monitoring of NO_X, CO, and O_2 exhaust concentrations shall be conducted at least once per month (in which a source test is not performed) using a portable analyzer.

The following conditions will be included on the ATC permit order to ensure compliance with the requirements of the alternate monitoring plan:

- {4319} The permittee shall monitor and record the stack concentration of NOx, CO, NH3 and O2 at least once during each month in which source testing is not performed. NOx, CO and O2 monitoring shall be conducted utilizing a portable analyzer that meets District specifications. NH3 monitoring shall be conducted utilizing Draeger tubes or a District approved equivalent method. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless it has been performed within the last month. [District Rules 4305, 4306, and 4320]

- {4320} If the NOx, CO or NH3 concentrations, as measured by the portable analyzer or the District approved ammonia monitoring equipment, exceed the permitted levels the permittee shall return the emissions to compliant levels as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer or the ammonia monitoring equipment continue to show emission limit violations after 1 hour of operation following detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation that is subject to enforcement action has occurred. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306 and 4320]

- {4321} All NOx, CO, O2 and ammonia emission readings shall be taken with the unit operating at conditions representative of normal operation or under the conditions specified in the Permit to Operate. The NOx, CO and O2 analyzer as well as the NH3 emission monitoring equipment shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Analyzer readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306 and 4320]

- {4322} Ammonia emission readings shall be conducted at the time the NOx, CO and O2 readings are taken. The readings shall be converted to ppmvd @ 3% O2. [District Rules 4305, 4306 and 4320]

- {4323} The permittee shall maintain records of: (1) the date and time of NOx, CO, NH3 and O2 measurements, (2) the O2 concentration in percent by volume and the measured NOx, CO and NH3 concentrations corrected to 3% O2, (3) make and model of the portable analyzer, (4) portable analyzer calibration records, (5) the method of determining the NH3 emission concentration, and (6) a description of any corrective action taken to maintain the emissions at or below the acceptable levels. [District Rules 4305, 4306 and 4320]

5.7.6 Monitoring SOx Emissions

Section 5.7.6.1 requires operators complying with Sections 5.4.1.1 or 5.4.1.2 shall provide an annual fuel analysis to the District unless a more frequent sampling and reporting period

is included in the Permit To Operate. Sulfur analysis shall be performed in accordance with the test methods in Section 6.2.

Section 5.7.6.2 requires operators complying with Section 5.4.1.3 by installing and operating a control device with 95% SOx reduction shall propose the key system operating parameters and frequency of the monitoring and recording. The monitoring option proposed shall be submitted for approval by the APCO.

Section 5.7.6.3 requires operators complying with Section 5.4.1.3 shall perform an annual source test unless a more frequent sampling and reporting period is included in the Permit To Operate. Source tests shall be performed in accordance with the test methods in Section 6.2.

The boilers are authorized to combust only PUC-regulated natural gas and therefore the requirements of this subsection are satisfied.

Section 5.8 Compliance Determination

Section 5.8.1 requires that the operator of any unit have the option of complying with either the applicable heat input (lb/MMBtu), emission limits or the concentration (ppmv) emission limits specified in Section 5.2. The emission limits selected to demonstrate compliance shall be specified in the source test proposal pursuant to Rule 1081 (Source Sampling).

Therefore, the following condition will be included on the ATC permit:

- {4350} The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306, and 4320]
-

Section 5.8.2 requires that all emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the Permit to Operate, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0. Therefore, the following permit condition will remain on the ATC permit:

- {4351} All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. [District Rules 4305, 4306, and 4320]

Section 5.8.4 requires that for emissions monitoring pursuant to Sections 5.7.1 and 6.3.1 using a portable NO_X analyzer as part of an APCO approved Alternate Emissions Monitoring System, emission readings shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15-consecutive-minute sample reading or by taking at least five (5) readings evenly

spaced out over the 15-consecutive-minute period. Therefore, the following condition will remain on the ATC permit:

- {4321} All NOx, CO, O2 and ammonia emission readings shall be taken with the unit operating at conditions representative of normal operation or under the conditions specified in the Permit to Operate. The NOx, CO and O2 analyzer as well as the NH3 emission monitoring equipment shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Analyzer readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306 and 4320]

Section 5.8.5 requires that for emissions source testing performed pursuant to Section 6.3.1 for the purpose of determining compliance with an applicable standard or numerical limitation of this rule, the arithmetic average of three (3) 30-consecutive-minute test runs shall apply. If two (2) of three (3) runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. Therefore, the following condition will remain on the ATC permit:

- {4352} For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306, and 4320]

Section 6.1 Recordkeeping

Section 6.1 requires that the records required by Sections 6.1.1 through 6.1.5 shall be maintained for five calendar years and shall be made available to the APCO and EPA upon request. Failure to maintain records or information contained in the records that demonstrate noncompliance with the applicable requirements of this rule shall constitute a violation of this rule.

Therefore, the following condition will remain on the ATC permit:

- {Modified 2983} All records shall be maintained and retained on-site for a minimum of five years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306, and 4320]

Section 6.2 Test Methods

Section 6.2 identifies test methods to be used when determining compliance with the rule. The following conditions will remain on the ATC permit:

- {109} Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081]

- {4346} NOx emissions for source test purposes shall be determined using EPA Method 7E or ARB Method 100 on a ppmv basis, or EPA Method 19 on a heat input basis. [District Rules 4305, 4306, and 4320]

- {4347} CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100. [District Rules 4305, 4306, and 4320]

- {4348} Stack gas oxygen (O2) shall be determined using EPA Method 3 or 3A or ARB Method 100. [District Rules 4305, 4306, and 4320]

Section 6.3 Compliance Testing

Section 6.3.1 requires that this unit be tested to determine compliance with the applicable requirements of section 5.2 not less than once every 12 months (no more than 30 days before or after the required annual source test date). Upon demonstrating compliance on two consecutive compliance source tests, the following source test may be deferred for up to thirty-six months.

Section 6.3.1.1 Units that demonstrate compliance on two consecutive 12-month source tests may defer the following 12-month source test for up to 36 months (no more than 30 days before or after the required 36-month source test date). During the 36-month source testing interval, the operator shall tune the unit in accordance with the provisions of Section 5.5.1, and shall monitor, on a monthly basis, the unit's operational characteristics recommended by the manufacturer to ensure compliance with the applicable emission limits specified in Section 5.2.

Section 6.3.1.2 Tune-ups required by Sections 5.5.1 and 6.3.1 do not need to be performed for units that operate and maintain an APCO approved CEMS or an APCO approved Alternate Monitoring System where the applicable emission limits are periodically monitored.

Section 6.3.1.3 If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits specified in Section 5.2, the source testing frequency shall revert to at least once every 12 months.

The following conditions will be listed on the ATC permits:

- {110} The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]

- {4345} Source testing to measure NOx and CO emissions from this unit while fired on natural gas shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306, and 4320]

Sections 6.3.2.1 through 6.3.2.7 address the requirements of group testing which is not proposed in this project. Therefore these sections are not applicable.

Conditions will be incorporated into the ATC permits and PTOs in order to ensure compliance with each section of this rule. Compliance with the requirements of District Rule 4320 is expected.

Rule 4351 Boilers, Steam Generators and Process Heaters – Phase 1

This rule applies to boilers, steam generators, and process heaters at NO_x Major Sources that are not located west of Interstate 5 in Fresno, Kings, or Kern counties. If applicable, the emission limits, monitoring provisions, and testing requirements of this rule are satisfied when the unit is operated in compliance with Rule 4320. The emission units in this project are all compliant with Rule 4320. Therefore the requirements of this Rule are satisfied.

District Rule 4801 Sulfur Compounds

A person shall not discharge into the atmosphere sulfur compounds, which would exist as a liquid or gas at standard conditions, exceeding in concentration at the point of discharge: 0.2 % by volume calculated as SO_2, on a dry basis averaged over 15 consecutive minutes.

Compliance with the requirements of Rule 4320 ensures that the much higher emission limits of Rule 4801 will be met. Compliance is expected.

California Health & Safety Code 42301.6 (School Notice)

The District has verified that this site is not located within 1,000 feet of a school. Therefore, pursuant to California Health and Safety Code 42301.6, a school notice is not required.

California Environmental Quality Act (CEQA)

CEQA requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The District adopted its *Environmental Review Guidelines* (ERG) in 2001. The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities;
- Identify the ways that environmental damage can be avoided or significantly reduced;
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible; and
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

Greenhouse Gas (GHG) Significance Determination

District is a Lead Agency & GHG emissions increases are from the combustion of fossil fuel other than jet fuels

It is determined that no other agency has prepared or will prepare an environmental review document for the project. Thus the District is the Lead Agency for this project.

On December 17, 2009, the District's Governing Board adopted a policy, APR 2005, *Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency,* for addressing GHG emission impacts when the District is Lead Agency under CEQA and approved the District's guidance document for use by other agencies when addressing GHG impacts as lead agencies under CEQA. Under this policy, the District's determination of significance of project-specific GHG emissions is founded on the principal that projects with GHG emission reductions consistent with AB 32 emission reduction targets are considered to have a less than significant impact on global climate change. Consistent with District Policy 2005, projects complying with an approved GHG emission reduction plan or GHG mitigation program, which avoids or substantially reduces GHG emissions within the geographic area in which the project is located, would be determined to have a less than significant individual and cumulative impact for GHG emission.

The California Air Resources Board (ARB) adopted a Cap-and-Trade regulation as part one of the strategies identified for AB 32. This Cap-and-Trade regulation is a statewide plan, supported by a CEQA compliant environmental review document, aimed at reducing or mitigating GHG emissions from targeted industries. Facilities subject to the Cap-and-Trade regulation are subject to an industry-wide cap on overall GHG emissions. Any growth in emissions must be accounted for under that cap such that a corresponding and equivalent reduction in emissions must occur to allow any increase. Further, the cap decreases over time, resulting in an overall decrease in GHG emissions.

Under District policy APR 2025, *CEQA Determinations of Significance for Projects Subject to ARB's GHG Cap-and-Trade Regulation*, the District finds that the Cap-and-Trade is a regulation plan approved by ARB, consistent with AB32 emission reduction targets, and supported by a CEQA compliant environmental review document. As such, consistent with District Policy 2005, projects complying with Cap-and-Trade requirements are determined to have a less than significant individual and cumulative impact for GHG emissions.

The GHG emissions increases associated with this project result from the combustion of fossil fuel(s), other than jet fuel, delivered from suppliers subject to the Cap-and-Trade regulation. Therefore, as discussed above, consistent with District Policies APR 2005 and APR 2025, the District concludes that the GHG emissions increases associated with this project would have a less than significant individual and cumulative impact on global climate change.

District CEQA Findings

The District is the Lead Agency for this project because there is no other agency with broader statutory authority over this project. The District performed an Engineering Evaluation (this document) for the proposed project and determined that the activity will occur at an existing facility and the project involves negligible expansion of the existing or former use. Furthermore, the District determined that the activity will not have a significant effect on the environment. Therefore, the District finds that the activity is categorically exempt from the provisions of CEQA pursuant to CEQA Guideline § 15301 (Existing Facilities), and finds that the project is exempt per the common sense exemption that CEQA applies only to projects which have the potential for causing a significant effect on the environment (CEQA Guidelines §15061(b)(3)).

Indemnification Agreement/Letter of Credit Determination

According to District Policy APR 2010 (CEQA Implementation Policy), when the District is the Lead or Responsible Agency for CEQA purposes, an indemnification agreement and/or a letter of credit may be required. The decision to require an indemnity agreement and/or a letter of credit is based on a case-by-case analysis of a particular project's potential for litigation risk, which in turn may be based on a project's potential to generate public concern, its potential for significant impacts, and the project proponent's ability to pay for the costs of litigation without a letter of credit, among other factors.

The criteria pollutant emissions and toxic air contaminant emissions associated with the proposed project are not significant, and there is minimal potential for public concern for this particular type of facility/operation. Therefore, an Indemnification Agreement and/or a Letter of Credit will not be required for this project in the absence of expressed public concern.

IX. Recommendation

Compliance with all applicable rules and regulations is expected. Pending a successful NSR Public Noticing period, issue ATCs S-7063-8-9, S-7063-9-9, and S-7063-18-6 subject to the permit conditions on the attached draft ATC in **Appendix A.**

X. Billing Information

Annual Permit Fees			
Permit Number	**Fee Schedule**	**Fee Description**	**Annual Fee**
S-7063-8-9	3020-02-H	63,000 kBtu/hr boiler	$1,238
S-7063-9-9	3020-10-F	63,000 kBtu/hr boiler	$1,238
S-7063-18-6	3020-10-F	63,000 kBtu/hr boiler	$1,238

Appendixes

A: Draft ATC
B: Current PTOs
C: BACT Analysis
D: HRA and AAQA Summary
E: Quarterly Net Emissions Change
F: Compliance Certification
G: ERC Surplus Analysis
H: ERC Withdrawal Calculations
I: Calculations
J: Manufacturer Specifications

APPENDIX A
Draft ATC

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: S-7063-8-9 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: CALIFORNIA DAIRIES INC
MAILING ADDRESS: 2000 N PLAZA DR
VISALIA, CA 93291

LOCATION: 2000 N PLAZA DR
VISALIA, CA 93291

EQUIPMENT DESCRIPTION:
MODIFICATION OF 63.0 MMBTU/HR HURST SERIES 400 NATURAL GAS FIRED BOILER WITH A NOVA PLUS ULTRA LOW NOX COMBUSTION SYSTEM MODEL NVC17-G-40 ULTRA LOW NOX BURNER AND INDUCED FLUE GAS RECIRCULATION (FGR) SYSTEM: RETROFIT BOILER TO MEET 2.5PPM NOX BY REPLACING EXISTING BURNER WITH A PROFIRE MODEL NTXLG-630, INSTALLING AN SCR SYSTEM, REMOVE SLC SPECIFYING THAT NO MORE THAN TWO BOILERS (BETWEEN S-7063-8, '-9, AND '-18) CAN OPERATE CONCURRENTLY.

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOX emission reduction credits for the following quantity of emissions: 1st quarter - 546 lb, 2nd quarter - 546 lb, 3rd quarter - 547 lb, and fourth quarter - 547 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 8/15/19) for the ERC specified below. [District Rule 2201]
4. ERC Certificate Number N-1569-2 (or a certificate split from this certificate) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Samir Sheikh, Executive Director / APCO

DRAFT

Brian Clements, Director of Permit Services
S-7063-8-9 : Jun 20 2022 2:05PM -- OBAA : Joint Inspection NOT Required

5. The unit shall only be fired on PUC-regulated natural gas. [District Rules 2201, 2520, 4320, and 4801] Federally Enforceable Through Title V Permit

6. A non-resettable, totalizing mass or volumetric fuel flow meter to measure the amount of fuel combusted in the unit shall be installed, utilized, and maintained. [District Rule 2201] Federally Enforceable Through Title V Permit

7. Emissions from the natural gas-fired unit shall not exceed any of the following limits: 2.5 ppmvd NOx @ 3% O2 or 0.003 lb-NOx/MMBtu, 0.00285 lb-SOx/MMBtu, 0.003 lb-PM10/MMBtu, 50 ppmvd CO @ 3% O2 or 0.037 lb-CO/MMBtu, or 0.0055 lb-VOC/MMBtu. [District Rules 2201, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

8. During startup and shutdown, emissions from the natural gas-fired unit shall not exceed 20 ppmvd NOx @ 3% O2 or 0.02428 lb-NOx/MMBtu. [District Rules 2201, 4305, 4306, and 4320]

9. The duration of each start-up or shutdown shall not exceed two hours. [District Rules 2201 and 4320]

10. Emissions from the natural gas-fired unit shall not exceed 10 ppmvd NH3 @ 3% O2 or 0.00449 lb-NH3/MMBtu. [District Rule 2201]

11. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]

12. {4350} The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306, and 4320]

13. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

14. Source testing to measure startup NOx and CO emissions shall be conducted within 60 days of initial startup of the third boiler retrofitted among S-7063-8, S-7063-9, and S-7063-18. [District Rule 2201]

15. Source testing to measure steady state NOx, CO and NH3 emissions shall be conducted within 60 days of initial startup of the third boiler retrofitted among S-7063-8, S-7063-9, and S-7063-18. [District Rule 2201]

16. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

17. Source testing to measure NOx, CO and NH3 emissions during steady state operation shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

18. NOx emissions for source test purposes shall be determined using EPA Method 7E or ARB Method 100 on a ppmv basis, or EPA Method 19 on a heat input basis. NOx emissions during the source test shall be calculated as the arithmetic average of three 30-consecutive-minute test runs. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

19. CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100. CO emissions during the source test shall be calculated as the arithmetic average of three 30-consecutive-minute test runs. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

20. Source testing for ammonia slip shall be conducted utilizing BAAQMD Method ST-1B. [District Rule 2201]

21. Stack gas oxygen shall be determined using EPA Method 3 or 3A or ARB Method 100. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

22. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

23. During the 36-month source testing interval, the owner/operator shall have unit tuned at least twice each calendar year, from four to eight months apart, in which it operates, by a technician that is qualified, to the satisfaction of the APCO, in accordance with the procedure described in Rule 4304 (Equipment Tuning Procedure for Boilers, Steam Generators, and Process Heaters). [District Rules 4306 and 4320] Federally Enforceable Through Title V Permit

24. If the unit does not operate throughout a continuous six-month period within a calendar year, only one tune-up is required for that calendar year. No tune-up is required for any unit that is not operated during that calendar year; this unit may be test fired to verify availability of the unit for its intended use, but once the test firing is completed the unit shall be shutdown. [District Rules 4306 and 4320] Federally Enforceable Through Title V Permit

25. The flue gas recirculation valve(s) setting shall be monitored at least on a weekly basis. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last week. Records must be maintained of the dates of non-operation to validate extended monitoring frequencies. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

26. The acceptable settings for the flue gas recirculation valve(s) shall be established by source testing this unit or other representative units as required by this permit and as approved by the District. The normal range/level shall be that for which compliance with applicable NOx and CO emissions rates have been demonstrated through source testing at a similar firing rate. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

27. Normal range or level for the flue gas recirculation valve(s) settings shall be re-established during each source test required by this permit. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

28. {4319} The permittee shall monitor and record the stack concentration of NOx, CO, NH3 and O2 at least once during each month in which source testing is not performed. NOx, CO and O2 monitoring shall be conducted utilizing a portable analyzer that meets District specifications. NH3 monitoring shall be conducted utilizing Draeger tubes or a District approved equivalent method. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless it has been performed within the last month. [District Rules 4305, 4306 and 4320]

29. {4320} If the NOx, CO or NH3 concentrations, as measured by the portable analyzer or the District approved ammonia monitoring equipment, exceed the permitted levels the permittee shall return the emissions to compliant levels as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer or the ammonia monitoring equipment continue to show emission limit violations after 1 hour of operation following detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation that is subject to enforcement action has occurred. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306 and 4320]

30. {4321} All NOx, CO, O2 and ammonia emission readings shall be taken with the unit operating at conditions representative of normal operation or under the conditions specified in the Permit to Operate. The NOx, CO and O2 analyzer as well as the NH3 emission monitoring equipment shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Analyzer readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306 and 4320]

31. {4322} Ammonia emission readings shall be conducted at the time the NOx, CO and O2 readings are taken. The readings shall be converted to ppmvd @ 3% O2. [District Rules 4305, 4306 and 4320]

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CONDITIONS CONTINUE ON NEXT PAGE

32. If the flue gas recirculation valve(s) setting is less than the normal range/level, the permittee shall return the flue gas recirculation valve(s) setting to the normal range/level as soon as possible, but no longer than 1 hour of operation after detection. If the flue gas recirculation valve(s) setting is not returned to the normal range/level within 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour, and conduct a source test within 60 days of the first exceedance, to demonstrate compliance with the applicable emission limits at the new flue gas recirculation valve(s) setting. A District-approved portable analyzer may be used in lieu of a source test to demonstrate compliance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

33. The permittee shall maintain records of the date and time of flue gas recirculation valve(s) settings, the observed setting, and the firing rate at the time of the flue gas recirculation valve(s) setting measurements. The records must also include a description of any corrective action taken to maintain the flue gas recirculation valve(s) setting within the acceptable range. [District Rules 2201, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

34. {4323} The permittee shall maintain records of: (1) the date and time of NOx, CO, NH3 and O2 measurements, (2) the O2 concentration in percent by volume and the measured NOx, CO and NH3 concentrations corrected to 3% O2, (3) make and model of the portable analyzer, (4) portable analyzer calibration records, (5) the method of determining the NH3 emission concentration, and (6) a description of any corrective action taken to maintain the emissions at or below the acceptable levels. [District Rules 4305, 4306 and 4320]

35. Permittee shall maintain daily records of the type and quantity of fuel combusted by the boiler. [District Rule 2201 and 40 CFR 60.48c(g)(1)] Federally Enforceable Through Title V Permit

36. The permittee shall determine the sulfur content of combusted gas annually and shall maintain records of the fuel sulfur content or shall maintain records of fuel purchase contracts, supplier certifications, tariff sheets, or transportation contracts demonstrating that the combusted gas is provided from a PUC or FERC regulated source. [District Rule 1081, 2520, and 4320] Federally Enforceable Through Title V Permit

37. Determination of total sulfur as hydrogen sulfide (H2S) content shall be determined by EPA Method 11 or EPA Method 15, as appropriate. [District Rule 2520] Federally Enforceable Through Title V Permit

38. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. The permittee shall maintain records of all equipment maintenance. [District Rule 2520] Federally Enforceable Through Title V Permit

39. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

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San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: S-7063-9-9 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: CALIFORNIA DAIRIES INC
MAILING ADDRESS: 2000 N PLAZA DR
VISALIA, CA 93291

LOCATION: 2000 N PLAZA DR
VISALIA, CA 93291

EQUIPMENT DESCRIPTION:
MODIFICATION OF 63.0 MMBTU/HR HURST SERIES 400 NATURAL GAS FIRED BOILER WITH A NOVA PLUS ULTRA LOW NOX COMBUSTION SYSTEM MODEL NVC17-G-40 ULTRA LOW NOX BURNER AND INDUCED FLUE GAS RECIRCULATION (FGR) SYSTEM: RETROFIT BOILER TO MEET 2.5PPM NOX BY REPLACING EXISTING BURNER WITH A PROFIRE MODEL NTXLG-630, INSTALLING AN SCR SYSTEM, REMOVE SLC SPECIFYING THAT NO MORE THAN TWO BOILERS (BETWEEN S-7063-8, '-9, AND '-18) CAN OPERATE CONCURRENTLY.

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOX emission reduction credits for the following quantity of emissions: 1st quarter - 668 lb, 2nd quarter -668 lb, 3rd quarter - 668 lb, and fourth quarter - 668 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 8/15/19) for the ERC specified below. [District Rule 2201]
4. ERC Certificate Number N-1569-2 (or a certificate split from this certificate) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Samir Sheikh, Executive Director / APCO

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Brian Clements, Director of Permit Services

Southern Regional Office • 34946 Flyover Court • Bakersfield, CA 93308 • (661) 392-5500 • Fax (661) 392-5585

5. The unit shall only be fired on PUC-regulated natural gas. [District Rules 2201, 2520, 4320, and 4801] Federally Enforceable Through Title V Permit
6. A non-resettable, totalizing mass or volumetric fuel flow meter to measure the amount of fuel combusted in the unit shall be installed, utilized, and maintained. [District Rule 2201] Federally Enforceable Through Title V Permit
7. Emissions from the natural gas-fired unit shall not exceed any of the following limits: 2.5 ppmvd NOx @ 3% O2 or 0.003 lb-NOx/MMBtu, 0.00285 lb-SOx/MMBtu, 0.003 lb-PM10/MMBtu, 50 ppmvd CO @ 3% O2 or 0.037 lb-CO/MMBtu, or 0.0055 lb-VOC/MMBtu. [District Rules 2201, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
8. During startup and shutdown, emissions from the natural gas-fired unit shall not exceed 20 ppmvd NOx @ 3% O2 or 0.02428 lb-NOx/MMBtu. [District Rules 2201, 4305, 4306, and 4320]
9. The duration of each start-up or shutdown shall not exceed two hours. [District Rules 2201 and 4320]
10. Emissions from the natural gas-fired unit shall not exceed 10 ppmvd NH3 @ 3% O2 or 0.00449 lb-NH3/MMBtu. [District Rule 2201]
11. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
12. {4350} The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306, and 4320]
13. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit
14. Source testing to measure startup NOx and CO emissions shall be conducted within 60 days of initial startup of the third boiler retrofitted among S-7063-8, S-7063-9, and S-7063-18. [District Rule 2201]
15. Source testing to measure steady state NOx, CO and NH3 emissions shall be conducted within 60 days of initial startup of the third boiler retrofitted among S-7063-8, S-7063-9, and S-7063-18. [District Rule 2201]
16. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit
17. Source testing to measure NOx, CO and NH3 emissions during steady state operation shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
18. NOx emissions for source test purposes shall be determined using EPA Method 7E or ARB Method 100 on a ppmv basis, or EPA Method 19 on a heat input basis. NOx emissions during the source test shall be calculated as the arithmetic average of three 30-consecutive-minute test runs. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
19. CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100. CO emissions during the source test shall be calculated as the arithmetic average of three 30-consecutive-minute test runs. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
20. Source testing for ammonia slip shall be conducted utilizing BAAQMD Method ST-1B. [District Rule 2201]
21. Stack gas oxygen shall be determined using EPA Method 3 or 3A or ARB Method 100. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
22. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

23. During the 36-month source testing interval, the owner/operator shall have unit tuned at least twice each calendar year, from four to eight months apart, in which it operates, by a technician that is qualified, to the satisfaction of the APCO, in accordance with the procedure described in Rule 4304 (Equipment Tuning Procedure for Boilers, Steam Generators, and Process Heaters). [District Rules 4306 and 4320] Federally Enforceable Through Title V Permit

24. If the unit does not operate throughout a continuous six-month period within a calendar year, only one tune-up is required for that calendar year. No tune-up is required for any unit that is not operated during that calendar year; this unit may be test fired to verify availability of the unit for its intended use, but once the test firing is completed the unit shall be shutdown. [District Rules 4306 and 4320] Federally Enforceable Through Title V Permit

25. The flue gas recirculation valve(s) setting shall be monitored at least on a weekly basis. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last week. Records must be maintained of the dates of non-operation to validate extended monitoring frequencies. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

26. The acceptable settings for the flue gas recirculation valve(s) shall be established by source testing this unit or other representative units as required by this permit and as approved by the District. The normal range/level shall be that for which compliance with applicable NOx and CO emissions rates have been demonstrated through source testing at a similar firing rate. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

27. Normal range or level for the flue gas recirculation valve(s) settings shall be re-established during each source test required by this permit. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

28. {4319} The permittee shall monitor and record the stack concentration of NOx, CO, NH3 and O2 at least once during each month in which source testing is not performed. NOx, CO and O2 monitoring shall be conducted utilizing a portable analyzer that meets District specifications. NH3 monitoring shall be conducted utilizing Draeger tubes or a District approved equivalent method. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless it has been performed within the last month. [District Rules 4305, 4306 and 4320]

29. {4320} If the NOx, CO or NH3 concentrations, as measured by the portable analyzer or the District approved ammonia monitoring equipment, exceed the permitted levels the permittee shall return the emissions to compliant levels as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer or the ammonia monitoring equipment continue to show emission limit violations after 1 hour of operation following detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation that is subject to enforcement action has occurred. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306 and 4320]

30. {4321} All NOx, CO, O2 and ammonia emission readings shall be taken with the unit operating at conditions representative of normal operation or under the conditions specified in the Permit to Operate. The NOx, CO and O2 analyzer as well as the NH3 emission monitoring equipment shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Analyzer readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306 and 4320]

31. {4322} Ammonia emission readings shall be conducted at the time the NOx, CO and O2 readings are taken. The readings shall be converted to ppmvd @ 3% O2. [District Rules 4305, 4306 and 4320]

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CONDITIONS CONTINUE ON NEXT PAGE

32. If the flue gas recirculation valve(s) setting is less than the normal range/level, the permittee shall return the flue gas recirculation valve(s) setting to the normal range/level as soon as possible, but no longer than 1 hour of operation after detection. If the flue gas recirculation valve(s) setting is not returned to the normal range/level within 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour, and conduct a source test within 60 days of the first exceedance, to demonstrate compliance with the applicable emission limits at the new flue gas recirculation valve(s) setting. A District-approved portable analyzer may be used in lieu of a source test to demonstrate compliance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

33. The permittee shall maintain records of the date and time of flue gas recirculation valve(s) settings, the observed setting, and the firing rate at the time of the flue gas recirculation valve(s) setting measurements. The records must also include a description of any corrective action taken to maintain the flue gas recirculation valve(s) setting within the acceptable range. [District Rules 2201, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

34. {4323} The permittee shall maintain records of: (1) the date and time of NOx, CO, NH3 and O2 measurements, (2) the O2 concentration in percent by volume and the measured NOx, CO and NH3 concentrations corrected to 3% O2, (3) make and model of the portable analyzer, (4) portable analyzer calibration records, (5) the method of determining the NH3 emission concentration, and (6) a description of any corrective action taken to maintain the emissions at or below the acceptable levels. [District Rules 4305, 4306 and 4320]

35. Permittee shall maintain daily records of the type and quantity of fuel combusted by the boiler. [District Rule 2201 and 40 CFR 60.48c(g)(1)] Federally Enforceable Through Title V Permit

36. The permittee shall determine the sulfur content of combusted gas annually and shall maintain records of the fuel sulfur content or shall maintain records of fuel purchase contracts, supplier certifications, tariff sheets, or transportation contracts demonstrating that the combusted gas is provided from a PUC or FERC regulated source. [District Rule 1081, 2520, and 4320] Federally Enforceable Through Title V Permit

37. Determination of total sulfur as hydrogen sulfide (H2S) content shall be determined by EPA Method 11 or EPA Method 15, as appropriate. [District Rule 2520] Federally Enforceable Through Title V Permit

38. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. The permittee shall maintain records of all equipment maintenance. [District Rule 2520] Federally Enforceable Through Title V Permit

39. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

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San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

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PERMIT NO: S-7063-18-6 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: CALIFORNIA DAIRIES INC
MAILING ADDRESS: 2000 N PLAZA DR
VISALIA, CA 93291

LOCATION: 2000 N PLAZA DR
VISALIA, CA 93291

EQUIPMENT DESCRIPTION:
MODIFICATION OF 63.0 MMBTU/HR HURST SERIES 400 NATURAL GAS FIRED BOILER WITH A NOVA PLUS ULTRA LOW NOX COMBUSTION SYSTEM MODEL NVC17-G-40 ULTRA LOW NOX BURNER AND INDUCED FLUE GAS RECIRCULATION (FGR) SYSTEM: RETROFIT BOILER TO MEET 2.5PPM NOX BY REPLACING EXISTING BURNER WITH A PROFIRE MODEL NTXLG-630, INSTALLING AN SCR SYSTEM, REMOVE SLC SPECIFYING THAT NO MORE THAN TWO BOILERS (BETWEEN S-7063-8, '-9, AND '-18) CAN OPERATE CONCURRENTLY.

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOX emission reduction credits for the following quantity of emissions: 1st quarter - 616 lb, 2nd quarter - 616 lb, 3rd quarter - 616 lb, and fourth quarter - 616 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 8/15/19) for the ERC specified below. [District Rule 2201]
4. ERC Certificate Number N-1569-2 (or a certificate split from this certificate) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Samir Sheikh, Executive Director / APCO

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Brian Clements, Director of Permit Services
S-7063-18-6 : Jun 20 2022 2:06PM -- OBAA : Joint Inspection NOT Required

5. The unit shall only be fired on PUC-regulated natural gas. [District Rules 2201, 2520, 4320, and 4801] Federally Enforceable Through Title V Permit

6. A non-resettable, totalizing mass or volumetric fuel flow meter to measure the amount of fuel combusted in the unit shall be installed, utilized, and maintained. [District Rule 2201] Federally Enforceable Through Title V Permit

7. Emissions from the natural gas-fired unit shall not exceed any of the following limits: 2.5 ppmvd NOx @ 3% O2 or 0.003 lb-NOx/MMBtu, 0.00285 lb-SOx/MMBtu, 0.003 lb-PM10/MMBtu, 50 ppmvd CO @ 3% O2 or 0.037 lb-CO/MMBtu, or 0.0055 lb-VOC/MMBtu. [District Rules 2201, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

8. During startup and shutdown, emissions from the natural gas-fired unit shall not exceed 20 ppmvd NOx @ 3% O2 or 0.02428 lb-NOx/MMBtu. [District Rules 2201, 4305, 4306, and 4320]

9. The duration of each start-up or shutdown shall not exceed two hours. [District Rules 2201 and 4320]

10. Emissions from the natural gas-fired unit shall not exceed 10 ppmvd NH3 @ 3% O2 or 0.00449 lb-NH3/MMBtu. [District Rule 2201]

11. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]

12. {4350} The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306, and 4320]

13. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

14. Source testing to measure startup NOx and CO emissions shall be conducted within 60 days of initial startup of the third boiler retrofitted among S-7063-8, S-7063-9, and S-7063-18. [District Rule 2201]

15. Source testing to measure steady state NOx, CO and NH3 emissions shall be conducted within 60 days of initial startup of the third boiler retrofitted among S-7063-8, S-7063-9, and S-7063-18. [District Rule 2201]

16. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

17. Source testing to measure NOx, CO and NH3 emissions during steady state operation shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

18. NOx emissions for source test purposes shall be determined using EPA Method 7E or ARB Method 100 on a ppmv basis, or EPA Method 19 on a heat input basis. NOx emissions during the source test shall be calculated as the arithmetic average of three 30-consecutive-minute test runs. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

19. CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100. CO emissions during the source test shall be calculated as the arithmetic average of three 30-consecutive-minute test runs. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

20. Source testing for ammonia slip shall be conducted utilizing BAAQMD Method ST-1B. [District Rule 2201]

21. Stack gas oxygen shall be determined using EPA Method 3 or 3A or ARB Method 100. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

22. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

23. During the 36-month source testing interval, the owner/operator shall have unit tuned at least twice each calendar year, from four to eight months apart, in which it operates, by a technician that is qualified, to the satisfaction of the APCO, in accordance with the procedure described in Rule 4304 (Equipment Tuning Procedure for Boilers, Steam Generators, and Process Heaters). [District Rules 4306 and 4320] Federally Enforceable Through Title V Permit

24. If the unit does not operate throughout a continuous six-month period within a calendar year, only one tune-up is required for that calendar year. No tune-up is required for any unit that is not operated during that calendar year; this unit may be test fired to verify availability of the unit for its intended use, but once the test firing is completed the unit shall be shutdown. [District Rules 4306 and 4320] Federally Enforceable Through Title V Permit

25. The flue gas recirculation valve(s) setting shall be monitored at least on a weekly basis. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last week. Records must be maintained of the dates of non-operation to validate extended monitoring frequencies. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

26. The acceptable settings for the flue gas recirculation valve(s) shall be established by source testing this unit or other representative units as required by this permit and as approved by the District. The normal range/level shall be that for which compliance with applicable NOx and CO emissions rates have been demonstrated through source testing at a similar firing rate. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

27. Normal range or level for the flue gas recirculation valve(s) settings shall be re-established during each source test required by this permit. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

28. {4319} The permittee shall monitor and record the stack concentration of NOx, CO, NH3 and O2 at least once during each month in which source testing is not performed. NOx, CO and O2 monitoring shall be conducted utilizing a portable analyzer that meets District specifications. NH3 monitoring shall be conducted utilizing Draeger tubes or a District approved equivalent method. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless it has been performed within the last month. [District Rules 4305, 4306 and 4320]

29. {4320} If the NOx, CO or NH3 concentrations, as measured by the portable analyzer or the District approved ammonia monitoring equipment, exceed the permitted levels the permittee shall return the emissions to compliant levels as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer or the ammonia monitoring equipment continue to show emission limit violations after 1 hour of operation following detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation that is subject to enforcement action has occurred. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306 and 4320]

30. {4321} All NOx, CO, O2 and ammonia emission readings shall be taken with the unit operating at conditions representative of normal operation or under the conditions specified in the Permit to Operate. The NOx, CO and O2 analyzer as well as the NH3 emission monitoring equipment shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Analyzer readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306 and 4320]

31. {4322} Ammonia emission readings shall be conducted at the time the NOx, CO and O2 readings are taken. The readings shall be converted to ppmvd @ 3% O2. [District Rules 4305, 4306 and 4320]

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CONDITIONS CONTINUE ON NEXT PAGE

32. If the flue gas recirculation valve(s) setting is less than the normal range/level, the permittee shall return the flue gas recirculation valve(s) setting to the normal range/level as soon as possible, but no longer than 1 hour of operation after detection. If the flue gas recirculation valve(s) setting is not returned to the normal range/level within 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour, and conduct a source test within 60 days of the first exceedance, to demonstrate compliance with the applicable emission limits at the new flue gas recirculation valve(s) setting. A District-approved portable analyzer may be used in lieu of a source test to demonstrate compliance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

33. The permittee shall maintain records of the date and time of flue gas recirculation valve(s) settings, the observed setting, and the firing rate at the time of the flue gas recirculation valve(s) setting measurements. The records must also include a description of any corrective action taken to maintain the flue gas recirculation valve(s) setting within the acceptable range. [District Rules 2201, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

34. {4323} The permittee shall maintain records of: (1) the date and time of NOx, CO, NH3 and O2 measurements, (2) the O2 concentration in percent by volume and the measured NOx, CO and NH3 concentrations corrected to 3% O2, (3) make and model of the portable analyzer, (4) portable analyzer calibration records, (5) the method of determining the NH3 emission concentration, and (6) a description of any corrective action taken to maintain the emissions at or below the acceptable levels. [District Rules 4305, 4306 and 4320]

35. Permittee shall maintain daily records of the type and quantity of fuel combusted by the boiler. [District Rule 2201 and 40 CFR 60.48c(g)(1)] Federally Enforceable Through Title V Permit

36. The permittee shall determine the sulfur content of combusted gas annually and shall maintain records of the fuel sulfur content or shall maintain records of fuel purchase contracts, supplier certifications, tariff sheets, or transportation contracts demonstrating that the combusted gas is provided from a PUC or FERC regulated source. [District Rule 1081, 2520, and 4320] Federally Enforceable Through Title V Permit

37. Determination of total sulfur as hydrogen sulfide (H2S) content shall be determined by EPA Method 11 or EPA Method 15, as appropriate. [District Rule 2520] Federally Enforceable Through Title V Permit

38. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. The permittee shall maintain records of all equipment maintenance. [District Rule 2520] Federally Enforceable Through Title V Permit

39. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

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APPENDIX B
Current PTOs

San Joaquin Valley
Air Pollution Control District

PERMIT UNIT: S-7063-8-6 **EXPIRATION DATE:** 02/28/2021

EQUIPMENT DESCRIPTION:
63.0 MMBTU/HR HURST SERIES 400 NATURAL GAS FIRED BOILER WITH A NOVA PLUS ULTRA LOW NOX COMBUSTION SYSTEM MODEL NVC17-G-40 ULTRA LOW NOX BURNER AND INDUCED FLUE GAS RECIRCULATION (FGR) SYSTEM

PERMIT UNIT REQUIREMENTS

1. The unit shall only be fired on PUC-regulated natural gas. [District Rules 2201, 2520, 4320, and 4801] Federally Enforceable Through Title V Permit
2. A non-resettable, totalizing mass or volumetric fuel flow meter to measure the amount of fuel combusted in the unit shall be installed, utilized, and maintained. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Emissions from the natural gas-fired unit shall not exceed any of the following limits: 7.0 ppmvd NOx @ 3% O2 or 0.008 lb-NOx/MMBtu, 0.00285 lb-SOx/MMBtu, 0.0076 lb-PM10/MMBtu, 50 ppmvd CO @ 3% O2 or 0.037 lb-CO/MMBtu, or 0.0055 lb-VOC/MMBtu. [District Rules 2201, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
4. Except for those periods necessary to transition services from one boiler to another, conduct mandatory emissions testing, or testing during repairs, only two of the three boilers S-7063-8, -9, and -18 shall operate at any one time. [District Rule 2201 and CEQA] Federally Enforceable Through Title V Permit
5. Periods in which all three boilers (S-7063-8, -9, and -18) are operating concurrently due to transitioning services from one boiler to another, conducting mandatory emissions testing, or testing during repairs, shall not exceed 2 hours. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit
6. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit
7. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit
8. Source testing to measure NOx and CO emissions from this unit while fired on natural gas shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
9. NOx emissions for source test purposes shall be determined using EPA Method 7E or ARB Method 100 on a ppmv basis, or EPA Method 19 on a heat input basis. NOx emissions during the source test shall be calculated as the arithmetic average of three 30-consecutive-minute test runs. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
10. CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100. CO emissions during the source test shall be calculated as the arithmetic average of three 30-consecutive-minute test runs. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

11. Stack gas oxygen shall be determined using EPA Method 3 or 3A or ARB Method 100. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

12. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

13. During the 36-month source testing interval, the owner/operator shall have unit tuned at least twice each calendar year, from four to eight months apart, in which it operates, by a technician that is qualified, to the satisfaction of the APCO, in accordance with the procedure described in Rule 4304 (Equipment Tuning Procedure for Boilers, Steam Generators, and Process Heaters). [District Rules 4306 and 4320] Federally Enforceable Through Title V Permit

14. If the unit does not operate throughout a continuous six-month period within a calendar year, only one tune-up is required for that calendar year. No tune-up is required for any unit that is not operated during that calendar year; this unit may be test fired to verify availability of the unit for its intended use, but once the test firing is completed the unit shall be shutdown. [District Rules 4306 and 4320] Federally Enforceable Through Title V Permit

15. The flue gas recirculation valve(s) setting shall be monitored at least on a weekly basis. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last week. Records must be maintained of the dates of non-operation to validate extended monitoring frequencies. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

16. The acceptable settings for the flue gas recirculation valve(s) shall be established by source testing this unit or other representative units as required by this permit and as approved by the District. The normal range/level shall be that for which compliance with applicable NOx and CO emissions rates have been demonstrated through source testing at a similar firing rate. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

17. Normal range or level for the flue gas recirculation valve(s) settings shall be re-established during each source test required by this permit. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

18. If the flue gas recirculation valve(s) setting is less than the normal range/level, the permittee shall return the flue gas recirculation valve(s) setting to the normal range/level as soon as possible, but no longer than 1 hour of operation after detection. If the flue gas recirculation valve(s) setting is not returned to the normal range/level within 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour, and conduct a source test within 60 days of the first exceedance, to demonstrate compliance with the applicable emission limits at the new flue gas recirculation valve(s) setting. A District-approved portable analyzer may be used in lieu of a source test to demonstrate compliance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

19. The permittee shall maintain records of the date and time of flue gas recirculation valve(s) settings, the observed setting, and the firing rate at the time of the flue gas recirculation valve(s) setting measurements. The records must also include a description of any corrective action taken to maintain the flue gas recirculation valve(s) setting within the acceptable range. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

20. Permittee shall maintain records of periods in which all three boilers (S-7063-8, -9, and -18) are operating concurrently due to transitioning services from one boiler to another, conducting mandatory emissions testing, or testing during repairs. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit

21. Permittee shall maintain daily records of the type and quantity of fuel combusted by the boiler. [District Rule 2201 and 40 CFR 60.48c(g)(1)] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

22. The permittee shall determine the sulfur content of combusted gas annually and shall maintain records of the fuel sulfur content or shall maintain records of fuel purchase contracts, supplier certifications, tariff sheets, or transportation contracts demonstrating that the combusted gas is provided from a PUC or FERC regulated source. [District Rule 1081, 2520, and 4320] Federally Enforceable Through Title V Permit
23. Determination of total sulfur as hydrogen sulfide (H2S) content shall be determined by EPA Method 11 or EPA Method 15, as appropriate. [District Rule 2520] Federally Enforceable Through Title V Permit
24. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. The permittee shall maintain records of all equipment maintenance. [District Rule 2520] Federally Enforceable Through Title V Permit
25. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

PERMIT UNIT: S-7063-9-6 **EXPIRATION DATE:** 02/28/2021

EQUIPMENT DESCRIPTION:
63.0 MMBTU/HR HURST SERIES 400 NATURAL GAS FIRED BOILER WITH A NOVA PLUS ULTRA LOW NOX COMBUSTION SYSTEM MODEL NVC17-G-40 ULTRA LOW NOX BURNER AND INDUCED FLUE GAS RECIRCULATION (FGR) SYSTEM

PERMIT UNIT REQUIREMENTS

1. The unit shall only be fired on PUC-regulated natural gas. [District Rules 2201, 2520, 4320, and 4801] Federally Enforceable Through Title V Permit
2. A non-resettable, totalizing mass or volumetric fuel flow meter to measure the amount of fuel combusted in the unit shall be installed, utilized, and maintained. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Emissions from the natural gas-fired unit shall not exceed any of the following limits: 7.0 ppmvd NOx @ 3% O2 or 0.008 lb-NOx/MMBtu, 0.00285 lb-SOx/MMBtu, 0.0076 lb-PM10/MMBtu, 50 ppmvd CO @ 3% O2 or 0.037 lb-CO/MMBtu, or 0.0055 lb-VOC/MMBtu. [District Rules 2201, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
4. Except for those periods necessary to transition services from one boiler to another, conduct mandatory emissions testing, or testing during repairs, only two of the three boilers S-7063-8, -9, and -18 shall operate at any one time. [District Rule 2201 and CEQA] Federally Enforceable Through Title V Permit
5. Periods in which all three boilers (S-7063-8, -9, and -18) are operating concurrently due to transitioning services from one boiler to another, conducting mandatory emissions testing, or testing during repairs, shall not exceed 2 hours. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit
6. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit
7. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit
8. Source testing to measure NOx and CO emissions from this unit while fired on natural gas shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
9. NOx emissions for source test purposes shall be determined using EPA Method 7E or ARB Method 100 on a ppmv basis, or EPA Method 19 on a heat input basis. NOx emissions during the source test shall be calculated as the arithmetic average of three 30-consecutive-minute test runs. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
10. CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100. CO emissions during the source test shall be calculated as the arithmetic average of three 30-consecutive-minute test runs. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

11. Stack gas oxygen shall be determined using EPA Method 3 or 3A or ARB Method 100. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
12. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
13. During the 36-month source testing interval, the owner/operator shall have unit tuned at least twice each calendar year, from four to eight months apart, in which it operates, by a technician that is qualified, to the satisfaction of the APCO, in accordance with the procedure described in Rule 4304 (Equipment Tuning Procedure for Boilers, Steam Generators, and Process Heaters). [District Rules 4306 and 4320] Federally Enforceable Through Title V Permit
14. If the unit does not operate throughout a continuous six-month period within a calendar year, only one tune-up is required for that calendar year. No tune-up is required for any unit that is not operated during that calendar year; this unit may be test fired to verify availability of the unit for its intended use, but once the test firing is completed the unit shall be shutdown. [District Rules 4306 and 4320] Federally Enforceable Through Title V Permit
15. The flue gas recirculation valve(s) setting shall be monitored at least on a weekly basis. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last week. Records must be maintained of the dates of non-operation to validate extended monitoring frequencies. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
16. The acceptable settings for the flue gas recirculation valve(s) shall be established by source testing this unit or other representative units as required by this permit and as approved by the District. The normal range/level shall be that for which compliance with applicable NOx and CO emissions rates have been demonstrated through source testing at a similar firing rate. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
17. Normal range or level for the flue gas recirculation valve(s) settings shall be re-established during each source test required by this permit. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
18. If the flue gas recirculation valve(s) setting is less than the normal range/level, the permittee shall return the flue gas recirculation valve(s) setting to the normal range/level as soon as possible, but no longer than 1 hour of operation after detection. If the flue gas recirculation valve(s) setting is not returned to the normal range/level within 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour, and conduct a source test within 60 days of the first exceedance, to demonstrate compliance with the applicable emission limits at the new flue gas recirculation valve(s) setting. A District-approved portable analyzer may be used in lieu of a source test to demonstrate compliance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
19. The permittee shall maintain records of the date and time of flue gas recirculation valve(s) settings, the observed setting, and the firing rate at the time of the flue gas recirculation valve(s) setting measurements. The records must also include a description of any corrective action taken to maintain the flue gas recirculation valve(s) setting within the acceptable range. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
20. Permittee shall maintain records of periods in which all three boilers (S-7063-8, -9, and -18) are operating concurrently due to transitioning services from one boiler to another, conducting mandatory emissions testing, or testing during repairs. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit
21. Permittee shall maintain daily records of the type and quantity of fuel combusted by the boiler. [District Rule 2201 and 40 CFR 60.48c(g)(1)] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

22. The permittee shall determine the sulfur content of combusted gas annually and shall maintain records of the fuel sulfur content or shall maintain records of fuel purchase contracts, supplier certifications, tariff sheets, or transportation contracts demonstrating that the combusted gas is provided from a PUC or FERC regulated source. [District Rule 1081, 2520, and 4320] Federally Enforceable Through Title V Permit
23. Determination of total sulfur as hydrogen sulfide (H2S) content shall be determined by EPA Method 11 or EPA Method 15, as appropriate. [District Rule 2520] Federally Enforceable Through Title V Permit
24. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. The permittee shall maintain records of all equipment maintenance. [District Rule 2520] Federally Enforceable Through Title V Permit
25. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

PERMIT UNIT: S-7063-18-3 **EXPIRATION DATE:** 02/28/2021

EQUIPMENT DESCRIPTION:
63.0 MMBTU/HR HURST SERIES 400 NATURAL GAS FIRED BOILER WITH A NOVA PLUS ULTRA LOW NOX COMBUSTION SYSTEM MODEL NVC17-G-40 ULTRA LOW NOX BURNER AND INDUCED FLUE GAS RECIRCULATION (FGR) SYSTEM

PERMIT UNIT REQUIREMENTS

1. The unit shall only be fired on PUC-regulated natural gas. [District Rules 2201, 2520, 4320, and 4801] Federally Enforceable Through Title V Permit
2. A non-resettable, totalizing mass or volumetric fuel flow meter to measure the amount of fuel combusted in the unit shall be installed, utilized, and maintained. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Emissions from the natural gas-fired unit shall not exceed any of the following limits: 5.0 ppmvd NOx @ 3% O2 or 0.0062 lb-NOx/MMBtu, 0.00285 lb-SOx/MMBtu, 0.0076 lb-PM10/MMBtu, 50 ppmvd CO @ 3% O2 or 0.037 lb-CO/MMBtu, or 0.0055 lb-VOC/MMBtu. [District Rules 2201, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
4. Except for those periods necessary to transition services from one boiler to another, conduct mandatory emissions testing, or testing during repairs, only two of the three boilers S-7063-8, -9, and -18 shall operate at any one time. [District Rule 2201 and CEQA] Federally Enforceable Through Title V Permit
5. Periods in which all three boilers (S-7063-8, -9, and -18) are operating concurrently due to transitioning services from one boiler to another, conducting mandatory emissions testing, or testing during repairs, shall not exceed 2 hours. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit
6. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit
7. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit
8. Source testing to measure NOx and CO emissions from this unit while fired on natural gas shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
9. NOx emissions for source test purposes shall be determined using EPA Method 7E or ARB Method 100 on a ppmv basis, or EPA Method 19 on a heat input basis. NOx emissions during the source test shall be calculated as the arithmetic average of three 30-consecutive-minute test runs. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
10. CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100. CO emissions during the source test shall be calculated as the arithmetic average of three 30-consecutive-minute test runs. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

11. Stack gas oxygen shall be determined using EPA Method 3 or 3A or ARB Method 100. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

12. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

13. During the 36-month source testing interval, the owner/operator shall have unit tuned at least twice each calendar year, from four to eight months apart, in which it operates, by a technician that is qualified, to the satisfaction of the APCO, in accordance with the procedure described in Rule 4304 (Equipment Tuning Procedure for Boilers, Steam Generators, and Process Heaters). [District Rules 4306 and 4320] Federally Enforceable Through Title V Permit

14. If the unit does not operate throughout a continuous six-month period within a calendar year, only one tune-up is required for that calendar year. No tune-up is required for any unit that is not operated during that calendar year; this unit may be test fired to verify availability of the unit for its intended use, but once the test firing is completed the unit shall be shutdown. [District Rules 4306 and 4320] Federally Enforceable Through Title V Permit

15. The flue gas recirculation valve(s) setting shall be monitored at least on a weekly basis. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last week. Records must be maintained of the dates of non-operation to validate extended monitoring frequencies. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

16. The acceptable settings for the flue gas recirculation valve(s) shall be established by source testing this unit or other representative units as required by this permit and as approved by the District. The normal range/level shall be that for which compliance with applicable NOx and CO emissions rates have been demonstrated through source testing at a similar firing rate. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

17. Normal range or level for the flue gas recirculation valve(s) settings shall be re-established during each source test required by this permit. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

18. If the flue gas recirculation valve(s) setting is less than the normal range/level, the permittee shall return the flue gas recirculation valve(s) setting to the normal range/level as soon as possible, but no longer than 1 hour of operation after detection. If the flue gas recirculation valve(s) setting is not returned to the normal range/level within 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour, and conduct a source test within 60 days of the first exceedance, to demonstrate compliance with the applicable emission limits at the new flue gas recirculation valve(s) setting. A District-approved portable analyzer may be used in lieu of a source test to demonstrate compliance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

19. The permittee shall maintain records of the date and time of flue gas recirculation valve(s) settings, the observed setting, and the firing rate at the time of the flue gas recirculation valve(s) setting measurements. The records must also include a description of any corrective action taken to maintain the flue gas recirculation valve(s) setting within the acceptable range. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

20. Permittee shall maintain records of periods in which all three boilers (S-7063-8, -9, and -18) are operating concurrently due to transitioning services from one boiler to another, conducting mandatory emissions testing, or testing during repairs. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit

21. Permittee shall maintain daily records of the type and quantity of fuel combusted by the boiler. [District Rule 2201 and 40 CFR 60.48c(g)(1)] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

22. The permittee shall determine the sulfur content of combusted gas annually and shall maintain records of the fuel sulfur content or shall maintain records of fuel purchase contracts, supplier certifications, tariff sheets, or transportation contracts demonstrating that the combusted gas is provided from a PUC or FERC regulated source. [District Rule 1081, 2520, and 4320] Federally Enforceable Through Title V Permit
23. Determination of total sulfur as hydrogen sulfide (H2S) content shall be determined by EPA Method 11 or EPA Method 15, as appropriate. [District Rule 2520] Federally Enforceable Through Title V Permit
24. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. The permittee shall maintain records of all equipment maintenance. [District Rule 2520] Federally Enforceable Through Title V Permit
25. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

APPENDIX C
BACT Analysis

Top-Down BACT Analysis

S-7063-8-9, '-9-9, '-18-6: 63.0 MMBtu/hr natural gas-fired boiler with SCR system

The District does not currently have an approved BACT Guideline for this source category. The District's BACT Clearinghouse previously included guideline 1.1.2, which applied to boilers greater than 20 MMBtu/hr fired on natural gas, base-loaded or with small load swings. However, guideline 1.1.2 has been rescinded and is currently not an active guideline. Therefore, a project-specific BACT analysis is required.

NOx:

Step 1 - Identify all control technologies

Achieved-In-Practice:

The following references were consulted to determine emission limits and control required to reduce NOx emissions for boilers rated above 20 MMBtu/hr:

- EPA RACT/BACT/LAER clearinghouse
- CARB BACT clearinghouse
- South Coast AQMD BACT clearinghouse
- Bay Area AQMD BACT clearinghouse
- Sacramento Metro AQMD BACT Clearinghouse

Note that SJVAPCD BACT clearinghouse was not consulted because the BACT requirements are out of date and are being revised at this time. When a boiler triggers BACT, a case-by-case determination is conducted and the results of that determination are considered BACT for that industry.

The following Rules were also consulted:

- South Coast AQMD Rule 1146
- Bay Area AQMD Regulation 7, Rule 9
- Sacramento Metro AQMD Rule 411
- SJVAPCD Rule 4320

Survey of BACT Guidelines:
Since NOx and CO are related, the analysis will combine NOx and CO. The table below shows NOx and CO data.

Agency	Heat input rate (MMBtu/hr)	NOx (ppmvd @ 3% O2)	CO (ppmvd @ 3% O2)
EPA	The EPA RACT/BACT/LAER clearinghouse does not include general guidelines, only determinations done by individual agencies. None of the determinations are more stringent than most stringent standards shown below so the EPA data will not be listed.		
CARB	The CARB clearinghouse does not include general guidelines, only individual determinations done by individual districts. None of the determinations are more stringent than most stringent standards shown below so the CARB data will not be listed.		
SCAQMD*	≥ 20	9 w/LNB; or 7 w/add on control	50 – firetube 100 – watertube
	*Guidelines currently being revised to reflect the Rule 1146 NOx limits (in the cases where the BACT limit is less stringent than the rule limit). For the ≥ 20 MMBtu/hr units, the applicant chooses the control level (LNB or add-on controls).		
BAAQMD	≥ 50	25	100
SMAQMD	5 to < 25	7 – firetube 9 – atmospheric/thermal heater 12 – non-atmospheric	50 – firetube 100 – watertube

Survey of Applicable Rules:

The table below shows NOx and CO data.

Agency	Heat input rate (MMBtu/hr)	NOx (ppmvd @ 3% O2)	CO (ppmvd @ 3% O2)
SCAQMD Rule 1146	5 to < 75	9	400
BAAQMD Reg 9 Rule 7	≥ 20 load following	15	400
	≥ 20 to < 75	9	400
SMAQMD Rule 411	> 20	9	400
SJVAPCD Rule 4320	>20	7	400
EPA	40 CFR Part 60 Subparts Db do not contain NOx or CO emission limits for the proposed boiler units.		
CARB	No Rules		

From the review of the above data, the following level of emissions is considered achieved-in-practice for a boiler >20 MMBtu/hr at corrugated board manufacturing operations.

NOx: 2.5 ppmvd NOx @ 3% O_2 using SCR system or equivalent emission control equipment

Note that the above emission standard leaves about 28%[1] margin of compliance over the average tested value[2].

Technologically Feasible:
None

Alternate Basic Equipment:
None

Step 2 - Eliminate technologically infeasible options

There is no technologically infeasible option.

Step 3 - Rank remaining options by control effectiveness

1. 2.5 ppmvd NOx @ 3% O_2 using SCR system or equivalent emission control equipment

Step 4 - Cost Effectiveness Analysis

There is no technically feasible option or alternative basic equipment listed in Step 3 (above). Therefore, no further discussion is required.

Step 5 – Select BACT

BACT for the proposed boiler is to achieve 2.5 ppmvd @ 3% O2 or less NOx emissions during normal source operation. The applicant has proposed to comply with this standard. Therefore, BACT requirements are satisfied.

[1] (2.5 – 1.95)/1.95 = 0.28 or 28%
[2] Average tested value = (2.3 + 1.6)/2 = 1.95 ppmvd @ 3% O2

CO:

Step 1 - Identify all control technologies

Achieved-In-Practice:

The following references were consulted to determine emission limits and control required to reduce NOx emissions for boilers rated above 20 MMBtu/hr:

- EPA RACT/BACT/LAER clearinghouse
- CARB BACT clearinghouse
- South Coast AQMD BACT clearinghouse
- Bay Area AQMD BACT clearinghouse
- Sacramento Metro AQMD BACT Clearinghouse

Note that SJVAPCD BACT clearinghouse was not consulted because the BACT requirements are out of date and are being revised at this time. When a boiler triggers BACT, a case-by-case determination is conducted and the results of that determination are considered BACT for that industry.

The following Rules were also consulted:

- South Coast AQMD Rule 1146
- Bay Area AQMD Regulation 7, Rule 9
- Sacramento Metro AQMD Rule 411
- SJVAPCD Rule 4320

Survey of BACT Guidelines:
Since CO and NOx are related, the analysis will combine CO and NOx. The table below shows CO and NOx data.

Agency	Heat input rate (MMBtu/hr)	NOx (ppmvd @ 3% O2)	CO (ppmvd @ 3% O2)
EPA	The EPA RACT/BACT/LAER clearinghouse does not include general guidelines, only determinations done by individual agencies. None of the determinations are more stringent than most stringent standards shown below so the EPA data will not be listed.		
CARB	The CARB clearinghouse does not include general guidelines, only individual determinations done by individual districts. None of the determinations are more stringent than most stringent standards shown below so the CARB data will not be listed.		
SCAQMD*	≥ 20	9 w/LNB; or 7 w/add on control	50 – firetube 100 – watertube
	*Guidelines currently being revised to reflect the Rule 1146 NOx limits (in the cases where the BACT limit is less stringent than the rule limit). For the ≥ 20 MMBtu/hr units, the applicant chooses the control level (LNB or add-on controls).		
BAAQMD	≥ 50	25	100
SMAQMD	5 to < 25	7 – firetube 9 – atmospheric/thermal heater 12 – non-atmospheric	50 – firetube 100 – watertube

Survey of Applicable Rules:

The table below shows NOx and CO data.

Agency	Heat input rate (MMBtu/hr)	NOx (ppmvd @ 3% O2)	CO (ppmvd @ 3% O2)
SCAQMD Rule 1146	5 to < 75	9	400
BAAQMD Reg 9 Rule 7	≥ 20 load following	15	400
	≥ 20 to < 75	9	400
SMAQMD Rule 411	> 20	9	400
SJVAPCD Rule 4320	>20	7	400
EPA	40 CFR Part 60 Subparts Db do not contain NOx or CO emission limits for the proposed boiler units.		
CARB	No Rules		

From the review of the above data, the following level of emissions is considered achieved-in-practice for a boiler >20 MMBtu/hr at corrugated board manufacturing operations.

CO: 400 ppmvd @ 3% O_2

Technologically Feasible:
None

Alternate Basic Equipment:
None

Step 2 - Eliminate technologically infeasible options

There is no technologically infeasible option.

Step 3 - Rank remaining options by control effectiveness

CO: 400 ppmvd @ 3% O_2

Step 4 - Cost Effectiveness Analysis

There is no technically feasible option or alternative basic equipment listed in Step 3 (above). Therefore, no further discussion is required.

Step 5 – Select BACT

BACT for CO emissions from this boiler is CO emissions of 400 ppmv @ 3% O_2.The applicant has proposed to comply with this standard with units meeting 50 ppmv @3% O_2. Therefore, BACT requirements are satisfied.

SOx:

Step 1 - Identify all control technologies

Achieved-in-Practice:
SO_x: Use of PUC quality natural gas fuel

Technologically Feasible:
None

Alternate Basic Equipment:
None

Step 2 - Eliminate technologically infeasible options

There is no technologically infeasible option.

Step 3 - Rank remaining options by control effectiveness

1. Use of PUC quality natural gas fuel

Step 4 - Cost Effectiveness Analysis

There is no technically feasible option or alternative basic equipment listed in Step 3 (above). Therefore, no further discussion is required.

Step 5 – Select BACT

BACT for the proposed boiler is to use PUC quality natural gas fuel. The applicant has proposed to use PUC quality natural gas. Therefore, BACT requirements are satisfied.

PM10:

Step 1 - Identify all control technologies

Achieved-in-Practice:
PM_{10}: Use of PUC quality natural gas fuel

Technologically Feasible:
None

Alternate Basic Equipment:
None

Step 2 - Eliminate technologically infeasible options

There is no technologically infeasible option.

Step 3 - Rank remaining options by control effectiveness

1. Use of PUC quality natural gas fuel

Step 4 - Cost Effectiveness Analysis

There is no technically feasible option or alternative basic equipment listed in Step 3 (above). Therefore, no further discussion is required.

Step 5 – Select BACT

BACT for the proposed boiler is to use PUC quality natural gas fuel. The applicant has proposed to use PUC quality natural gas. Therefore, BACT requirements are satisfied.

VOC:

Step 1 - Identify all control technologies

Achieved in Practice or contained in the SIP:
VOC: Use of PUC quality natural gas fuel

Technologically Feasible:
None

Alternate Basic Equipment:
None

Step 2 - Eliminate technologically infeasible options

There is no technologically infeasible option.

Step 3 - Rank remaining options by control effectiveness

1. Use of PUC quality natural gas fuel

Step 4 - Cost Effectiveness Analysis

There is no technically feasible option or alternative basic equipment listed in Step 3 (above). Therefore, no further discussion is required.

Step 5 – Select BACT

BACT for the proposed boiler is to use PUC quality natural gas fuel. The applicant has proposed to use PUC quality natural gas. Therefore, BACT requirements are satisfied.

APPENDIX D
HRA and AAQA Summary

San Joaquin Valley Air Pollution Control District
Risk Management Review and Ambient Air Quality Analysis

To:	Adegoke Oba – Permit Services
From:	Adrian Ortiz – Technical Services
Date:	April 6, 2022
Facility Name:	CALIFORNIA DAIRIES INC
Location:	2000 N PLAZA DR, VISALIA
Application #(s):	S-7063-8-9, -9-9, -18-6
Project #:	S-1213742

Summary

RMR

Units	Prioritization Score	Acute Hazard Index	Chronic Hazard Index	Maximum Individual Cancer Risk	T-BACT Required	Special Permit Requirements
8-9	0.07	0.00	0.00	NA[1]	No	Yes
9-9	0.07	0.00	0.00	NA[1]	No	Yes
18-6	0.07	0.00	0.00	NA[1]	No	Yes
Project Totals	0.21	0.00	0.00	0.00E+00		
Facility Totals	>1	0.00	0.00	1.34E-06		

Notes:
1. Cancer Risk was not calculated for Units 8, 9 and 18 since there is no risk factor or the risk factor is so low that it has been determined to be insignificant for this type of unit.

AAQA

Pollutant	Air Quality Standard (State/Federal)				
	1 Hour	3 Hours	8 Hours	24 Hours	Annual
CO	Pass		Pass		
NO_x	Pass				Pass
SO_x	Pass	Pass		Pass	Pass
PM10				Pass	Pass
PM2.5				Pass	Pass

Notes:
1. Results were taken from the attached AAQA Report.
2. The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2) unless otherwise noted below.
3. Modeled PM10 concentrations were below the District SIL for non-fugitive sources of 5 $\mu g/m^3$ for the 24-hour average concentration and 1 $\mu g/m^3$ for the annual concentration.
4. Modeled PM2.5 concentrations were below the District SIL for non-fugitive sources of 1.2 $\mu g/m^3$ for the 24-hour average concentration and 0.2 $\mu g/m^3$ for the annual concentration.

To ensure that human health risks will not exceed District allowable levels; the following shall be included as requirements for:

Unit # 8-9, 9-9, 18-6

1. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction.

Project Description

Technical Services received a request on February 24, 2022 to perform a Risk Management Review (RMR) and Ambient Air Quality Analysis (AAQA) for the following:

- Unit -8-9: MODIFICATION OF 63.0 MMBTU/HR HURST SERIES 400 NATURAL GAS FIRED BOILER WITH A NOVA PLUS ULTRA LOW NOX COMBUSTION SYSTEM MODEL NVC17-G-40 ULTRA LOW NOX BURNER AND INDUCED FLUE GAS RECIRCULATION (FGR) SYSTEM: RETROFIT BOILER TO MEET 2.5PPM NOX, REMOVE SLC SPECIFYING THAT NO MORE THAN TWO BOILERS (BETWEEN S-7063-8, '-9, AND '-18) CAN OPERATE CONCURRENTLY.
- Unit -9-9: MODIFICATION OF 63.0 MMBTU/HR HURST SERIES 400 NATURAL GAS FIRED BOILER WITH A NOVA PLUS ULTRA LOW NOX COMBUSTION SYSTEM MODEL NVC17-G-40 ULTRA LOW NOX BURNER AND INDUCED FLUE GAS RECIRCULATION (FGR) SYSTEM: RETROFIT BOILER TO MEET 2.5PPM NOX, REMOVE SLC SPECIFYING THAT NO MORE THAN TWO BOILERS (BETWEEN S-7063-8, '-9, AND '-18) CAN OPERATE CONCURRENTLY.
- Unit -18-6: MODIFICATION OF 63.0 MMBTU/HR HURST SERIES 400 NATURAL GAS FIRED BOILER WITH A NOVA PLUS ULTRA LOW NOX COMBUSTION SYSTEM MODEL NVC17-G-40 ULTRA LOW NOX BURNER AND INDUCED FLUE GAS RECIRCULATION (FGR) SYSTEM: RETROFIT BOILER TO MEET 2.5PPM NOX, REMOVE SLC SPECIFYING THAT NO MORE THAN TWO BOILERS (BETWEEN S-7063-8, '-9, AND '-18) CAN OPERATE CONCURRENTLY.

RMR Report

Analysis

The District performed an analysis pursuant to the District's Risk Management Policy for Permitting New and Modified Sources (APR 1905, May 28, 2015) to determine the possible cancer and non-cancer health impact to the nearest resident or worksite. This policy requires that an assessment be performed on a unit by unit basis, project basis, and on a facility-wide basis. If a preliminary prioritization analysis demonstrates that:

- A unit's prioritization score is less than the District's significance threshold and;
- The project's prioritization score is less than the District's significance threshold and;
- The facility's total prioritization score is less than the District's significance threshold

Then, generally no further analysis is required.

The District's significant prioritization score threshold is defined as being equal to or greater than 1.0. If a preliminary analysis demonstrates that either the unit's or the project's or the facility's total prioritization score is greater than the District threshold, a screening or a refined assessment is required

If a refined assessment is greater than one in a million but less than 20 in one million for carcinogenic impacts (Cancer Risk) and less than 1.0 for the Acute and Chronic hazard indices(Non-Carcinogenic) on a unit by unit basis, project basis and on a facility-wide basis the proposed application is considered less

than significant. For unit's that exceed a cancer risk of 1 in one million, Toxic Best Available Control Technology (TBACT) must be implemented.

Toxic emissions for this project were calculated using the following methods:

- Toxic emissions for this proposed unit were calculated using 2001 Ventura County's Air Pollution Control District's emission factors for Natural Gas Fired external combustion.

These emissions were input into the San Joaquin Valley APCD's Hazard Assessment and Reporting Program (SHARP). In accordance with the District's Risk Management Policy, risks from the proposed unit's toxic emissions were prioritized using the procedure in the 2016 CAPCOA Facility Prioritization Guidelines. The prioritization score for this proposed facility was greater than 1.0 (see RMR Summary Table). Therefore, a refined health risk assessment was required.

The AERMOD model was used, with the parameters outlined below and meteorological data for 2007-2010 from Visalia (rural dispersion coefficient selected) to determine the dispersion factors (i.e., the predicted concentration or X divided by the normalized source strength or Q) for a receptor grid. These dispersion factors were input into the SHARP Program, which then used the Air Dispersion Modeling and Risk Tool (ADMRT) of the Hot Spots Analysis and Reporting Program Version 2 (HARP 2) to calculate the chronic and acute hazard indices and the carcinogenic risk for the project.

The following parameters were used for the review:

Source Process Rates					
Unit ID	**Process ID**	**Process Material**	**Process Units**	**Hourly Process Rate**	**Annual Process Rate**
8-9	1	NH3	Lbs.	0.09	828
9-9	1	NH3	Lbs.	0.09	828
18-6	1	NH3	Lbs.	0.09	828

Point Source Parameters						
Unit ID	**Unit Description**	**Release Height (m)**	**Temp. (°K)**	**Exit Velocity (m/sec)**	**Stack Diameter (m)**	**Vertical/ Horizontal/ Capped**
8-9	63 MMBtu/Hr Boiler	12.19	433	11.02	0.81	Vertical
9-9	63 MMBtu/Hr Boiler	12.19	433	11.02	0.81	Vertical
18-6	63 MMBtu/Hr Boiler	12.19	433	11.02	0.81	Vertical

AAQA Report

The District modeled the impact of the proposed project on the National Ambient Air Quality Standard (NAAQS) and/or California Ambient Air Quality Standard (CAAQS) in accordance with District Policy APR-1925 (Policy for District Rule 2201 AAQA Modeling) and EPA's Guideline for Air Quality Modeling (Appendix W of 40 CFR Part 51). The District uses a progressive three level approach to perform AAQAs. The first level (Level 1) uses a very conservative approach. If this analysis indicates a likely exceedance of an AAQS or Significant Impact Level (SIL), the analysis proceeds to the second level (Level 2) which implements a more refined approach. For the 1-hour NO_2 standard, there is also a third level that can be implemented if the Level 2 analysis indicates a likely exceedance of an AAQS or SIL.

The modeling analyses predicts the maximum air quality impacts using the appropriate emissions for each standard's averaging period. Required model inputs for a refined AAQA include background ambient air

quality data, land characteristics, meteorological inputs, a receptor grid, and source parameters including emissions. These inputs are described in the sections that follow.

Ambient air concentrations of criteria pollutants are recorded at monitoring stations throughout the San Joaquin Valley. Monitoring stations may not measure all necessary pollutants, so background data may need to be collected from multiple sources. The following stations were used for this evaluation:

Monitoring Stations				
Pollutant	**Station Name**	**County**	**City**	**Measurement Year**
CO	Clovis	Fresno	Clovis	2018
NOx	Visalia - N. Church	Tulare	Visalia	2018
PM10	Visalia - N. Church	Tulare	Visalia	2018
PM2.5	Visalia - N. Church	Tulare	Visalia	2018
SOx	Fresno - Garland	Fresno	Fresno	2018

Technical Services performed modeling for directly emitted criteria pollutants with the emission rates below:

Emission Rates (lbs./hour)						
Unit ID	**Process**	**NOx**	**SOx**	**CO**	**PM10**	**PM2.5**
8, 9 & 16	1	0.41	0.18	2.32	0.19	0.19

Emission Rates (lbs./year)						
Unit ID	**Process**	**NOx**	**SOx**	**CO**	**PM10**	**PM2.5**
8, 9 & 16	1	2,008	1,570	20,404	-	-

The AERMOD model was used to determine if emissions from the project would cause or contribute to an exceedance of any state of federal air quality standard. The parameters outlined below and meteorological data for 2007-2010 from Visalia (rural dispersion coefficient selected) were used for the analysis:

The following parameters were used for the review:

Point Source Parameters						
Unit ID	**Unit Description**	**Release Height (m)**	**Temp. (°K)**	**Exit Velocity (m/sec)**	**Stack Diameter (m)**	**Vertical/ Horizontal/ Capped**
8-9	63 MMBtu/Hr Boiler	12.19	433	11.02	0.81	Vertical
9-9	63 MMBtu/Hr Boiler	12.19	433	11.02	0.81	Vertical
18-6	63 MMBtu/Hr Boiler	12.19	433	11.02	0.81	Vertical

Conclusion

RMR

The cumulative acute and chronic indices for this facility, including this project, are below 1.0; and the cumulative cancer risk for this facility, including this project, is less than 20 in a million. In addition, the cancer risk for each unit in this project is less than 1.0 in a million. **In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT).**

To ensure that human health risks will not exceed District allowable levels; the permit requirements listed on page 1 of this report must be included for this proposed unit.

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

AAQA

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS.

Attachments

A. Modeling request from the project engineer

B. Additional information from the applicant/project engineer

C. Prioritization score w/ toxic emissions summary

D. Facility Summary

E. AAQA results

APPENDIX E
Quarterly Net Emissions Change (QNEC)

Quarterly Net Emissions Change (QNEC)

The Quarterly Net Emissions Change is used to complete the emission profile screen for the District's PAS database. The QNEC shall be calculated as follows:

QNEC = PE2 - PE1, where:

QNEC = Quarterly Net Emissions Change for each emissions unit, lb/qtr.
PE2 = Post-Project Potential to Emit for each emissions unit, lb/qtr.
PE1 = Pre-Project Potential to Emit for each emissions unit, lb/qtr.

Using the values in Sections VII.C.2 and VII.C.1 in the evaluation above, quarterly PE2 and quarterly PE1 can be calculated as follows:

$PE2_{quarterly}$ = $PE2_{annual}$ ÷ 4 quarters/year
$PE1_{quarterly}$ = $PE1_{annual}$ ÷ 4 quarters/year

S-7063-8-9:

QNEC NO_X = 3,614/4 – 4,417/4 = -200.75
QNEC SO_X = 1,570/4 – 1,570/4 = 0
QNEC PM_{10} = 4,198/4 – 1,656/4 = -635.5
QNEC CO = 20,404/4 – 20,404/4 = 0
QNEC VOC = 3,030/4 – 3,030/4 = 0

Quarterly NEC [QNEC]			
Pollutant	**PE2 (lb/qtr)**	**PE1 (lb/qtr)**	**QNEC (lb/qtr)**
NO_X	3,614	4,417	-200.75
SO_X	1,570	1,570	0
PM_{10}	4,198	1,656	-635.5
CO	20,404	20,404	0
VOC	3,030	3,030	0

S-7063-9-9:

QNEC NO_X = 3,614/4 – 4,417/4 = -200.75
QNEC SO_X = 1,570/4 – 1,570/4 = 0
QNEC PM_{10} = 4,198/4 – 1,656/4 = -635.5
QNEC CO = 20,404/4 – 20,404/4 = 0
QNEC VOC = 3,030/4 – 3,030/4 = 0

Quarterly NEC [QNEC]			
Pollutant	**PE2 (lb/qtr)**	**PE1 (lb/qtr)**	**QNEC (lb/qtr)**
NO_X	3,614	4,417	-200.75
SO_X	1,570	1,570	0
PM_{10}	4,198	1,656	-635.5
CO	20,404	20,404	0
VOC	3,030	3,030	0

S-7063-18-6:

QNEC NO_x = 3,614/4 – 3,431/4 = 45.75
QNEC SO_x = 1,570/4 – 1,570/4 = 0
QNEC PM_{10} = 4,198/4 – 1,656/4 = -635.5
QNEC CO = 20,404/4 – 20,404/4 = 0
QNEC VOC = 3,030/4 – 3,030/4 = 0

Quarterly NEC [QNEC]			
Pollutant	**PE2 (lb/qtr)**	**PE1 (lb/qtr)**	**QNEC (lb/qtr)**
NO_X	3,614	3,431	45.75
SO_X	1,570	1,570	0
PM_{10}	4,198	1,656	-635.5
CO	20,404	20,404	0
VOC	3,030	3,030	0

APPENDIX F
Compliance Certification

San Joaquin Valley Air Pollution Control District

TITLE V MODIFICATION - COMPLIANCE CERTIFICATION FORM

I. TYPE OF PERMIT ACTION (Check appropriate box)

☐ ADMINISTRATIVE AMENDMENT ☐ MINOR MODIFICATION ☒ SIGNIFICANT MODIFICATION

COMPANY NAME: California Dairies, Inc.	FACILITY ID: S-7063
1. Type of Organization: ☒ Corporation ☐ Sole Ownership ☐ Government ☐ Partnership ☐ Utility	
2. Owner's Name:	
3. Agent to the Owner:	

II. COMPLIANCE CERTIFICATION (Read each statement carefully and initial **applicable** circles for confirmation):

(X) Based on information and belief formed after reasonable inquiry, the equipment identified in this application will continue to comply with the applicable federal requirement(s).

(X) Based on information and belief formed after reasonable inquiry, the equipment identified in this application will comply with applicable federal requirement(s) that will become effective during the permit term, on a timely basis.

(X) Corrected information will be provided to the District when I become aware that incorrect or incomplete information has been submitted.

(X) Based on information and belief formed after reasonable inquiry, information and statements in the submitted application package, including all accompanying reports, and required certifications are true, accurate, and complete.

(X) For minor modifications, this application meets the criteria for use of minor permit modification procedures pursuant to District Rule 2520.

I declare, under penalty of perjury under the laws of the state of California, that the forgoing is correct and true:

Signature of Responsible Official — Date: 12/9/2021

Dana Horne

Name of Responsible Official (please print)

Director of Compliance

Title of Responsible Official (please print)

APPENDIX G
ERC Surplus Analysis

San Joaquin Valley Air Pollution Control District
Surplus ERC Analysis

Facility Name: California Dairies
Mailing Address: 2000 N. Plaza Dr.
Visalia, CA 93291
Contact Person: Dana Home
Telephone: 559-217-6504
ERC Certificate(s) #: N-1579-2
ERC Surplus Project #: N/A
ATC Project #: S-1213742

Date: June 16, 2022
Engineer: Adegoke Oba
Lead Engineer: Steve Davidson

I. Proposal

California Dairies is proposing the use of the following Emission Reduction Credit (ERC) certificate(s) to meet the federal offset requirements of District project S-1213742.

Proposed ERC Certificate(s)	
Certificate #	**Criteria Pollutant**
N-1579-2	NOx

The purpose of this analysis is to ensure that the emission reductions on this ERC certificate are surplus of all applicable Federal requirements; therefore, this analysis establishes the surplus value of the ERC certificate as of the date of this analysis. The current face value and surplus value of the ERC certificate evaluated in this analysis are summarized in the following table(s):

Criteria Pollutant: NOx

ERC Certificate N-1579-2				
Pollutant	1st Qtr. (lb/qtr)	2nd Qtr. (lb/qtr)	3rd Qtr. (lb/qtr)	4th Qtr. (lb/qtr)
Current Value	2,746	2,746	2,746	2,746
Surplus Value	2,746	2,746	2,746	2,746

II. Individual ERC Certificate Analysis

ERC Certificate N-1579-2

A. ERC Background

Criteria Pollutant: NOx

ERC Certificate N-1579-2 is a certificate that was split out from parent ERC Certificate N-1086-2. Original ERC Certificate N-1086-2 was issued to N-802 on January 6, 2014 under project under project N-1122754. The ERCs were generated from the shutdown of emission units at solid fuel-fired power plant, facility ID N-802, which included a coal-fired circulating fluidized bed boiler (permit N-802-1) and various auxiliary equipment (permits N-802-2 through N-802-8, N-802-10 through N-802-14, N-802-16, N-802-17, and N-802-19). Of the units shut down, N-802-1 was the only source of NOx emissions. Therefore, the other permits will not be evaluated as part of this analysis. The following table summarizes the values of the original parent certificate and the current value of the subject certificate proposed to be utilized as a part of the current District analysis:

ERC Certificate N-1579-2				
Pollutant	1st Qtr. (lb/qtr)	2nd Qtr. (lb/qtr)	3rd Qtr. (lb/qtr)	4th Qtr. (lb/qtr)
Original Value of Parent Certificate N-1086-2	38,860	26,235	34,589	37,804
Current Value of ERC Certificate N-1579-2	2,746	2,746	2,746	2,746

B. Applicable Rules and Regulations at Time of Original Banking Project

Based on the application review for the original ERC banking project, the following rules and regulations were evaluated to determine the surplus value of actual emission reductions of NOx generated by the reduction project.

1. District Rules

Rule 2201 – New and Modified Stationary Source Review Rule (4/21/11)

The application review for the original ERC banking project demonstrated that the emission reductions were surplus of all Rule 2201 limits. Since this rule is only applicable to new and modified units, there are no new or additional requirements that could affect the surplus value of the original reductions.

Rule 2301 - Emission Reduction Credit Banking (12/17/92)

The application review for the original ERC banking project demonstrated that the ERC credit complied with District Rule 2301 requirements at the time it was issued.

Rule 4352 Solid Fuel Fired Boilers, Steam Generators and Process Heaters (12/15/2011)

The application review for the original ERC banking project demonstrated that the emission reductions were surplus of all Rule 4352 limits. Therefore, the original NOx emission reductions were surplus of all applicable District Rule requirements.

2. Federal Rules and Regulations

40 CFR Part 60 Subpart Da - Standards of Performance for Electric Utility Steam Generating Units

The application review for the original ERC banking project demonstrated that the boiler had a NO_X limit that was below the limit in the subpart. Therefore, the emission reductions were surplus of the requirements of any applicable federal rules or regulations at the time the ERC was originally banked.

C. New or Modified Rule and Regulations Applicable to the Original Banking Project

All District and federal rules and regulations that have been adopted or amended since the date the original banking project was finalized will be evaluated below:

1. District Rules:

Rule 4352 Solid Fuel Fired Boilers, Steam Generators and Process Heaters (12/16/2021)

District Rule 4352 was modified on December 16, 2021. However, this revision has not been incorporated into the EPA's State Implementation Plan (SIP). The EPA SIP uses the December 15, 2011 revision of Rule 4352 which predates the original ERC banking project. Therefore, the original NOx emission reductions continue to be surplus of District Rule requirements.

2. Federal Rules and Regulations:

40 CFR Part 60 Subpart Da - Standards of Performance for Electric Utility Steam Generating Units

The Emission monitoring section of this Rule was updated on April 6, 2016. However, no changes in this section applied to emission limits. Therefore, the original NOx emission reductions continue to be surplus of District Rule requirements.

D. Surplus at Time of Use Adjustments to ERC Quantities

As demonstrated in the section above, the emissions reductions from permit units in the

original banking project continue to be surplus of all applicable District and Federal Rules and Regulations. Therefore, no discounting to the ERC values are necessary for surplus at time of use considerations.

E. Surplus Value of ERC Certificate

The emissions continue to be Surplus of all District and Federal Rules and Regulations; therefore, no adjustments to the ERC values are necessary.

ERC Certificate N-1579-2 – Criteria Pollutant NO_x					
		1st Qtr. (lb/qtr)	2nd Qtr. (lb/qtr)	3rd Qtr. (lb/qtr)	4th Qtr. (lb/qtr)
(A)	Current ERC Quantity	2,746	2,746	2,746	2,746
(B)	Percent Discount	**0%**	**0%**	**0%**	**0%**
(C) = (A) x [1 – (B)]	**Surplus Value**	**2,746**	**2,746**	**2,746**	**2,746**

Attachment

1. Summary of Equipment Shut Down in Original ERC Banking Project

1. Summary of Equipment Shut Down in Original ERC Banking Project

District Permit	Equipment Summary
N-802-1	COAL FIRED CIRCULATING FLUIDIZED BED BOILER (CAPACITY 550,000 LBS/HR STEAM) UTILIZING LIMESTONE INJECTION FOR SOX CONTROL, A THERMAL DENOX SYSTEM FOR NOX CONTROL, AND TWO CYCLONES VENTED TO A BAGHOUSE FOR PARTICULATE CONTROL

APPENDIX H
ERC Withdrawal Calculations

ERC Withdrawal Calculations

NO_x	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
ERC N-1579-2	2,746	2,746	2,746	2,746
Offsets Required (Includes distance offset ratio)	1,830	1,831	1,831	1,831
Amount Remaining	916	915	915	915
Credits reissued under ERC N-YYYY-2	916	915	915	915

APPENDIX I
Calculations

Date	S-7063-8 (MMBTU)	S-7063-9 (MMBTU)	S-7063-18 (MMBTU)	S-7063-8 (lbs)	S-7063-9 (lbs)	S-7063-18 (lbs)	BAE (lbs)	AE (lbs)	1st yr AE (lbs)	2nd yr AE (lbs)	S-7063-8 AE (lbs)	S-7063-9 AE (lbs)	S-7063-18 AE (lbs)	S-7063-8 AE yr 1 (lbs)	S-7063-9 AE yr 1 (lbs)	S-7063-18 AE year 1 (lbs)
11/1/2019	526	664	268	4.2	5.3	1.7	9.5	9.5	**3499.6**	**3540.1**	**4.2**	**5.3**	**0.0**	1304.3	668.7	1526.6
11/2/2019	607	332	739	4.9	2.7	4.6	9.4	9.4			**4.9**	**0.0**	**4.6**			
11/3/2019	606	84	929	4.8	0.7	5.8	10.6	10.6			**4.8**	**0.0**	**5.8**	S-7063-8 AE year 2	S-7063-9 AE yr 2 (lbs)	S-7063-18 AE yr 2 (lbs)
11/4/2019	537	119	844	4.3	1.0	5.2	9.5	9.5			**4.3**	**0.0**	**5.2**	1551.4	1215.8	772.8
11/5/2019	430	2	746	3.4	0.0	4.6	8.1	8.1			**3.4**	**0.0**	**4.6**			
11/6/2019	570	237	254	4.6	1.9	1.6	6.5	6.5			**4.6**	**1.9**	**0.0**	S-7063-8 AE avg (lbs)	S-7063-9 AE avg (lbs)	S-7063-18 AE avg (lbs)
11/7/2019	715	559	9	5.7	4.5	0.1	10.2	10.2			**5.7**	**4.5**	**0.0**	**1427.9**	**942.3**	**1149.7**
11/8/2019	715	637	270	5.7	5.1	1.7	10.8	10.8			**5.7**	**5.1**	**0.0**			
11/9/2019	677	515	447	5.4	4.1	2.8	9.5	9.5			**5.4**	**4.1**	**0.0**	Sum avg of all 3 units (lbs)		
11/10/2019	671	456	465	5.4	3.6	2.9	9.0	9.0			**5.4**	**3.6**	**0.0**	**3519.8**		
11/11/2019	694	497	513	5.6	4.0	3.2	9.5	9.5			**5.6**	**4.0**	**0.0**			
11/12/2019	0	509	90	0.0	4.1	0.6	4.6	4.6			**0.0**	**4.1**	**0.6**			
11/13/2019	702	527	38	5.6	4.2	0.2	9.8	9.8			**5.6**	**4.2**	**0.0**			
11/14/2019	688	495	494	5.5	4.0	3.1	9.5	9.5			**5.5**	**4.0**	**0.0**			
11/15/2019	672	458	540	5.4	3.7	3.3	9.0	9.0			**5.4**	**3.7**	**0.0**			
11/16/2019	610	259	938	4.9	2.1	5.8	10.7	10.7			**4.9**	**0.0**	**5.8**			
11/17/2019	552	371	782	4.4	3.0	4.8	9.3	9.3			**4.4**	**0.0**	**4.8**			
11/18/2019	563	500	716	4.5	4.0	4.4	8.9	8.9			**4.5**	**0.0**	**4.4**			
11/19/2019	595	546	759	4.8	4.4	4.7	9.5	9.5			**4.8**	**0.0**	**4.7**			
11/20/2019	307	123	391	2.5	1.0	2.4	4.9	4.9			**2.5**	**0.0**	**2.4**			
11/21/2019	631	390	767	5.0	3.1	4.8	9.8	9.8			**5.0**	**0.0**	**4.8**			
11/22/2019	640	185	759	5.1	1.5	4.7	9.8	9.8			**5.1**	**0.0**	**4.7**			
11/23/2019	518	417	655	4.1	3.3	4.1	8.2	8.2			**4.1**	**0.0**	**4.1**			
11/24/2019	575	186	822	4.6	1.5	5.1	9.7	9.7			**4.6**	**0.0**	**5.1**			
11/25/2019	562	241	899	4.5	1.9	5.6	10.1	10.1			**4.5**	**0.0**	**5.6**			
11/26/2019	487	210	844	3.9	1.7	5.2	9.1	9.1			**3.9**	**0.0**	**5.2**			
11/27/2019	532	261	912	4.3	2.1	5.7	9.9	9.9			**4.3**	**0.0**	**5.7**			
11/28/2019	351	517	922	2.8	4.1	5.7	9.9	9.9			**0.0**	**4.1**	**5.7**			
11/29/2019	222	676	892	1.8	5.4	5.5	10.9	10.9			**0.0**	**5.4**	**5.5**			
11/30/2019	207	598	755	1.7	4.8	4.7	9.5	9.5			**0.0**	**4.8**	**4.7**			
12/1/2019	210	680	691	1.7	5.4	4.3	9.7	9.7			**0.0**	**5.4**	**4.3**			
12/2/2019	195	625	630	1.6	5.0	3.9	8.9	8.9			**0.0**	**5.0**	**3.9**			
12/3/2019	324	488	773	2.6	3.9	4.8	8.7	8.7			**0.0**	**3.9**	**4.8**			
12/4/2019	513	175	899	4.1	1.4	5.6	9.7	9.7			**4.1**	**0.0**	**5.6**			
12/5/2019	574	273	910	4.6	2.2	5.6	10.2	10.2			**4.6**	**0.0**	**5.6**			
12/6/2019	395	23	738	3.2	0.2	4.6	7.7	7.7			**3.2**	**0.0**	**4.6**			
12/7/2019	577	26	899	4.6	0.2	5.6	10.2	10.2			**4.6**	**0.0**	**5.6**			
12/8/2019	579	99	914	4.6	0.8	5.7	10.3	10.3			**4.6**	**0.0**	**5.7**			
12/9/2019	474	0	847	3.8	0.0	5.3	9.0	9.0			**3.8**	**0.0**	**5.3**			
12/10/2019	478	218	839	3.8	1.7	5.2	9.0	9.0			**3.8**	**0.0**	**5.2**			
12/11/2019	544	243	909	4.4	1.9	5.6	10.0	10.0			**4.4**	**0.0**	**5.6**			
12/12/2019	516	250	861	4.1	2.0	5.3	9.5	9.5			**4.1**	**0.0**	**5.3**			
12/13/2019	524	263	869	4.2	2.1	5.4	9.6	9.6			**4.2**	**0.0**	**5.4**			
12/14/2019	523	192	884	4.2	1.5	5.5	9.7	9.7			**4.2**	**0.0**	**5.5**			
12/15/2019	580	52	955	4.6	0.4	5.9	10.6	10.6			**4.6**	**0.0**	**5.9**			
12/16/2019	535	170	880	4.3	1.4	5.5	9.7	9.7			**4.3**	**0.0**	**5.5**			
12/17/2019	455	230	828	3.6	1.8	5.1	8.8	8.8			**3.6**	**0.0**	**5.1**			
12/18/2019	604	304	958	4.8	2.4	5.9	10.8	10.8			**4.8**	**0.0**	**5.9**			
12/19/2019	506	249	868	4.0	2.0	5.4	9.4	9.4			**4.0**	**0.0**	**5.4**			
12/20/2019	547	125	890	4.4	1.0	5.5	9.9	9.9			**4.4**	**0.0**	**5.5**			
12/21/2019	539	98	883	4.3	0.8	5.5	9.8	9.8			**4.3**	**0.0**	**5.5**			
12/22/2019	446	226	806	3.6	1.8	5.0	8.6	8.6			**3.6**	**0.0**	**5.0**			
12/23/2019	450	220	839	3.6	1.8	5.2	8.8	8.8			**3.6**	**0.0**	**5.2**			
12/24/2019	572	64	938	4.6	0.5	5.8	10.4	10.4			**4.6**	**0.0**	**5.8**			
12/25/2019	480	211	845	3.8	1.7	5.2	9.1	9.1			**3.8**	**0.0**	**5.2**			
12/26/2019	521	241	919	4.2	1.9	5.7	9.9	9.9			**4.2**	**0.0**	**5.7**			
12/27/2019	539	121	932	4.3	1.0	5.8	10.1	10.1			**4.3**	**0.0**	**5.8**			
12/28/2019	525	167	925	4.2	1.3	5.7	9.9	9.9			**4.2**	**0.0**	**5.7**			
12/29/2019	522	251	926	4.2	2.0	5.7	9.9	9.9			**4.2**	**0.0**	**5.7**			
12/30/2019	492	241	897	3.9	1.9	5.6	9.5	9.5			**3.9**	**0.0**	**5.6**			
12/31/2019	554	256	955	4.4	2.0	5.9	10.4	10.4			**4.4**	**0.0**	**5.9**			
1/1/2020	495	236	895	4.0	1.9	5.5	9.5	9.5			**4.0**	**0.0**	**5.5**			
1/2/2020	425	240	704	3.4	1.9	4.4	7.8	7.8			**3.4**	**0.0**	**4.4**			
1/3/2020	717	732	65	5.7	5.9	0.4	11.6	11.6			**5.7**	**5.9**	**0.0**			
1/4/2020	653	720	0	5.2	5.8	0.0	11.0	11.0			**5.2**	**5.8**	**0.0**			
1/5/2020	647	701	0	5.2	5.6	0.0	10.8	10.8			**5.2**	**5.6**	**0.0**			
1/6/2020	672	749	11	5.4	6.0	0.1	11.4	11.4			**5.4**	**6.0**	**0.0**			
1/7/2020	557	516	321	4.5	4.1	2.0	8.6	8.6			**4.5**	**4.1**	**0.0**			
1/8/2020	501	399	739	4.0	3.2	4.6	8.6	8.6			**4.0**	**0.0**	**4.6**			
1/9/2020	514	414	817	4.1	3.3	5.1	9.2	9.2			**4.1**	**0.0**	**5.1**			
1/10/2020	493	395	941	3.9	3.2	5.8	9.8	9.8			**3.9**	**0.0**	**5.8**			
1/11/2020	473	369	800	3.8	3.0	5.0	8.7	8.7			**3.8**	**0.0**	**5.0**			
1/12/2020	533	491	824	4.3	3.9	5.1	9.4	9.4			**4.3**	**0.0**	**5.1**			

1/13/2020	546	499	600	4.4	4.0	3.7	8.4	8.4	**4.4**	**4.0**	**0.0**
1/14/2020	567	476	589	4.5	3.8	3.7	8.3	8.3	**4.5**	**3.8**	**0.0**
1/15/2020	576	553	676	4.6	4.4	4.2	9.0	9.0	**4.6**	**4.4**	**0.0**
1/16/2020	514	451	754	4.1	3.6	4.7	8.8	8.8	**4.1**	**0.0**	**4.7**
1/17/2020	539	506	829	4.3	4.0	5.1	9.5	9.5	**4.3**	**0.0**	**5.1**
1/18/2020	518	484	840	4.1	3.9	5.2	9.4	9.4	**4.1**	**0.0**	**5.2**
1/19/2020	621	622	639	5.0	5.0	4.0	9.9	9.9	**5.0**	**5.0**	**0.0**
1/20/2020	661	709	314	5.3	5.7	1.9	11.0	11.0	**5.3**	**5.7**	**0.0**
1/21/2020	621	642	296	5.0	5.1	1.8	10.1	10.1	**5.0**	**5.1**	**0.0**
1/22/2020	680	755	349	5.4	6.0	2.2	11.5	11.5	**5.4**	**6.0**	**0.0**
1/23/2020	669	735	279	5.4	5.9	1.7	11.2	11.2	**5.4**	**5.9**	**0.0**
1/24/2020	665	731	314	5.3	5.8	1.9	11.2	11.2	**5.3**	**5.8**	**0.0**
1/25/2020	588	587	297	4.7	4.7	1.8	9.4	9.4	**4.7**	**4.7**	**0.0**
1/26/2020	641	697	310	5.1	5.6	1.9	10.7	10.7	**5.1**	**5.6**	**0.0**
1/27/2020	591	575	305	4.7	4.6	1.9	9.3	9.3	**4.7**	**4.6**	**0.0**
1/28/2020	468	565	339	3.7	4.5	2.1	8.3	8.3	**3.7**	**4.5**	**0.0**
1/29/2020	588	617	321	4.7	4.9	2.0	9.6	9.6	**4.7**	**4.9**	**0.0**
1/30/2020	621	622	321	5.0	5.0	2.0	9.9	9.9	**5.0**	**5.0**	**0.0**
1/31/2020	625	687	297	5.0	5.5	1.8	10.5	10.5	**5.0**	**5.5**	**0.0**
2/1/2020	615	646	310	4.9	5.2	1.9	10.1	10.1	**4.9**	**5.2**	**0.0**
2/2/2020	633	659	313	5.1	5.3	1.9	10.3	10.3	**5.1**	**5.3**	**0.0**
2/3/2020	639	676	313	5.1	5.4	1.9	10.5	10.5	**5.1**	**5.4**	**0.0**
2/4/2020	549	511	297	4.4	4.1	1.8	8.5	8.5	**4.4**	**4.1**	**0.0**
2/5/2020	610	650	302	4.9	5.2	1.9	10.1	10.1	**4.9**	**5.2**	**0.0**
2/6/2020	626	634	298	5.0	5.1	1.8	10.1	10.1	**5.0**	**5.1**	**0.0**
2/7/2020	596	601	296	4.8	4.8	1.8	9.6	9.6	**4.8**	**4.8**	**0.0**
2/8/2020	618	657	293	4.9	5.3	1.8	10.2	10.2	**4.9**	**5.3**	**0.0**
2/9/2020	603	613	298	4.8	4.9	1.8	9.7	9.7	**4.8**	**4.9**	**0.0**
2/10/2020	630	673	275	5.0	5.4	1.7	10.4	10.4	**5.0**	**5.4**	**0.0**
2/11/2020	652	720	286	5.2	5.8	1.8	11.0	11.0	**5.2**	**5.8**	**0.0**
2/12/2020	650	691	299	5.2	5.5	1.9	10.7	10.7	**5.2**	**5.5**	**0.0**
2/13/2020	637	689	294	5.1	5.5	1.8	10.6	10.6	**5.1**	**5.5**	**0.0**
2/14/2020	609	638	295	4.9	5.1	1.8	10.0	10.0	**4.9**	**5.1**	**0.0**
2/15/2020	607	629	299	4.9	5.0	1.9	9.9	9.9	**4.9**	**5.0**	**0.0**
2/16/2020	643	694	295	5.1	5.6	1.8	10.7	10.7	**5.1**	**5.6**	**0.0**
2/17/2020	570	582	288	4.6	4.7	1.8	9.2	9.2	**4.6**	**4.7**	**0.0**
2/18/2020	575	577	290	4.6	4.6	1.8	9.2	9.2	**4.6**	**4.6**	**0.0**
2/19/2020	518	466	292	4.1	3.7	1.8	7.9	7.9	**4.1**	**3.7**	**0.0**
2/20/2020	575	612	294	4.6	4.9	1.8	9.5	9.5	**4.6**	**4.9**	**0.0**
2/21/2020	648	707	290	5.2	5.7	1.8	10.8	10.8	**5.2**	**5.7**	**0.0**
2/22/2020	480	682	394	3.8	5.5	2.4	9.3	9.3	**3.8**	**5.5**	**0.0**
2/23/2020	65	922	886	0.5	7.4	5.5	12.9	12.9	**0.0**	**7.4**	**5.5**
2/24/2020	187	701	736	1.5	5.6	4.6	10.2	10.2	**0.0**	**5.6**	**4.6**
2/25/2020	329	724	516	2.6	5.8	3.2	9.0	9.0	**0.0**	**5.8**	**3.2**
2/26/2020	341	678	605	2.7	5.4	3.8	9.2	9.2	**0.0**	**5.4**	**3.8**
2/27/2020	280	649	863	2.2	5.2	5.4	10.5	10.5	**0.0**	**5.2**	**5.4**
2/28/2020	214	522	756	1.7	4.2	4.7	8.9	8.9	**0.0**	**4.2**	**4.7**
2/29/2020	257	544	784	2.1	4.4	4.9	9.2	9.2	**0.0**	**4.4**	**4.9**
3/1/2020	266	629	855	2.1	5.0	5.3	10.3	10.3	**0.0**	**5.0**	**5.3**
3/2/2020	255	570	858	2.0	4.6	5.3	9.9	9.9	**0.0**	**4.6**	**5.3**
3/3/2020	247	577	837	2.0	4.6	5.2	9.8	9.8	**0.0**	**4.6**	**5.2**
3/4/2020	284	633	819	2.3	5.1	5.1	10.1	10.1	**0.0**	**5.1**	**5.1**
3/5/2020	437	753	436	3.5	6.0	2.7	9.5	9.5	**3.5**	**6.0**	**0.0**
3/6/2020	263	636	863	2.1	5.1	5.4	10.4	10.4	**0.0**	**5.1**	**5.4**
3/7/2020	282	640	916	2.3	5.1	5.7	10.8	10.8	**0.0**	**5.1**	**5.7**
3/8/2020	241	579	830	1.9	4.6	5.1	9.8	9.8	**0.0**	**4.6**	**5.1**
3/9/2020	290	669	909	2.3	5.4	5.6	11.0	11.0	**0.0**	**5.4**	**5.6**
3/10/2020	226	562	835	1.8	4.5	5.2	9.7	9.7	**0.0**	**4.5**	**5.2**
3/11/2020	222	613	863	1.8	4.9	5.4	10.3	10.3	**0.0**	**4.9**	**5.4**
3/12/2020	309	612	795	2.5	4.9	4.9	9.8	9.8	**0.0**	**4.9**	**4.9**
3/13/2020	263	609	831	2.1	4.9	5.2	10.0	10.0	**0.0**	**4.9**	**5.2**
3/14/2020	238	561	818	1.9	4.5	5.1	9.6	9.6	**0.0**	**4.5**	**5.1**
3/15/2020	230	630	844	1.8	5.0	5.2	10.3	10.3	**0.0**	**5.0**	**5.2**
3/16/2020	253	799	540	2.0	6.4	3.3	9.7	9.7	**0.0**	**6.4**	**3.3**
3/17/2020	137	654	808	1.1	5.2	5.0	10.2	10.2	**0.0**	**5.2**	**5.0**
3/18/2020	199	591	919	1.6	4.7	5.7	10.4	10.4	**0.0**	**4.7**	**5.7**
3/19/2020	202	638	929	1.6	5.1	5.8	10.9	10.9	**0.0**	**5.1**	**5.8**
3/20/2020	201	0	853	1.6	0.0	5.3	6.9	6.9	**1.6**	**0.0**	**5.3**
3/21/2020	205	584	862	1.6	4.7	5.3	10.0	10.0	**0.0**	**4.7**	**5.3**
3/22/2020	213	699	925	1.7	5.6	5.7	11.3	11.3	**0.0**	**5.6**	**5.7**
3/23/2020	210	645	900	1.7	5.2	5.6	10.7	10.7	**0.0**	**5.2**	**5.6**
3/24/2020	197	442	767	1.6	3.5	4.8	8.3	8.3	**0.0**	**3.5**	**4.8**
3/25/2020	196	421	799	1.6	3.4	5.0	8.3	8.3	**0.0**	**3.4**	**5.0**
3/26/2020	199	557	905	1.6	4.5	5.6	10.1	10.1	**0.0**	**4.5**	**5.6**

3/27/2020	201	606	905	1.6	4.8	5.6	10.5	10.5	**0.0**	**4.8**	**5.6**
3/28/2020	200	645	937	1.6	5.2	5.8	11.0	11.0	**0.0**	**5.2**	**5.8**
3/29/2020	226	575	862	1.8	4.6	5.3	9.9	9.9	**0.0**	**4.6**	**5.3**
3/30/2020	204	633	900	1.6	5.1	5.6	10.6	10.6	**0.0**	**5.1**	**5.6**
3/31/2020	252	578	791	2.0	4.6	4.9	9.5	9.5	**0.0**	**4.6**	**4.9**
4/1/2020	208	677	921	1.7	5.4	5.7	11.1	11.1	**0.0**	**5.4**	**5.7**
4/2/2020	198	560	885	1.6	4.5	5.5	10.0	10.0	**0.0**	**4.5**	**5.5**
4/3/2020	205	587	885	1.6	4.7	5.5	10.2	10.2	**0.0**	**4.7**	**5.5**
4/4/2020	193	609	901	1.5	4.9	5.6	10.5	10.5	**0.0**	**4.9**	**5.6**
4/5/2020	193	597	862	1.5	4.8	5.3	10.1	10.1	**0.0**	**4.8**	**5.3**
4/6/2020	220	621	897	1.8	5.0	5.6	10.5	10.5	**0.0**	**5.0**	**5.6**
4/7/2020	228	600	904	1.8	4.8	5.6	10.4	10.4	**0.0**	**4.8**	**5.6**
4/8/2020	305	457	974	2.4	3.7	6.0	9.7	9.7	**0.0**	**3.7**	**6.0**
4/9/2020	337	482	918	2.7	3.9	5.7	9.5	9.5	**0.0**	**3.9**	**5.7**
4/10/2020	576	357	1,008	4.6	2.9	6.2	10.9	10.9	**4.6**	**0.0**	**6.2**
4/11/2020	511	255	944	4.1	2.0	5.9	9.9	9.9	**4.1**	**0.0**	**5.9**
4/12/2020	535	262	965	4.3	2.1	6.0	10.3	10.3	**4.3**	**0.0**	**6.0**
4/13/2020	463	290	903	3.7	2.3	5.6	9.3	9.3	**3.7**	**0.0**	**5.6**
4/14/2020	463	251	869	3.7	2.0	5.4	9.1	9.1	**3.7**	**0.0**	**5.4**
4/15/2020	478	257	905	3.8	2.1	5.6	9.4	9.4	**3.8**	**0.0**	**5.6**
4/16/2020	486	240	883	3.9	1.9	5.5	9.4	9.4	**3.9**	**0.0**	**5.5**
4/17/2020	499	266	942	4.0	2.1	5.8	9.8	9.8	**4.0**	**0.0**	**5.8**
4/18/2020	552	280	972	4.4	2.2	6.0	10.4	10.4	**4.4**	**0.0**	**6.0**
4/19/2020	525	276	944	4.2	2.2	5.9	10.1	10.1	**4.2**	**0.0**	**5.9**
4/20/2020	531	277	976	4.2	2.2	6.1	10.3	10.3	**4.2**	**0.0**	**6.1**
4/21/2020	445	267	892	3.6	2.1	5.5	9.1	9.1	**3.6**	**0.0**	**5.5**
4/22/2020	531	257	942	4.2	2.1	5.8	10.1	10.1	**4.2**	**0.0**	**5.8**
4/23/2020	525	289	928	4.2	2.3	5.8	10.0	10.0	**4.2**	**0.0**	**5.8**
4/24/2020	536	376	978	4.3	3.0	6.1	10.4	10.4	**4.3**	**0.0**	**6.1**
4/25/2020	548	287	938	4.4	2.3	5.8	10.2	10.2	**4.4**	**0.0**	**5.8**
4/26/2020	583	271	965	4.7	2.2	6.0	10.6	10.6	**4.7**	**0.0**	**6.0**
4/27/2020	569	259	956	4.6	2.1	5.9	10.5	10.5	**4.6**	**0.0**	**5.9**
4/28/2020	613	138	979	4.9	1.1	6.1	11.0	11.0	**4.9**	**0.0**	**6.1**
4/29/2020	323	408	859	2.6	3.3	5.3	8.6	8.6	**0.0**	**3.3**	**5.3**
4/30/2020	482	253	1,013	3.9	2.0	6.3	10.1	10.1	**3.9**	**0.0**	**6.3**
5/1/2020	543	249	1,073	4.3	2.0	6.7	11.0	11.0	**4.3**	**0.0**	**6.7**
5/2/2020	533	254	1,051	4.3	2.0	6.5	10.8	10.8	**4.3**	**0.0**	**6.5**
5/3/2020	519	243	1,045	4.2	1.9	6.5	10.6	10.6	**4.2**	**0.0**	**6.5**
5/4/2020	502	251	1,028	4.0	2.0	6.4	10.4	10.4	**4.0**	**0.0**	**6.4**
5/5/2020	435	139	988	3.5	1.1	6.1	9.6	9.6	**3.5**	**0.0**	**6.1**
5/6/2020	527	131	994	4.2	1.0	6.2	10.4	10.4	**4.2**	**0.0**	**6.2**
5/7/2020	521	279	943	4.2	2.2	5.8	10.0	10.0	**4.2**	**0.0**	**5.8**
5/8/2020	523	312	949	4.2	2.5	5.9	10.1	10.1	**4.2**	**0.0**	**5.9**
5/9/2020	516	288	931	4.1	2.3	5.8	9.9	9.9	**4.1**	**0.0**	**5.8**
5/10/2020	529	268	947	4.2	2.1	5.9	10.1	10.1	**4.2**	**0.0**	**5.9**
5/11/2020	529	332	964	4.2	2.7	6.0	10.2	10.2	**4.2**	**0.0**	**6.0**
5/12/2020	270	241	893	2.2	1.9	5.5	7.7	7.7	**2.2**	**0.0**	**5.5**
5/13/2020	486	0	939	3.9	0.0	5.8	9.7	9.7	**3.9**	**0.0**	**5.8**
5/14/2020	507	83	1,000	4.1	0.7	6.2	10.3	10.3	**4.1**	**0.0**	**6.2**
5/15/2020	519	271	984	4.2	2.2	6.1	10.3	10.3	**4.2**	**0.0**	**6.1**
5/16/2020	508	207	940	4.1	1.7	5.8	9.9	9.9	**4.1**	**0.0**	**5.8**
5/17/2020	505	228	952	4.0	1.8	5.9	9.9	9.9	**4.0**	**0.0**	**5.9**
5/18/2020	495	167	936	4.0	1.3	5.8	9.8	9.8	**4.0**	**0.0**	**5.8**
5/19/2020	488	120	977	3.9	1.0	6.1	10.0	10.0	**3.9**	**0.0**	**6.1**
5/20/2020	536	169	1,016	4.3	1.4	6.3	10.6	10.6	**4.3**	**0.0**	**6.3**
5/21/2020	507	199	950	4.1	1.6	5.9	9.9	9.9	**4.1**	**0.0**	**5.9**
5/22/2020	539	261	1,025	4.3	2.1	6.4	10.7	10.7	**4.3**	**0.0**	**6.4**
5/23/2020	521	263	1,003	4.2	2.1	6.2	10.4	10.4	**4.2**	**0.0**	**6.2**
5/24/2020	509	86	932	4.1	0.7	5.8	9.9	9.9	**4.1**	**0.0**	**5.8**
5/25/2020	476	39	890	3.8	0.3	5.5	9.3	9.3	**3.8**	**0.0**	**5.5**
5/26/2020	465	219	910	3.7	1.8	5.6	9.4	9.4	**3.7**	**0.0**	**5.6**
5/27/2020	467	211	867	3.7	1.7	5.4	9.1	9.1	**3.7**	**0.0**	**5.4**
5/28/2020	502	251	981	4.0	2.0	6.1	10.1	10.1	**4.0**	**0.0**	**6.1**
5/29/2020	513	236	967	4.1	1.9	6.0	10.1	10.1	**4.1**	**0.0**	**6.0**
5/30/2020	531	244	1,008	4.2	2.0	6.2	10.5	10.5	**4.2**	**0.0**	**6.2**
5/31/2020	528	129	1,006	4.2	1.0	6.2	10.5	10.5	**4.2**	**0.0**	**6.2**
6/1/2020	518	0	1,009	4.1	0.0	6.3	10.4	10.4	**4.1**	**0.0**	**6.3**
6/2/2020	401	165	956	3.2	1.3	5.9	9.1	9.1	**3.2**	**0.0**	**5.9**
6/3/2020	157	540	934	1.3	4.3	5.8	10.1	10.1	**0.0**	**4.3**	**5.8**
6/4/2020	496	127	925	4.0	1.0	5.7	9.7	9.7	**4.0**	**0.0**	**5.7**
6/5/2020	499	426	879	4.0	3.4	5.4	9.4	9.4	**4.0**	**0.0**	**5.4**
6/6/2020	500	274	976	4.0	2.2	6.1	10.1	10.1	**4.0**	**0.0**	**6.1**
6/7/2020	543	584	334	4.3	4.7	2.1	9.0	9.0	**4.3**	**4.7**	**0.0**
6/8/2020	552	768	0	4.4	6.1	0.0	10.6	10.6	**4.4**	**6.1**	**0.0**

6/9/2020	547	819	85	4.4	6.6	0.5	10.9	10.9	**4.4**	**6.6**	**0.0**
6/10/2020	475	347	843	3.8	2.8	5.2	9.0	9.0	**3.8**	**0.0**	**5.2**
6/11/2020	512	131	1,001	4.1	1.0	6.2	10.3	10.3	**4.1**	**0.0**	**6.2**
6/12/2020	503	307	900	4.0	2.5	5.6	9.6	9.6	**4.0**	**0.0**	**5.6**
6/13/2020	525	226	902	4.2	1.8	5.6	9.8	9.8	**4.2**	**0.0**	**5.6**
6/14/2020	486	222	808	3.9	1.8	5.0	8.9	8.9	**3.9**	**0.0**	**5.0**
6/15/2020	500	224	828	4.0	1.8	5.1	9.1	9.1	**4.0**	**0.0**	**5.1**
6/16/2020	484	220	808	3.9	1.8	5.0	8.9	8.9	**3.9**	**0.0**	**5.0**
6/17/2020	486	219	815	3.9	1.8	5.1	8.9	8.9	**3.9**	**0.0**	**5.1**
6/18/2020	502	204	775	4.0	1.6	4.8	8.8	8.8	**4.0**	**0.0**	**4.8**
6/19/2020	545	200	808	4.4	1.6	5.0	9.4	9.4	**4.4**	**0.0**	**5.0**
6/20/2020	500	222	749	4.0	1.8	4.6	8.6	8.6	**4.0**	**0.0**	**4.6**
6/21/2020	254	297	954	2.0	2.4	5.9	8.3	8.3	**0.0**	**2.4**	**5.9**
6/22/2020	478	218	752	3.8	1.7	4.7	8.5	8.5	**3.8**	**0.0**	**4.7**
6/23/2020	504	206	759	4.0	1.6	4.7	8.7	8.7	**4.0**	**0.0**	**4.7**
6/24/2020	541	222	843	4.3	1.8	5.2	9.6	9.6	**4.3**	**0.0**	**5.2**
6/25/2020	583	220	886	4.7	1.8	5.5	10.2	10.2	**4.7**	**0.0**	**5.5**
6/26/2020	579	214	809	4.6	1.7	5.0	9.6	9.6	**4.6**	**0.0**	**5.0**
6/27/2020	581	206	803	4.6	1.6	5.0	9.6	9.6	**4.6**	**0.0**	**5.0**
6/28/2020	608	209	854	4.9	1.7	5.3	10.2	10.2	**4.9**	**0.0**	**5.3**
6/29/2020	518	215	769	4.1	1.7	4.8	8.9	8.9	**4.1**	**0.0**	**4.8**
6/30/2020	526	201	755	4.2	1.6	4.7	8.9	8.9	**4.2**	**0.0**	**4.7**
7/1/2020	519	246	628	4.2	2.0	3.9	8.0	8.0	**4.2**	**0.0**	**3.9**
7/2/2020	534	195	759	4.3	1.6	4.7	9.0	9.0	**4.3**	**0.0**	**4.7**
7/3/2020	537	206	777	4.3	1.6	4.8	9.1	9.1	**4.3**	**0.0**	**4.8**
7/4/2020	591	211	858	4.7	1.7	5.3	10.0	10.0	**4.7**	**0.0**	**5.3**
7/5/2020	614	378	612	4.9	3.0	3.8	8.7	8.7	**4.9**	**0.0**	**3.8**
7/6/2020	477	357	879	3.8	2.9	5.4	9.3	9.3	**3.8**	**0.0**	**5.4**
7/7/2020	426	347	837	3.4	2.8	5.2	8.6	8.6	**3.4**	**0.0**	**5.2**
7/8/2020	446	294	859	3.6	2.4	5.3	8.9	8.9	**3.6**	**0.0**	**5.3**
7/9/2020	410	281	816	3.3	2.2	5.1	8.3	8.3	**3.3**	**0.0**	**5.1**
7/10/2020	475	385	899	3.8	3.1	5.6	9.4	9.4	**3.8**	**0.0**	**5.6**
7/11/2020	429	216	812	3.4	1.7	5.0	8.5	8.5	**3.4**	**0.0**	**5.0**
7/12/2020	46	460	1,072	0.4	3.7	6.6	10.3	10.3	**0.0**	**3.7**	**6.6**
7/13/2020	0	700	989	0.0	5.6	6.1	11.7	11.7	**0.0**	**5.6**	**6.1**
7/14/2020	153	635	912	1.2	5.1	5.7	10.7	10.7	**0.0**	**5.1**	**5.7**
7/15/2020	635	243	844	5.1	1.9	5.2	10.3	10.3	**5.1**	**0.0**	**5.2**
7/16/2020	433	259	914	3.5	2.1	5.7	9.1	9.1	**3.5**	**0.0**	**5.7**
7/17/2020	194	277	1,024	1.6	2.2	6.3	8.6	8.6	**0.0**	**2.2**	**6.3**
7/18/2020	186	298	1,037	1.5	2.4	6.4	8.8	8.8	**0.0**	**2.4**	**6.4**
7/19/2020	454	112	919	3.6	0.9	5.7	9.3	9.3	**3.6**	**0.0**	**5.7**
7/20/2020	550	40	905	4.4	0.3	5.6	10.0	10.0	**4.4**	**0.0**	**5.6**
7/21/2020	450	197	783	3.6	1.6	4.9	8.5	8.5	**3.6**	**0.0**	**4.9**
7/22/2020	592	36	811	4.7	0.3	5.0	9.8	9.8	**4.7**	**0.0**	**5.0**
7/23/2020	622	88	709	5.0	0.7	4.4	9.4	9.4	**5.0**	**0.0**	**4.4**
7/24/2020	640	192	829	5.1	1.5	5.1	10.3	10.3	**5.1**	**0.0**	**5.1**
7/25/2020	631	48	751	5.0	0.4	4.7	9.7	9.7	**5.0**	**0.0**	**4.7**
7/26/2020	631	146	795	5.0	1.2	4.9	10.0	10.0	**5.0**	**0.0**	**4.9**
7/27/2020	604	192	592	4.8	1.5	3.7	8.5	8.5	**4.8**	**0.0**	**3.7**
7/28/2020	613	74	572	4.9	0.6	3.5	8.5	8.5	**4.9**	**0.0**	**3.5**
7/29/2020	650	212	558	5.2	1.7	3.5	8.7	8.7	**5.2**	**0.0**	**3.5**
7/30/2020	638	77	825	5.1	0.6	5.1	10.2	10.2	**5.1**	**0.0**	**5.1**
7/31/2020	580	195	737	4.6	1.6	4.6	9.2	9.2	**4.6**	**0.0**	**4.6**
8/1/2020	610	129	806	4.9	1.0	5.0	9.9	9.9	**4.9**	**0.0**	**5.0**
8/2/2020	579	197	734	4.6	1.6	4.6	9.2	9.2	**4.6**	**0.0**	**4.6**
8/3/2020	583	195	745	4.7	1.6	4.6	9.3	9.3	**4.7**	**0.0**	**4.6**
8/4/2020	541	21	653	4.3	0.2	4.0	8.4	8.4	**4.3**	**0.0**	**4.0**
8/5/2020	495	2	620	4.0	0.0	3.8	7.8	7.8	**4.0**	**0.0**	**3.8**
8/6/2020	563	93	727	4.5	0.7	4.5	9.0	9.0	**4.5**	**0.0**	**4.5**
8/7/2020	602	196	755	4.8	1.6	4.7	9.5	9.5	**4.8**	**0.0**	**4.7**
8/8/2020	594	147	720	4.8	1.2	4.5	9.2	9.2	**4.8**	**0.0**	**4.5**
8/9/2020	565	195	682	4.5	1.6	4.2	8.7	8.7	**4.5**	**0.0**	**4.2**
8/10/2020	594	194	743	4.8	1.6	4.6	9.4	9.4	**4.8**	**0.0**	**4.6**
8/11/2020	606	108	762	4.8	0.9	4.7	9.6	9.6	**4.8**	**0.0**	**4.7**
8/12/2020	634	159	828	5.1	1.3	5.1	10.2	10.2	**5.1**	**0.0**	**5.1**
8/13/2020	650	261	788	5.2	2.1	4.9	10.1	10.1	**5.2**	**0.0**	**4.9**
8/14/2020	648	147	844	5.2	1.2	5.2	10.4	10.4	**5.2**	**0.0**	**5.2**
8/15/2020	586	226	900	4.7	1.8	5.6	10.3	10.3	**4.7**	**0.0**	**5.6**
8/16/2020	655	96	898	5.2	0.8	5.6	10.8	10.8	**5.2**	**0.0**	**5.6**
8/17/2020	609	203	595	4.9	1.6	3.7	8.6	8.6	**4.9**	**0.0**	**3.7**
8/18/2020	559	221	334	4.5	1.8	2.1	6.5	6.5	**4.5**	**0.0**	**2.1**
8/19/2020	633	391	0	5.1	3.1	0.0	8.2	8.2	**5.1**	**3.1**	**0.0**
8/20/2020	555	259	458	4.4	2.1	2.8	7.3	7.3	**4.4**	**0.0**	**2.8**
8/21/2020	363	221	1,083	2.9	1.8	6.7	9.6	9.6	**2.9**	**0.0**	**6.7**

8/22/2020	326	217	1,076	2.6	1.7	6.7	9.3	9.3	**2.6**	**0.0**	**6.7**
8/23/2020	375	216	1,079	3.0	1.7	6.7	9.7	9.7	**3.0**	**0.0**	**6.7**
8/24/2020	490	307	726	3.9	2.5	4.5	8.4	8.4	**3.9**	**0.0**	**4.5**
8/25/2020	391	270	858	3.1	2.2	5.3	8.4	8.4	**3.1**	**0.0**	**5.3**
8/26/2020	365	224	1,061	2.9	1.8	6.6	9.5	9.5	**2.9**	**0.0**	**6.6**
8/27/2020	330	220	1,081	2.6	1.8	6.7	9.3	9.3	**2.6**	**0.0**	**6.7**
8/28/2020	0	131	912	0.0	1.0	5.7	6.7	6.7	**0.0**	**1.0**	**5.7**
8/29/2020	560	193	759	4.5	1.5	4.7	9.2	9.2	**4.5**	**0.0**	**4.7**
8/30/2020	534	202	778	4.3	1.6	4.8	9.1	9.1	**4.3**	**0.0**	**4.8**
8/31/2020	556	196	806	4.4	1.6	5.0	9.4	9.4	**4.4**	**0.0**	**5.0**
9/1/2020	504	175	714	4.0	1.4	4.4	8.5	8.5	**4.0**	**0.0**	**4.4**
9/2/2020	413	294	802	3.3	2.4	5.0	8.3	8.3	**3.3**	**0.0**	**5.0**
9/3/2020	432	236	928	3.5	1.9	5.8	9.2	9.2	**3.5**	**0.0**	**5.8**
9/4/2020	476	169	953	3.8	1.4	5.9	9.7	9.7	**3.8**	**0.0**	**5.9**
9/5/2020	477	145	843	3.8	1.2	5.2	9.0	9.0	**3.8**	**0.0**	**5.2**
9/6/2020	421	195	882	3.4	1.6	5.5	8.8	8.8	**3.4**	**0.0**	**5.5**
9/7/2020	454	198	901	3.6	1.6	5.6	9.2	9.2	**3.6**	**0.0**	**5.6**
9/8/2020	406	200	882	3.2	1.6	5.5	8.7	8.7	**3.2**	**0.0**	**5.5**
9/9/2020	239	120	539	1.9	1.0	3.3	5.3	5.3	**1.9**	**0.0**	**3.3**
9/10/2020	495	205	978	4.0	1.6	6.1	10.0	10.0	**4.0**	**0.0**	**6.1**
9/11/2020	375	199	953	3.0	1.6	5.9	8.9	8.9	**3.0**	**0.0**	**5.9**
9/12/2020	463	204	985	3.7	1.6	6.1	9.8	9.8	**3.7**	**0.0**	**6.1**
9/13/2020	503	231	966	4.0	1.8	6.0	10.0	10.0	**4.0**	**0.0**	**6.0**
9/14/2020	450	223	894	3.6	1.8	5.5	9.1	9.1	**3.6**	**0.0**	**5.5**
9/15/2020	527	250	773	4.2	2.0	4.8	9.0	9.0	**4.2**	**0.0**	**4.8**
9/16/2020	56	324	735	0.4	2.6	4.6	7.1	7.1	**0.0**	**2.6**	**4.6**
9/17/2020	627	434	565	5.0	3.5	3.5	8.5	8.5	**5.0**	**0.0**	**3.5**
9/18/2020	638	619	165	5.1	5.0	1.0	10.1	10.1	**5.1**	**5.0**	**0.0**
9/19/2020	476	195	999	3.8	1.6	6.2	10.0	10.0	**3.8**	**0.0**	**6.2**
9/20/2020	640	245	317	5.1	2.0	2.0	7.1	7.1	**5.1**	**0.0**	**2.0**
9/21/2020	659	804	0	5.3	6.4	0.0	11.7	11.7	**5.3**	**6.4**	**0.0**
9/22/2020	651	702	0	5.2	5.6	0.0	10.8	10.8	**5.2**	**5.6**	**0.0**
9/23/2020	466	556	0	3.7	4.4	0.0	8.2	8.2	**3.7**	**4.4**	**0.0**
9/24/2020	667	663	48	5.3	5.3	0.3	10.6	10.6	**5.3**	**5.3**	**0.0**
9/25/2020	663	535	559	5.3	4.3	3.5	9.6	9.6	**5.3**	**4.3**	**0.0**
9/26/2020	451	199	1,034	3.6	1.6	6.4	10.0	10.0	**3.6**	**0.0**	**6.4**
9/27/2020	504	207	1,040	4.0	1.7	6.4	10.5	10.5	**4.0**	**0.0**	**6.4**
9/28/2020	487	205	1,046	3.9	1.6	6.5	10.4	10.4	**3.9**	**0.0**	**6.5**
9/29/2020	346	203	973	2.8	1.6	6.0	8.8	8.8	**2.8**	**0.0**	**6.0**
9/30/2020	360	197	990	2.9	1.6	6.1	9.0	9.0	**2.9**	**0.0**	**6.1**
10/1/2020	562	412	622	4.5	3.3	3.9	8.4	8.4	**4.5**	**0.0**	**3.9**
10/2/2020	639	677	104	5.1	5.4	0.6	10.5	10.5	**5.1**	**5.4**	**0.0**
10/3/2020	659	519	342	5.3	4.2	2.1	9.4	9.4	**5.3**	**4.2**	**0.0**
10/4/2020	650	595	379	5.2	4.8	2.3	10.0	10.0	**5.2**	**4.8**	**0.0**
10/5/2020	637	441	345	5.1	3.5	2.1	8.6	8.6	**5.1**	**3.5**	**0.0**
10/6/2020	642	456	369	5.1	3.6	2.3	8.8	8.8	**5.1**	**3.6**	**0.0**
10/7/2020	636	413	345	5.1	3.3	2.1	8.4	8.4	**5.1**	**3.3**	**0.0**
10/8/2020	643	559	446	5.1	4.5	2.8	9.6	9.6	**5.1**	**4.5**	**0.0**
10/9/2020	650	470	574	5.2	3.8	3.6	9.0	9.0	**5.2**	**3.8**	**0.0**
10/10/2020	641	473	512	5.1	3.8	3.2	8.9	8.9	**5.1**	**3.8**	**0.0**
10/11/2020	638	440	467	5.1	3.5	2.9	8.6	8.6	**5.1**	**3.5**	**0.0**
10/12/2020	642	588	507	5.1	4.7	3.1	9.8	9.8	**5.1**	**4.7**	**0.0**
10/13/2020	639	180	541	5.1	1.4	3.4	8.5	8.5	**5.1**	**0.0**	**3.4**
10/14/2020	627	0	472	5.0	0.0	2.9	7.9	7.9	**5.0**	**0.0**	**2.9**
10/15/2020	633	179	511	5.1	1.4	3.2	8.2	8.2	**5.1**	**0.0**	**3.2**
10/16/2020	634	232	649	5.1	1.9	4.0	9.1	9.1	**5.1**	**0.0**	**4.0**
10/17/2020	632	92	825	5.1	0.7	5.1	10.2	10.2	**5.1**	**0.0**	**5.1**
10/18/2020	641	184	726	5.1	1.5	4.5	9.6	9.6	**5.1**	**0.0**	**4.5**
10/19/2020	284	496	856	2.3	4.0	5.3	9.3	9.3	**0.0**	**4.0**	**5.3**
10/20/2020	208	502	746	1.7	4.0	4.6	8.6	8.6	**0.0**	**4.0**	**4.6**
10/21/2020	393	361	609	3.1	2.9	3.8	6.9	6.9	**3.1**	**0.0**	**3.8**
10/22/2020	3	337	714	0.0	2.7	4.4	7.1	7.1	**0.0**	**2.7**	**4.4**
10/23/2020	666	328	800	5.3	2.6	5.0	10.3	10.3	**5.3**	**0.0**	**5.0**
10/24/2020	658	317	800	5.3	2.5	5.0	10.2	10.2	**5.3**	**0.0**	**5.0**
10/25/2020	661	273	829	5.3	2.2	5.1	10.4	10.4	**5.3**	**0.0**	**5.1**
10/26/2020	468	414	943	3.7	3.3	5.8	9.6	9.6	**3.7**	**0.0**	**5.8**
10/27/2020	421	538	863	3.4	4.3	5.4	9.7	9.7	**0.0**	**4.3**	**5.4**
10/28/2020	648	472	729	5.2	3.8	4.5	9.7	9.7	**5.2**	**0.0**	**4.5**
10/29/2020	659	431	709	5.3	3.4	4.4	9.7	9.7	**5.3**	**0.0**	**4.4**
10/30/2020	501	385	790	4.0	3.1	4.9	8.9	8.9	**4.0**	**0.0**	**4.9**
10/31/2020	314	663	744	2.5	5.3	4.6	9.9	9.9	**0.0**	**5.3**	**4.6**
11/1/2020	469	1,055	1,093	3.8	8.4	6.8	15.2	15.2	**0.0**	**8.4**	**6.8**
11/2/2020	313	777	771	2.5	6.2	4.8	11.0	11.0	**0.0**	**6.2**	**4.8**
11/3/2020	515	333	717	4.1	2.7	4.4	8.6	8.6	**4.1**	**0.0**	**4.4**

11/4/2020	645	322	664	5.2	2.6	4.1	9.3	9.3	**5.2**	**0.0**	**4.1**
11/5/2020	645	394	486	5.2	3.2	3.0	8.3	8.3	**5.2**	**3.2**	**0.0**
11/6/2020	649	326	762	5.2	2.6	4.7	9.9	9.9	**5.2**	**0.0**	**4.7**
11/7/2020	598	210	989	4.8	1.7	6.1	10.9	10.9	**4.8**	**0.0**	**6.1**
11/8/2020	545	265	879	4.4	2.1	5.4	9.8	9.8	**4.4**	**0.0**	**5.4**
11/9/2020	686	528	206	5.5	4.2	1.3	9.7	9.7	**5.5**	**4.2**	**0.0**
11/10/2020	679	569	104	5.4	4.6	0.6	10.0	10.0	**5.4**	**4.6**	**0.0**
11/11/2020	690	608	320	5.5	4.9	2.0	10.4	10.4	**5.5**	**4.9**	**0.0**
11/12/2020	0	742	337	0.0	5.9	2.1	8.0	8.0	**0.0**	**5.9**	**2.1**
11/13/2020	691	677	163	5.5	5.4	1.0	10.9	10.9	**5.5**	**5.4**	**0.0**
11/14/2020	691	518	413	5.5	4.1	2.6	9.7	9.7	**5.5**	**4.1**	**0.0**
11/15/2020	690	607	383	5.5	4.9	2.4	10.4	10.4	**5.5**	**4.9**	**0.0**
11/16/2020	689	569	324	5.5	4.6	2.0	10.1	10.1	**5.5**	**4.6**	**0.0**
11/17/2020	682	490	296	5.5	3.9	1.8	9.4	9.4	**5.5**	**3.9**	**0.0**
11/18/2020	690	576	354	5.5	4.6	2.2	10.1	10.1	**5.5**	**4.6**	**0.0**
11/19/2020	675	521	371	5.4	4.2	2.3	9.6	9.6	**5.4**	**4.2**	**0.0**
11/20/2020	704	383	564	5.6	3.1	3.5	9.1	9.1	**5.6**	**0.0**	**3.5**
11/21/2020	740	244	650	5.9	2.0	4.0	10.0	10.0	**5.9**	**0.0**	**4.0**
11/22/2020	735	239	597	5.9	1.9	3.7	9.6	9.6	**5.9**	**0.0**	**3.7**
11/23/2020	726	266	770	5.8	2.1	4.8	10.6	10.6	**5.8**	**0.0**	**4.8**
11/24/2020	718	228	564	5.7	1.8	3.5	9.2	9.2	**5.7**	**0.0**	**3.5**
11/25/2020	569	487	458	4.6	3.9	2.8	8.4	8.4	**4.6**	**3.9**	**0.0**
11/26/2020	739	475	312	5.9	3.8	1.9	9.7	9.7	**5.9**	**3.8**	**0.0**
11/27/2020	722	426	308	5.8	3.4	1.9	9.2	9.2	**5.8**	**3.4**	**0.0**
11/28/2020	740	536	322	5.9	4.3	2.0	10.2	10.2	**5.9**	**4.3**	**0.0**
11/29/2020	731	531	307	5.8	4.2	1.9	10.1	10.1	**5.8**	**4.2**	**0.0**
11/30/2020	718	394	393	5.7	3.2	2.4	8.9	8.9	**5.7**	**3.2**	**0.0**
12/1/2020	687	444	366	5.5	3.6	2.3	9.0	9.0	**5.5**	**3.6**	**0.0**
12/2/2020	684	426	284	5.5	3.4	1.8	8.9	8.9	**5.5**	**3.4**	**0.0**
12/3/2020	718	476	333	5.7	3.8	2.1	9.6	9.6	**5.7**	**3.8**	**0.0**
12/4/2020	730	487	282	5.8	3.9	1.7	9.7	9.7	**5.8**	**3.9**	**0.0**
12/5/2020	718	492	286	5.7	3.9	1.8	9.7	9.7	**5.7**	**3.9**	**0.0**
12/6/2020	712	485	285	5.7	3.9	1.8	9.6	9.6	**5.7**	**3.9**	**0.0**
12/7/2020	707	548	294	5.7	4.4	1.8	10.0	10.0	**5.7**	**4.4**	**0.0**
12/8/2020	697	671	297	5.6	5.4	1.8	10.9	10.9	**5.6**	**5.4**	**0.0**
12/9/2020	685	549	284	5.5	4.4	1.8	9.9	9.9	**5.5**	**4.4**	**0.0**
12/10/2020	682	438	351	5.5	3.5	2.2	9.0	9.0	**5.5**	**3.5**	**0.0**
12/11/2020	675	496	289	5.4	4.0	1.8	9.4	9.4	**5.4**	**4.0**	**0.0**
12/12/2020	674	653	295	5.4	5.2	1.8	10.6	10.6	**5.4**	**5.2**	**0.0**
12/13/2020	679	132	716	5.4	1.1	4.4	9.9	9.9	**5.4**	**0.0**	**4.4**
12/14/2020	679	426	557	5.4	3.4	3.5	8.9	8.9	**5.4**	**0.0**	**3.5**
12/15/2020	684	457	394	5.5	3.7	2.4	9.1	9.1	**5.5**	**3.7**	**0.0**
12/16/2020	678	477	425	5.4	3.8	2.6	9.2	9.2	**5.4**	**3.8**	**0.0**
12/17/2020	659	519	441	5.3	4.2	2.7	9.4	9.4	**5.3**	**4.2**	**0.0**
12/18/2020	673	578	471	5.4	4.6	2.9	10.0	10.0	**5.4**	**4.6**	**0.0**
12/19/2020	668	560	466	5.3	4.5	2.9	9.8	9.8	**5.3**	**4.5**	**0.0**
12/20/2020	670	529	447	5.4	4.2	2.8	9.6	9.6	**5.4**	**4.2**	**0.0**
12/21/2020	653	543	463	5.2	4.3	2.9	9.6	9.6	**5.2**	**4.3**	**0.0**
12/22/2020	593	619	488	4.7	5.0	3.0	9.7	9.7	**4.7**	**5.0**	**0.0**
12/23/2020	743	550	276	5.9	4.4	1.7	10.3	10.3	**5.9**	**4.4**	**0.0**
12/24/2020	736	480	282	5.9	3.8	1.7	9.7	9.7	**5.9**	**3.8**	**0.0**
12/25/2020	714	616	279	5.7	4.9	1.7	10.6	10.6	**5.7**	**4.9**	**0.0**
12/26/2020	685	598	286	5.5	4.8	1.8	10.3	10.3	**5.5**	**4.8**	**0.0**
12/27/2020	685	533	278	5.5	4.3	1.7	9.7	9.7	**5.5**	**4.3**	**0.0**
12/28/2020	683	718	300	5.5	5.7	1.9	11.2	11.2	**5.5**	**5.7**	**0.0**
12/29/2020	690	742	289	5.5	5.9	1.8	11.5	11.5	**5.5**	**5.9**	**0.0**
12/30/2020	683	623	279	5.5	5.0	1.7	10.4	10.4	**5.5**	**5.0**	**0.0**
12/31/2020	670	671	283	5.4	5.4	1.8	10.7	10.7	**5.4**	**5.4**	**0.0**
1/1/2021	659	752	286	5.3	6.0	1.8	11.3	11.3	**5.3**	**6.0**	**0.0**
1/2/2021	650	689	332	5.2	5.5	2.1	10.7	10.7	**5.2**	**5.5**	**0.0**
1/3/2021	634	724	292	5.1	5.8	1.8	10.9	10.9	**5.1**	**5.8**	**0.0**
1/4/2021	626	593	303	5.0	4.7	1.9	9.8	9.8	**5.0**	**4.7**	**0.0**
1/5/2021	721	673	282	5.8	5.4	1.7	11.2	11.2	**5.8**	**5.4**	**0.0**
1/6/2021	724	737	294	5.8	5.9	1.8	11.7	11.7	**5.8**	**5.9**	**0.0**
1/7/2021	707	717	283	5.7	5.7	1.8	11.4	11.4	**5.7**	**5.7**	**0.0**
1/8/2021	695	701	282	5.6	5.6	1.7	11.2	11.2	**5.6**	**5.6**	**0.0**
1/9/2021	680	734	295	5.4	5.9	1.8	11.3	11.3	**5.4**	**5.9**	**0.0**
1/10/2021	655	712	291	5.2	5.7	1.8	10.9	10.9	**5.2**	**5.7**	**0.0**
1/11/2021	638	749	302	5.1	6.0	1.9	11.1	11.1	**5.1**	**6.0**	**0.0**
1/12/2021	617	808	291	4.9	6.5	1.8	11.4	11.4	**4.9**	**6.5**	**0.0**
1/13/2021	596	769	308	4.8	6.2	1.9	10.9	10.9	**4.8**	**6.2**	**0.0**
1/14/2021	673	588	286	5.4	4.7	1.8	10.1	10.1	**5.4**	**4.7**	**0.0**
1/15/2021	701	639	286	5.6	5.1	1.8	10.7	10.7	**5.6**	**5.1**	**0.0**
1/16/2021	689	701	290	5.5	5.6	1.8	11.1	11.1	**5.5**	**5.6**	**0.0**

1/17/2021	667	616	294	5.3	4.9	1.8	10.3	10.3	**5.3**	**4.9**	**0.0**
1/18/2021	690	634	288	5.5	5.1	1.8	10.6	10.6	**5.5**	**5.1**	**0.0**
1/19/2021	684	610	301	5.5	4.9	1.9	10.4	10.4	**5.5**	**4.9**	**0.0**
1/20/2021	719	564	282	5.8	4.5	1.7	10.3	10.3	**5.8**	**4.5**	**0.0**
1/21/2021	701	625	287	5.6	5.0	1.8	10.6	10.6	**5.6**	**5.0**	**0.0**
1/22/2021	698	728	230	5.6	5.8	1.4	11.4	11.4	**5.6**	**5.8**	**0.0**
1/23/2021	710	667	284	5.7	5.3	1.8	11.0	11.0	**5.7**	**5.3**	**0.0**
1/24/2021	699	723	284	5.6	5.8	1.8	11.4	11.4	**5.6**	**5.8**	**0.0**
1/25/2021	717	688	316	5.7	5.5	2.0	11.2	11.2	**5.7**	**5.5**	**0.0**
1/26/2021	715	600	313	5.7	4.8	1.9	10.5	10.5	**5.7**	**4.8**	**0.0**
1/27/2021	699	689	313	5.6	5.5	1.9	11.1	11.1	**5.6**	**5.5**	**0.0**
1/28/2021	692	691	316	5.5	5.5	2.0	11.1	11.1	**5.5**	**5.5**	**0.0**
1/29/2021	693	624	311	5.5	5.0	1.9	10.5	10.5	**5.5**	**5.0**	**0.0**
1/30/2021	690	745	337	5.5	6.0	2.1	11.5	11.5	**5.5**	**6.0**	**0.0**
1/31/2021	708	640	311	5.7	5.1	1.9	10.8	10.8	**5.7**	**5.1**	**0.0**
2/1/2021	683	645	330	5.5	5.2	2.0	10.6	10.6	**5.5**	**5.2**	**0.0**
2/2/2021	679	605	400	5.4	4.8	2.5	10.3	10.3	**5.4**	**4.8**	**0.0**
2/3/2021	674	532	495	5.4	4.3	3.1	9.6	9.6	**5.4**	**4.3**	**0.0**
2/4/2021	680	488	445	5.4	3.9	2.8	9.3	9.3	**5.4**	**3.9**	**0.0**
2/5/2021	662	519	458	5.3	4.2	2.8	9.4	9.4	**5.3**	**4.2**	**0.0**
2/6/2021	692	501	453	5.5	4.0	2.8	9.5	9.5	**5.5**	**4.0**	**0.0**
2/7/2021	672	451	427	5.4	3.6	2.6	9.0	9.0	**5.4**	**3.6**	**0.0**
2/8/2021	635	540	475	5.1	4.3	2.9	9.4	9.4	**5.1**	**4.3**	**0.0**
2/9/2021	602	545	486	4.8	4.4	3.0	9.2	9.2	**4.8**	**4.4**	**0.0**
2/10/2021	594	561	497	4.8	4.5	3.1	9.2	9.2	**4.8**	**4.5**	**0.0**
2/11/2021	585	645	556	4.7	5.2	3.4	9.8	9.8	**4.7**	**5.2**	**0.0**
2/12/2021	576	594	515	4.6	4.8	3.2	9.4	9.4	**4.6**	**4.8**	**0.0**
2/13/2021	574	667	571	4.6	5.3	3.5	9.9	9.9	**4.6**	**5.3**	**0.0**
2/14/2021	574	633	540	4.6	5.1	3.3	9.7	9.7	**4.6**	**5.1**	**0.0**
2/15/2021	567	617	519	4.5	4.9	3.2	9.5	9.5	**4.5**	**4.9**	**0.0**
2/16/2021	683	567	479	5.5	4.5	3.0	10.0	10.0	**5.5**	**4.5**	**0.0**
2/17/2021	706	482	420	5.6	3.9	2.6	9.5	9.5	**5.6**	**3.9**	**0.0**
2/18/2021	697	333	590	5.6	2.7	3.7	9.2	9.2	**5.6**	**0.0**	**3.7**
2/19/2021	690	437	436	5.5	3.5	2.7	9.0	9.0	**5.5**	**3.5**	**0.0**
2/20/2021	673	654	320	5.4	5.2	2.0	10.6	10.6	**5.4**	**5.2**	**0.0**
2/21/2021	675	675	316	5.4	5.4	2.0	10.8	10.8	**5.4**	**5.4**	**0.0**
2/22/2021	649	615	311	5.2	4.9	1.9	10.1	10.1	**5.2**	**4.9**	**0.0**
2/23/2021	633	534	454	5.1	4.3	2.8	9.3	9.3	**5.1**	**4.3**	**0.0**
2/24/2021	696	618	334	5.6	4.9	2.1	10.5	10.5	**5.6**	**4.9**	**0.0**
2/25/2021	692	608	333	5.5	4.9	2.1	10.4	10.4	**5.5**	**4.9**	**0.0**
2/26/2021	673	425	581	5.4	3.4	3.6	9.0	9.0	**5.4**	**0.0**	**3.6**
2/27/2021	655	218	925	5.2	1.7	5.7	11.0	11.0	**5.2**	**0.0**	**5.7**
2/28/2021	652	197	859	5.2	1.6	5.3	10.5	10.5	**5.2**	**0.0**	**5.3**
3/1/2021	632	194	836	5.1	1.6	5.2	10.2	10.2	**5.1**	**0.0**	**5.2**
3/2/2021	621	198	921	5.0	1.6	5.7	10.7	10.7	**5.0**	**0.0**	**5.7**
3/3/2021	569	504	566	4.6	4.0	3.5	8.6	8.6	**4.6**	**4.0**	**0.0**
3/4/2021	694	603	328	5.6	4.8	2.0	10.4	10.4	**5.6**	**4.8**	**0.0**
3/5/2021	335	849	493	2.7	6.8	3.1	9.8	9.8	**0.0**	**6.8**	**3.1**
3/6/2021	356	885	503	2.8	7.1	3.1	10.2	10.2	**0.0**	**7.1**	**3.1**
3/7/2021	356	834	509	2.8	6.7	3.2	9.8	9.8	**0.0**	**6.7**	**3.2**
3/8/2021	355	488	846	2.8	3.9	5.2	9.1	9.1	**0.0**	**3.9**	**5.2**
3/9/2021	354	508	859	2.8	4.1	5.3	9.4	9.4	**0.0**	**4.1**	**5.3**
3/10/2021	356	573	882	2.8	4.6	5.5	10.1	10.1	**0.0**	**4.6**	**5.5**
3/11/2021	357	564	878	2.9	4.5	5.4	10.0	10.0	**0.0**	**4.5**	**5.4**
3/12/2021	356	575	886	2.8	4.6	5.5	10.1	10.1	**0.0**	**4.6**	**5.5**
3/13/2021	356	647	940	2.8	5.2	5.8	11.0	11.0	**0.0**	**5.2**	**5.8**
3/14/2021	341	565	858	2.7	4.5	5.3	9.8	9.8	**0.0**	**4.5**	**5.3**
3/15/2021	357	533	865	2.9	4.3	5.4	9.6	9.6	**0.0**	**4.3**	**5.4**
3/16/2021	355	543	850	2.8	4.3	5.3	9.6	9.6	**0.0**	**4.3**	**5.3**
3/17/2021	356	563	889	2.8	4.5	5.5	10.0	10.0	**0.0**	**4.5**	**5.5**
3/18/2021	350	458	819	2.8	3.7	5.1	8.7	8.7	**0.0**	**3.7**	**5.1**
3/19/2021	364	556	897	2.9	4.4	5.6	10.0	10.0	**0.0**	**4.4**	**5.6**
3/20/2021	372	0	881	3.0	0.0	5.5	8.4	8.4	**3.0**	**0.0**	**5.5**
3/21/2021	376	512	849	3.0	4.1	5.3	9.4	9.4	**0.0**	**4.1**	**5.3**
3/22/2021	376	493	856	3.0	3.9	5.3	9.3	9.3	**0.0**	**3.9**	**5.3**
3/23/2021	378	528	850	3.0	4.2	5.3	9.5	9.5	**0.0**	**4.2**	**5.3**
3/24/2021	375	473	844	3.0	3.8	5.2	9.0	9.0	**0.0**	**3.8**	**5.2**
3/25/2021	375	483	834	3.0	3.9	5.2	9.0	9.0	**0.0**	**3.9**	**5.2**
3/26/2021	374	487	856	3.0	3.9	5.3	9.2	9.2	**0.0**	**3.9**	**5.3**
3/27/2021	375	516	867	3.0	4.1	5.4	9.5	9.5	**0.0**	**4.1**	**5.4**
3/28/2021	375	494	874	3.0	4.0	5.4	9.4	9.4	**0.0**	**4.0**	**5.4**
3/29/2021	374	386	809	3.0	3.1	5.0	8.1	8.1	**0.0**	**3.1**	**5.0**
3/30/2021	375	541	897	3.0	4.3	5.6	9.9	9.9	**0.0**	**4.3**	**5.6**
3/31/2021	373	491	860	3.0	3.9	5.3	9.3	9.3	**0.0**	**3.9**	**5.3**

4/1/2021	372	492	863	3.0	3.9	5.4	9.3	9.3	**0.0**	**3.9**	**5.4**
4/2/2021	372	468	857	3.0	3.7	5.3	9.1	9.1	**0.0**	**3.7**	**5.3**
4/3/2021	374	550	898	3.0	4.4	5.6	10.0	10.0	**0.0**	**4.4**	**5.6**
4/4/2021	352	400	784	2.8	3.2	4.9	8.1	8.1	**0.0**	**3.2**	**4.9**
4/5/2021	196	418	805	1.6	3.3	5.0	8.3	8.3	**0.0**	**3.3**	**5.0**
4/6/2021	270	451	829	2.2	3.6	5.1	8.7	8.7	**0.0**	**3.6**	**5.1**
4/7/2021	366	463	847	2.9	3.7	5.3	9.0	9.0	**0.0**	**3.7**	**5.3**
4/8/2021	368	499	845	2.9	4.0	5.2	9.2	9.2	**0.0**	**4.0**	**5.2**
4/9/2021	368	504	851	2.9	4.0	5.3	9.3	9.3	**0.0**	**4.0**	**5.3**
4/10/2021	368	549	893	2.9	4.4	5.5	9.9	9.9	**0.0**	**4.4**	**5.5**
4/11/2021	366	541	889	2.9	4.3	5.5	9.8	9.8	**0.0**	**4.3**	**5.5**
4/12/2021	444	739	566	3.6	5.9	3.5	9.5	9.5	**3.6**	**5.9**	**0.0**
4/13/2021	478	786	387	3.8	6.3	2.4	10.1	10.1	**3.8**	**6.3**	**0.0**
4/14/2021	479	822	372	3.8	6.6	2.3	10.4	10.4	**3.8**	**6.6**	**0.0**
4/15/2021	477	861	411	3.8	6.9	2.5	10.7	10.7	**3.8**	**6.9**	**0.0**
4/16/2021	477	791	364	3.8	6.3	2.3	10.1	10.1	**3.8**	**6.3**	**0.0**
4/17/2021	474	836	407	3.8	6.7	2.5	10.5	10.5	**3.8**	**6.7**	**0.0**
4/18/2021	473	697	426	3.8	5.6	2.6	9.4	9.4	**3.8**	**5.6**	**0.0**
4/19/2021	472	619	603	3.8	5.0	3.7	8.7	8.7	**3.8**	**5.0**	**0.0**
4/20/2021	472	604	658	3.8	4.8	4.1	8.9	8.9	**0.0**	**4.8**	**4.1**
4/21/2021	479	577	730	3.8	4.6	4.5	9.1	9.1	**0.0**	**4.6**	**4.5**
4/22/2021	685	572	384	5.5	4.6	2.4	10.1	10.1	**5.5**	**4.6**	**0.0**
4/23/2021	688	638	296	5.5	5.1	1.8	10.6	10.6	**5.5**	**5.1**	**0.0**
4/24/2021	685	695	301	5.5	5.6	1.9	11.0	11.0	**5.5**	**5.6**	**0.0**
4/25/2021	656	627	329	5.2	5.0	2.0	10.3	10.3	**5.2**	**5.0**	**0.0**
4/26/2021	702	539	292	5.6	4.3	1.8	9.9	9.9	**5.6**	**4.3**	**0.0**
4/27/2021	696	695	304	5.6	5.6	1.9	11.1	11.1	**5.6**	**5.6**	**0.0**
4/28/2021	689	610	308	5.5	4.9	1.9	10.4	10.4	**5.5**	**4.9**	**0.0**
4/29/2021	686	596	307	5.5	4.8	1.9	10.3	10.3	**5.5**	**4.8**	**0.0**
4/30/2021	674	423	387	5.4	3.4	2.4	8.8	8.8	**5.4**	**3.4**	**0.0**
5/1/2021	272	553	995	2.2	4.4	6.2	10.6	10.6	**0.0**	**4.4**	**6.2**
5/2/2021	257	566	950	2.1	4.5	5.9	10.4	10.4	**0.0**	**4.5**	**5.9**
5/3/2021	263	553	958	2.1	4.4	5.9	10.4	10.4	**0.0**	**4.4**	**5.9**
5/4/2021	412	535	701	3.3	4.3	4.3	8.6	8.6	**0.0**	**4.3**	**4.3**
5/5/2021	599	526	545	4.8	4.2	3.4	9.0	9.0	**4.8**	**4.2**	**0.0**
5/6/2021	652	527	428	5.2	4.2	2.7	9.4	9.4	**5.2**	**4.2**	**0.0**
5/7/2021	648	527	393	5.2	4.2	2.4	9.4	9.4	**5.2**	**4.2**	**0.0**
5/8/2021	666	550	433	5.3	4.4	2.7	9.7	9.7	**5.3**	**4.4**	**0.0**
5/9/2021	652	547	412	5.2	4.4	2.6	9.6	9.6	**5.2**	**4.4**	**0.0**
5/10/2021	629	544	406	5.0	4.4	2.5	9.4	9.4	**5.0**	**4.4**	**0.0**
5/11/2021	605	542	395	4.8	4.3	2.4	9.2	9.2	**4.8**	**4.3**	**0.0**
5/12/2021	655	537	420	5.2	4.3	2.6	9.5	9.5	**5.2**	**4.3**	**0.0**
5/13/2021	647	537	448	5.2	4.3	2.8	9.5	9.5	**5.2**	**4.3**	**0.0**
5/14/2021	645	465	504	5.2	3.7	3.1	8.9	8.9	**5.2**	**3.7**	**0.0**
5/15/2021	669	568	465	5.4	4.5	2.9	9.9	9.9	**5.4**	**4.5**	**0.0**
5/16/2021	666	585	406	5.3	4.7	2.5	10.0	10.0	**5.3**	**4.7**	**0.0**
5/17/2021	642	576	424	5.1	4.6	2.6	9.7	9.7	**5.1**	**4.6**	**0.0**
5/18/2021	653	576	419	5.2	4.6	2.6	9.8	9.8	**5.2**	**4.6**	**0.0**
5/19/2021	663	571	482	5.3	4.6	3.0	9.9	9.9	**5.3**	**4.6**	**0.0**
5/20/2021	652	582	411	5.2	4.7	2.5	9.9	9.9	**5.2**	**4.7**	**0.0**
5/21/2021	663	325	565	5.3	2.6	3.5	8.8	8.8	**5.3**	**0.0**	**3.5**
5/22/2021	681	362	580	5.4	2.9	3.6	9.0	9.0	**5.4**	**0.0**	**3.6**
5/23/2021	676	362	629	5.4	2.9	3.9	9.3	9.3	**5.4**	**0.0**	**3.9**
5/24/2021	670	356	655	5.4	2.8	4.1	9.4	9.4	**5.4**	**0.0**	**4.1**
5/25/2021	657	344	668	5.3	2.8	4.1	9.4	9.4	**5.3**	**0.0**	**4.1**
5/26/2021	651	349	685	5.2	2.8	4.2	9.5	9.5	**5.2**	**0.0**	**4.2**
5/27/2021	644	352	681	5.2	2.8	4.2	9.4	9.4	**5.2**	**0.0**	**4.2**
5/28/2021	644	351	621	5.2	2.8	3.9	9.0	9.0	**5.2**	**0.0**	**3.9**
5/29/2021	642	351	611	5.1	2.8	3.8	8.9	8.9	**5.1**	**0.0**	**3.8**
5/30/2021	640	349	652	5.1	2.8	4.0	9.2	9.2	**5.1**	**0.0**	**4.0**
5/31/2021	630	339	689	5.0	2.7	4.3	9.3	9.3	**5.0**	**0.0**	**4.3**
6/1/2021	619	329	627	5.0	2.6	3.9	8.8	8.8	**5.0**	**0.0**	**3.9**
6/2/2021	613	407	478	4.9	3.3	3.0	8.2	8.2	**4.9**	**3.3**	**0.0**
6/3/2021	603	498	497	4.8	4.0	3.1	8.8	8.8	**4.8**	**4.0**	**0.0**
6/4/2021	613	410	618	4.9	3.3	3.8	8.7	8.7	**4.9**	**0.0**	**3.8**
6/5/2021	612	403	610	4.9	3.2	3.8	8.7	8.7	**4.9**	**0.0**	**3.8**
6/6/2021	613	385	600	4.9	3.1	3.7	8.6	8.6	**4.9**	**0.0**	**3.7**
6/7/2021	621	433	611	5.0	3.5	3.8	8.8	8.8	**5.0**	**0.0**	**3.8**
6/8/2021	631	364	618	5.0	2.9	3.8	8.9	8.9	**5.0**	**0.0**	**3.8**
6/9/2021	633	353	609	5.1	2.8	3.8	8.8	8.8	**5.1**	**0.0**	**3.8**
6/10/2021	633	350	656	5.1	2.8	4.1	9.1	9.1	**5.1**	**0.0**	**4.1**
6/11/2021	622	241	792	5.0	1.9	4.9	9.9	9.9	**5.0**	**0.0**	**4.9**
6/12/2021	644	211	860	5.2	1.7	5.3	10.5	10.5	**5.2**	**0.0**	**5.3**
6/13/2021	605	241	830	4.8	1.9	5.1	10.0	10.0	**4.8**	**0.0**	**5.1**

6/14/2021	604	239	743	4.8	1.9	4.6	9.4	9.4	**4.8**	**0.0**	**4.6**
6/15/2021	709	67	687	5.7	0.5	4.3	9.9	9.9	**5.7**	**0.0**	**4.3**
6/16/2021	696	109	741	5.6	0.9	4.6	10.2	10.2	**5.6**	**0.0**	**4.6**
6/17/2021	644	217	667	5.2	1.7	4.1	9.3	9.3	**5.2**	**0.0**	**4.1**
6/18/2021	661	199	767	5.3	1.6	4.8	10.0	10.0	**5.3**	**0.0**	**4.8**
6/19/2021	679	206	805	5.4	1.6	5.0	10.4	10.4	**5.4**	**0.0**	**5.0**
6/20/2021	673	208	783	5.4	1.7	4.9	10.2	10.2	**5.4**	**0.0**	**4.9**
6/21/2021	690	205	779	5.5	1.6	4.8	10.3	10.3	**5.5**	**0.0**	**4.8**
6/22/2021	694	227	706	5.6	1.8	4.4	9.9	9.9	**5.6**	**0.0**	**4.4**
6/23/2021	689	429	447	5.5	3.4	2.8	8.9	8.9	**5.5**	**3.4**	**0.0**
6/24/2021	682	286	692	5.5	2.3	4.3	9.7	9.7	**5.5**	**0.0**	**4.3**
6/25/2021	689	229	833	5.5	1.8	5.2	10.7	10.7	**5.5**	**0.0**	**5.2**
6/26/2021	673	235	769	5.4	1.9	4.8	10.2	10.2	**5.4**	**0.0**	**4.8**
6/27/2021	657	212	785	5.3	1.7	4.9	10.1	10.1	**5.3**	**0.0**	**4.9**
6/28/2021	659	211	777	5.3	1.7	4.8	10.1	10.1	**5.3**	**0.0**	**4.8**
6/29/2021	657	209	736	5.3	1.7	4.6	9.8	9.8	**5.3**	**0.0**	**4.6**
6/30/2021	652	229	741	5.2	1.8	4.6	9.8	9.8	**5.2**	**0.0**	**4.6**
7/1/2021	660	567	131	5.3	4.5	0.8	9.8	9.8	**5.3**	**4.5**	**0.0**
7/2/2021	673	547	0	5.4	4.4	0.0	9.8	9.8	**5.4**	**4.4**	**0.0**
7/3/2021	668	559	46	5.3	4.5	0.3	9.8	9.8	**5.3**	**4.5**	**0.0**
7/4/2021	663	317	637	5.3	2.5	3.9	9.3	9.3	**5.3**	**0.0**	**3.9**
7/5/2021	653	388	542	5.2	3.1	3.4	8.6	8.6	**5.2**	**0.0**	**3.4**
7/6/2021	495	301	742	4.0	2.4	4.6	8.6	8.6	**4.0**	**0.0**	**4.6**
7/7/2021	629	217	729	5.0	1.7	4.5	9.6	9.6	**5.0**	**0.0**	**4.5**
7/8/2021	296	469	812	2.4	3.8	5.0	8.8	8.8	**0.0**	**3.8**	**5.0**
7/9/2021	1	618	884	0.0	4.9	5.5	10.4	10.4	**0.0**	**4.9**	**5.5**
7/10/2021	0	662	923	0.0	5.3	5.7	11.0	11.0	**0.0**	**5.3**	**5.7**
7/11/2021	0	581	907	0.0	4.6	5.6	10.3	10.3	**0.0**	**4.6**	**5.6**
7/12/2021	0	562	880	0.0	4.5	5.5	10.0	10.0	**0.0**	**4.5**	**5.5**
7/13/2021	0	584	896	0.0	4.7	5.6	10.2	10.2	**0.0**	**4.7**	**5.6**
7/14/2021	0	622	905	0.0	5.0	5.6	10.6	10.6	**0.0**	**5.0**	**5.6**
7/15/2021	0	342	1,052	0.0	2.7	6.5	9.3	9.3	**0.0**	**2.7**	**6.5**
7/16/2021	374	233	909	3.0	1.9	5.6	8.6	8.6	**3.0**	**0.0**	**5.6**
7/17/2021	678	0	757	5.4	0.0	4.7	10.1	10.1	**5.4**	**0.0**	**4.7**
7/18/2021	694	22	767	5.6	0.2	4.8	10.3	10.3	**5.6**	**0.0**	**4.8**
7/19/2021	669	5	692	5.4	0.0	4.3	9.6	9.6	**5.4**	**0.0**	**4.3**
7/20/2021	633	0	590	5.1	0.0	3.7	8.7	8.7	**5.1**	**0.0**	**3.7**
7/21/2021	600	0	443	4.8	0.0	2.7	7.5	7.5	**4.8**	**0.0**	**2.7**
7/22/2021	649	0	639	5.2	0.0	4.0	9.2	9.2	**5.2**	**0.0**	**4.0**
7/23/2021	680	0	703	5.4	0.0	4.4	9.8	9.8	**5.4**	**0.0**	**4.4**
7/24/2021	598	153	557	4.8	1.2	3.5	8.2	8.2	**4.8**	**0.0**	**3.5**
7/25/2021	633	604	0	5.1	4.8	0.0	9.9	9.9	**5.1**	**4.8**	**0.0**
7/26/2021	673	577	5	5.4	4.6	0.0	10.0	10.0	**5.4**	**4.6**	**0.0**
7/27/2021	699	539	0	5.6	4.3	0.0	9.9	9.9	**5.6**	**4.3**	**0.0**
7/28/2021	698	541	0	5.6	4.3	0.0	9.9	9.9	**5.6**	**4.3**	**0.0**
7/29/2021	681	611	0	5.4	4.9	0.0	10.3	10.3	**5.4**	**4.9**	**0.0**
7/30/2021	671	626	39	5.4	5.0	0.2	10.4	10.4	**5.4**	**5.0**	**0.0**
7/31/2021	655	271	656	5.2	2.2	4.1	9.3	9.3	**5.2**	**0.0**	**4.1**
8/1/2021	673	468	176	5.4	3.7	1.1	9.1	9.1	**5.4**	**3.7**	**0.0**
8/2/2021	672	607	12	5.4	4.9	0.1	10.2	10.2	**5.4**	**4.9**	**0.0**
8/3/2021	651	571	38	5.2	4.6	0.2	9.8	9.8	**5.2**	**4.6**	**0.0**
8/4/2021	645	527	53	5.2	4.2	0.3	9.4	9.4	**5.2**	**4.2**	**0.0**
8/5/2021	649	524	61	5.2	4.2	0.4	9.4	9.4	**5.2**	**4.2**	**0.0**
8/6/2021	657	311	267	5.3	2.5	1.7	7.7	7.7	**5.3**	**2.5**	**0.0**
8/7/2021	637	0	801	5.1	0.0	5.0	10.1	10.1	**5.1**	**0.0**	**5.0**
8/8/2021	618	0	832	4.9	0.0	5.2	10.1	10.1	**4.9**	**0.0**	**5.2**
8/9/2021	615	30	690	4.9	0.2	4.3	9.2	9.2	**4.9**	**0.0**	**4.3**
8/10/2021	594	0	717	4.8	0.0	4.4	9.2	9.2	**4.8**	**0.0**	**4.4**
8/11/2021	619	0	710	5.0	0.0	4.4	9.4	9.4	**5.0**	**0.0**	**4.4**
8/12/2021	609	0	808	4.9	0.0	5.0	9.9	9.9	**4.9**	**0.0**	**5.0**
8/13/2021	617	13	584	4.9	0.1	3.6	8.6	8.6	**4.9**	**0.0**	**3.6**
8/14/2021	615	7	780	4.9	0.1	4.8	9.8	9.8	**4.9**	**0.0**	**4.8**
8/15/2021	604	559	7	4.8	4.5	0.0	9.3	9.3	**4.8**	**4.5**	**0.0**
8/16/2021	444	266	550	3.6	2.1	3.4	7.0	7.0	**3.6**	**0.0**	**3.4**
8/17/2021	654	531	0	5.2	4.2	0.0	9.5	9.5	**5.2**	**4.2**	**0.0**
8/18/2021	661	516	0	5.3	4.1	0.0	9.4	9.4	**5.3**	**4.1**	**0.0**
8/19/2021	635	577	0	5.1	4.6	0.0	9.7	9.7	**5.1**	**4.6**	**0.0**
8/20/2021	614	548	0	4.9	4.4	0.0	9.3	9.3	**4.9**	**4.4**	**0.0**
8/21/2021	598	546	0	4.8	4.4	0.0	9.2	9.2	**4.8**	**4.4**	**0.0**
8/22/2021	600	599	0	4.8	4.8	0.0	9.6	9.6	**4.8**	**4.8**	**0.0**
8/23/2021	593	475	0	4.7	3.8	0.0	8.5	8.5	**4.7**	**3.8**	**0.0**
8/24/2021	594	627	0	4.8	5.0	0.0	9.8	9.8	**4.8**	**5.0**	**0.0**
8/25/2021	596	609	0	4.8	4.9	0.0	9.6	9.6	**4.8**	**4.9**	**0.0**
8/26/2021	599	508	0	4.8	4.1	0.0	8.9	8.9	**4.8**	**4.1**	**0.0**

8/27/2021	596	529	0	4.8	4.2	0.0	9.0	9.0	**4.8**	**4.2**	**0.0**
8/28/2021	584	595	0	4.7	4.8	0.0	9.4	9.4	**4.7**	**4.8**	**0.0**
8/29/2021	573	619	0	4.6	5.0	0.0	9.5	9.5	**4.6**	**5.0**	**0.0**
8/30/2021	568	612	0	4.5	4.9	0.0	9.4	9.4	**4.5**	**4.9**	**0.0**
8/31/2021	566	622	0	4.5	5.0	0.0	9.5	9.5	**4.5**	**5.0**	**0.0**
9/1/2021	577	457	259	4.6	3.7	1.6	8.3	8.3	**4.6**	**3.7**	**0.0**
9/2/2021	589	48	767	4.7	0.4	4.8	9.5	9.5	**4.7**	**0.0**	**4.8**
9/3/2021	583	0	788	4.7	0.0	4.9	9.5	9.5	**4.7**	**0.0**	**4.9**
9/4/2021	50	439	954	0.4	3.5	5.9	9.4	9.4	**0.0**	**3.5**	**5.9**
9/5/2021	315	306	530	2.5	2.4	3.3	5.8	5.8	**2.5**	**0.0**	**3.3**
9/6/2021	604	616	40	4.8	4.9	0.2	9.8	9.8	**4.8**	**4.9**	**0.0**
9/7/2021	579	506	88	4.6	4.0	0.5	8.7	8.7	**4.6**	**4.0**	**0.0**
9/8/2021	615	521	67	4.9	4.2	0.4	9.1	9.1	**4.9**	**4.2**	**0.0**
9/9/2021	692	505	217	5.5	4.0	1.3	9.6	9.6	**5.5**	**4.0**	**0.0**
9/10/2021	723	462	469	5.8	3.7	2.9	9.5	9.5	**5.8**	**3.7**	**0.0**
9/11/2021	737	445	436	5.9	3.6	2.7	9.5	9.5	**5.9**	**3.6**	**0.0**
9/12/2021	723	245	729	5.8	2.0	4.5	10.3	10.3	**5.8**	**0.0**	**4.5**
9/13/2021	706	272	522	5.6	2.2	3.2	8.9	8.9	**5.6**	**0.0**	**3.2**
9/14/2021	720	263	583	5.8	2.1	3.6	9.4	9.4	**5.8**	**0.0**	**3.6**
9/15/2021	718	231	493	5.7	1.8	3.1	8.8	8.8	**5.7**	**0.0**	**3.1**
9/16/2021	722	280	565	5.8	2.2	3.5	9.3	9.3	**5.8**	**0.0**	**3.5**
9/17/2021	604	321	529	4.8	2.6	3.3	8.1	8.1	**4.8**	**0.0**	**3.3**
9/18/2021	580	230	927	4.6	1.8	5.7	10.4	10.4	**4.6**	**0.0**	**5.7**
9/19/2021	605	254	870	4.8	2.0	5.4	10.2	10.2	**4.8**	**0.0**	**5.4**
9/20/2021	622	263	916	5.0	2.1	5.7	10.7	10.7	**5.0**	**0.0**	**5.7**
9/21/2021	546	237	843	4.4	1.9	5.2	9.6	9.6	**4.4**	**0.0**	**5.2**
9/22/2021	687	214	826	5.5	1.7	5.1	10.6	10.6	**5.5**	**0.0**	**5.1**
9/23/2021	716	229	775	5.7	1.8	4.8	10.5	10.5	**5.7**	**0.0**	**4.8**
9/24/2021	723	201	833	5.8	1.6	5.2	10.9	10.9	**5.8**	**0.0**	**5.2**
9/25/2021	722	218	804	5.8	1.7	5.0	10.8	10.8	**5.8**	**0.0**	**5.0**
9/26/2021	457	313	852	3.7	2.5	5.3	8.9	8.9	**3.7**	**0.0**	**5.3**
9/27/2021	52	481	869	0.4	3.8	5.4	9.2	9.2	**0.0**	**3.8**	**5.4**
9/28/2021	0	368	995	0.0	2.9	6.2	9.1	9.1	**0.0**	**2.9**	**6.2**
9/29/2021	19	462	796	0.2	3.7	4.9	8.6	8.6	**0.0**	**3.7**	**4.9**
9/30/2021	327	547	652	2.6	4.4	4.0	8.4	8.4	**0.0**	**4.4**	**4.0**
10/1/2021	408	576	689	3.3	4.6	4.3	8.9	8.9	**0.0**	**4.6**	**4.3**
10/2/2021	384	512	688	3.1	4.1	4.3	8.4	8.4	**0.0**	**4.1**	**4.3**
10/3/2021	386	523	765	3.1	4.2	4.7	8.9	8.9	**0.0**	**4.2**	**4.7**
10/4/2021	378	504	705	3.0	4.0	4.4	8.4	8.4	**0.0**	**4.0**	**4.4**
10/5/2021	380	528	720	3.0	4.2	4.5	8.7	8.7	**0.0**	**4.2**	**4.5**
10/6/2021	385	521	648	3.1	4.2	4.0	8.2	8.2	**0.0**	**4.2**	**4.0**
10/7/2021	415	616	710	3.3	4.9	4.4	9.3	9.3	**0.0**	**4.9**	**4.4**
10/8/2021	577	573	565	4.6	4.6	3.5	9.2	9.2	**4.6**	**4.6**	**0.0**
10/9/2021	634	543	531	5.1	4.3	3.3	9.4	9.4	**5.1**	**4.3**	**0.0**
10/10/2021	661	618	560	5.3	4.9	3.5	10.2	10.2	**5.3**	**4.9**	**0.0**
10/11/2021	650	607	543	5.2	4.9	3.4	10.1	10.1	**5.2**	**4.9**	**0.0**
10/12/2021	663	635	578	5.3	5.1	3.6	10.4	10.4	**5.3**	**5.1**	**0.0**
10/13/2021	646	555	536	5.2	4.4	3.3	9.6	9.6	**5.2**	**4.4**	**0.0**
10/14/2021	395	273	311	3.2	2.2	1.9	5.3	5.3	**3.2**	**2.2**	**0.0**
10/15/2021	671	560	506	5.4	4.5	3.1	9.8	9.8	**5.4**	**4.5**	**0.0**
10/16/2021	664	491	503	5.3	3.9	3.1	9.2	9.2	**5.3**	**3.9**	**0.0**
10/17/2021	672	566	475	5.4	4.5	2.9	9.9	9.9	**5.4**	**4.5**	**0.0**
10/18/2021	674	565	497	5.4	4.5	3.1	9.9	9.9	**5.4**	**4.5**	**0.0**
10/19/2021	672	578	456	5.4	4.6	2.8	10.0	10.0	**5.4**	**4.6**	**0.0**
10/20/2021	676	594	517	5.4	4.8	3.2	10.2	10.2	**5.4**	**4.8**	**0.0**
10/21/2021	659	514	506	5.3	4.1	3.1	9.4	9.4	**5.3**	**4.1**	**0.0**
10/22/2021	664	501	481	5.3	4.0	3.0	9.3	9.3	**5.3**	**4.0**	**0.0**
10/23/2021	669	523	487	5.4	4.2	3.0	9.5	9.5	**5.4**	**4.2**	**0.0**
10/24/2021	668	514	488	5.3	4.1	3.0	9.5	9.5	**5.3**	**4.1**	**0.0**
10/25/2021	667	513	489	5.3	4.1	3.0	9.4	9.4	**5.3**	**4.1**	**0.0**
10/26/2021	640	404	369	5.1	3.2	2.3	8.4	8.4	**5.1**	**3.2**	**0.0**
10/27/2021	681	230	791	5.4	1.8	4.9	10.4	10.4	**5.4**	**0.0**	**4.9**
10/28/2021	661	464	581	5.3	3.7	3.6	9.0	9.0	**5.3**	**3.7**	**0.0**
10/29/2021	658	524	509	5.3	4.2	3.2	9.5	9.5	**5.3**	**4.2**	**0.0**
10/30/2021	682	625	588	5.5	5.0	3.6	10.5	10.5	**5.5**	**5.0**	**0.0**
10/31/2021	682	625	642	5.5	5.0	4.0	10.5	10.5	**5.5**	**5.0**	**0.0**
							7039.7	7039.7			

APPENDIX J
Manufacturer Specifications

R.F. MacDonald Co.
your boiler & pump solutions team
~ since 1956

Fresno:
4912 West Jacquelyn Ave
Fresno, CA 93722
Phone: 559.498.6949
Fax: 559.498.7086
rfmacdonald.com

Bakersfield
Las Vegas
Los Angeles
Modesto
Reno
Sacramento
San Diego
San Francisco
Sonoma/Napa

December 29, 2021

California Dairies – Visalia
2000 North Plaza Drive
Visalia Ca, 93291
Ph: (559) 625-2200

Attention: **Glenn Peugh**

Reference: **California Dairies Visalia - Boiler Plant NOx Reduction Project**
Revision: 4
QUO-123336-M8D3V8

Dear Glenn Peugh,

Due to the recent San Joaquin Valley Air Pollution Control District's requirements of 2.5 PPM NOx on your three (3) 1,500 HP Hurst boilers, we present our solution in the following document to reduce NOx emissions to 2.5 PPM.

Thank you for the opportunity to quote on your requirements. We trust that we will be able to review this proposal with you at your convenience. In the meantime, if you have any questions or require additional information, please let me know.

Sincerely,

Keith Johnson
Aftermarket Sales Manager
R.F. MacDonald Co.
4912 W Jacquelyn Avenue
Fresno, CA 93722
Cell: (559) 647-2852
Office: (559) 498-6949

Tim Brouwer
Boiler Sales Engineer
R.F. MacDonald Co.
4912 W Jacquelyn Avenue
Fresno, CA 93722
Cell: (559) 514-1818
Office: (559) 498-6949

1. Major Equipment

Cleaver-Brooks –ProFire Model NTXLG-630

Three (3) Cleaver-Brooks Burner– model ProFire NTXLG-630. The NTXL Series gas burner is an axial flow type based on low to moderate swirling air jet aerodynamics. It shall use intensive mixing with counter-flow fuel injection to control and minimize NOx formation. It shall use a combination of swirl and central core bluff-body effect to stabilize the flame. A preset ratio of tangential to axial momentum shall be used to effectively produce the required flame shape for a given furnace geometry. The flame shape and concentration properties within the furnace confinement shall be determined by Application.

The burner shall be designed to burn natural gas. An efficient combustion is achieved by entering gas through ports ahead of the diffuser providing superior mixing of fuel, air and FGR (flue gas recirculation). Listed by Underwriters Laboratory, CSD-1 requirements.

The firing head of the Cleaver-Brooks ProFire NTXL burner does not utilize any type of element, special alloy, internal burner swirlers or other exotic means to maintain flame retention. The burner utilizes an open flow through design that establishes proper mixing in the combustion chamber via strategically placed nozzle assemblies. This burner design does not require air filters that will need to be cleaned on a regular basis nor does it require any type of special gas filters to keep finite particles from plugging the burner nozzles. The burner is designed for maximum life and minimal maintenance.

Burner Details:

- Burner Input up to 63,000,000 BTU/hr
- 20 ppm NO_x prior to Selective Catalytic Reduction System
- 50 ppm CO prior to Selective Catalytic Reduction System.
- Up to 5:1 turndown @ 20 PPM NOx
- 125 HP high efficiency blower motor
- CSD-1, NFPA gas train (non FM)
- Designed for Hurst Series 500, 1500 HP Boilers operating at 138 PSI steam

Requirements:

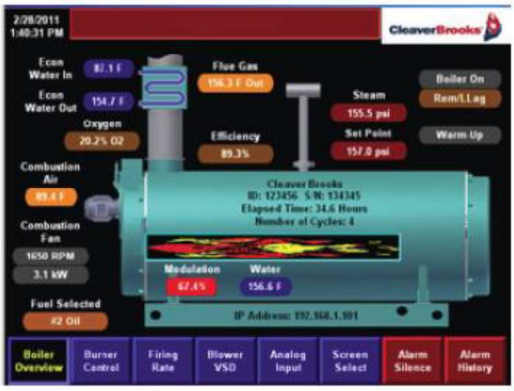
Blower motor: 460V/3Ph/60Hz
Gas pressure: 30 PSIG Natural Gas
A control circuit transformer will be provided to supply 120V/1Ph/60Hz to the control circuit.

R.F. MacDonald Co.

December 29, 2021

Cleaver Brooks- Hawk 4000 Control System:

The Hawk 4000 is a state-of-the-art boiler control system that integrates the functions of a Programmable Controller and Burner Management Controller, as well as other boiler operating and ancillary controls. The Hawk 4000 system incorporates a touch screen Human Machine Interface (HMI) featuring boiler parameter display, fault annunciation and alarm history, and access to boiler configuration and control functions. The Hawk 4000's advanced technology features utilize the latest communication methods, such as Modbus, Ethernet, and the Internet. The Hawk 4000 also has the capability of interfacing with various building/plant automation systems. Additional features include lead/lag capability, e-mailing and text messaging of alarms, remote monitoring, and HMI alarm history printing.



Included Features:

- Integrates control function of burner sequencing and safety with firing rate, fuel-air ratio, and operating limit controls
- Touch screen graphical human machine interface (HMI)•Monitors and displays connected boiler parameters
- Optimizes boiler firing rate control
- Alarm/fault indication and history
- On-screen fault diagnostic
- Night/day setback control
- Remote modulation
- Remote setpoint
- Assured low fire cut-off
- Assured start permissive safety interlocking
- High stack temperature alarm and shutdown
- Boiler efficiency calculations
- Fuel-air ratio control
- O2 monitoring and trim
- Allen Bradley Variable Speed Drive on combustion air fan
    - No VSD bypass included (bypass not recommended for blower motors over 50hp)

- Programming to Integrate the SCR Controls into the Boiler Control Panel (PLC and HMI).
- E-Mail and text message alarm/fault forwarding

Display/ Diagnostic Capabilities:

- Touch screen graphical human machine interface (HMI)
- 10” touchscreen screen
- HMI allows easy screen navigation to monitor various boiler parameters & diagnostics and to configure boiler controls.
- Displays alarms/faults, burner status, and flame signal from the flame safety control
- Diagnostics in plain English and prioritized fault annunciation simplify troubleshooting. Last 100 faults are stored
- Displays boiler steam pressure, firing rate, Stack temperature, boiler efficiency, combustion air temperature (optional), Flue gas O2 concentration, shell water temperature, and other control points.
- Displays boiler operating status (e.g. “Warm Up”, “Auto/Manual”, “Boiler On”, fuel selection, etc.).
- Displays boiler firing rate control parameters and settings.
- Provides remote monitoring and diagnostic capabilities (optional).

Safety Provisions and Diagnostics:

- Integrated Burner Management
  - Utilizes the CB780E or CB120E flame safety control
  - Burner Control status, faults, and diagnostics displayed on HMI
- Integrated Boiler Controls
  - Operating and modulating controls
  - Variable Speed Drive Ethernet communications
  - Password protection of programmable controller logic
  - Password protection of parallel positioning control (optional)Powerful Display/Diagnostic Capabilities:

Simplified Servicing:

- Diagnostic and fault history, up to 100 faults, through touch screen display simplifies troubleshooting procedures
- E-Mail forwarding and texting of system fault codes
- Building automation interface/protocol

Engineering Data:

- Supply voltage: 120 VAC (+10%/-15%) 50 or 60 Hz
- Maximum total connected load: 1200 VA
- Operating temperature limits: 32 to 130°F
- 85% RH continuous, non-condensing, humidity
- 0.5G continuous vibration

Selective Catalytic Reduction System

SCR, or Selective Catalytic Reduction, is a flue gas treatment method for the removal of oxides of nitrogen. It was invented in Japan during the 1970's. Today, there are thousands of SCR units around the world reducing NOx in boilers, process heaters, coal-fired power plants, diesel engines, gas turbines and other fired sources.

As the name implies, NOx is reduced selectively, meaning only NOx is reduced, over a catalyst surface in the presence of ammonia, the reducing agent.

NOx + NH3 = N2 +H2O

The by-products of this reaction are nitrogen and water. However, even in a well-designed system there is a small amount of ammonia that does not react with NOx. This is referred to as ammonia slip and is allowed under air permits in California and elsewhere. Ammonia slip should never exceed 10 ppm.

Ammonia Flow Control Unit (AFCU) – In order to inject the ammonia into the flue gas it must first be vaporized and diluted with air for transfer and proper dispersion. The ammonia vaporization skid does this step. The vaporized ammonia is released in the required amount using a flow control valve in conjunction with the burner controls on the boiler. The flow required is determined during startup using a gas analyzer to measure NOx and NH3. During normal operation ammonia is controlled via the signal from the boiler fuel gas flow meter.

Ammonia Injection Grid (AIG) – A series of stainless steel pipes strategically placed across the discharge of the boiler and having a series of holes drilled ensuring the ammonia is evenly dispersed into the flue gas stream to maximize catalyst performance.

Catalyst – A substance made from titanium dioxide and vanadium pent oxide and extruded into a honeycomb shape, then calcined at high temperature to give the catalyst structure the strength required to survive years of service. The reduction of NOx to N2 occurs on the catalyst surface.

Safety

- To help ensure the safe handling of Ammonia our system will include the following:
  - Skid will include an ambient Ammonia detection sensor, audible alarm and beacon alarm. Additional contacts for remote indication can be provided upon request. The sensor will be mounted 8-10 ft above grade.
  - If a dilution skid is to be located outdoors a wind sock will be added to monitor wind direction.
  - A detailed instruction O&M manual will be provided.
  - Safety relief discharge will be piped to 12' above grade or any adjacent platform level.

System Design

Boilers shall be Hurst 1500HP firetubes - The design strategy will include new equipment is as follows:

- The SCR will utilize anhydrous ammonia
- A skid will be provided with an air system to supply diluted ammonia to the AIG
- Ammonia flow control will be dictated by a fuel flow signal for each boiler
- PLC controls will be integrated into the corresponding Hawk 4000 controller on each boiler

Scope of Supply – Equipment

- **SCR System** will be designed as an integral assembly with appropriate inlet/outlet transitions, AIG and catalyst bed. Construction is carbon steel with insulation and aluminum corrugated lagging designed for 600° F operating temperature and 20" WC static pressure.
- **SCR Housing will include the following:**
  - One (1) access door
  - Four (4) inlet pitot traverse test ports
  - Four (4) outlet pitot traverse test ports
- **SCR Catalyst: Corrugated Type – Umicore DNX-LT2 or equal**
- **Ammonia Injection Grid (AIG):**

- One (1) AIG inline ammonia injector system consisting of the following:
- Single point injection pipe.
- Includes static mixer plate.
- **Materials:** Ammonia Piping – 304SS
- **Fabrication:** Piping is furnished in sections and field fitted by RFMCO.

- **Air Dilution and Ammonia Flow Control Unit (AFCU)**
  - One (1) ammonia flow control unit with all hardware mounted on a freestanding skid and all electrical items wired to the main control panel. The following components are included:
    - One (1) NEMA 4 control panel
    - One (1) ammonia strainer DP pressure gauge
    - One (1) ammonia PRV
    - One (1) mass flow controller valve, 4-20 mA input
    - One (1) low ammonia pressure switch
    - One (1) inlet supply pressure gauge
    - One (1) ammonia SSO Valve
    - One (1) dilution air blower c/w TEFC motor and inlet screen filter
    - One (1) motor starter
    - One (1) low dilution air pressure switch
    - One (1) dilution air pressure gauge
    - One (1) butterfly valve for flow control to AIG
    - One (1) ammonia detection sensor and alarm
    - One (1) thermometer & thermo well for manifold temperature
    - One (1) pressure gage with siphon and isolation valve for manifold pressure

Emission Performance Guarantee:

NOx (Corrected to 3% O2)	2.5 PPM
CO (Corrected to 3% O2)	50 PPM
Ammonia Slip	10 PPM

Ammonia Usage: 1.1 lbs ammonia/ hour/ boiler