

July 30, 2019

Mr. Jeff Gove, Director of Compliance and Enforcement
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105
Attn. Title V Reports

1. RECEIVED IN ENFORCEMENT: (via email) 7/31/19

Dear Mr. Gove:

RE: Semiannual Major Facility Review (Title V) Monitoring Report for the East Bay Municipal Utility District (EBMUD) Main Wastewater Treatment Plant (Facility #A0591)

Attached is the semiannual monitoring report for the EBMUD Main Wastewater Treatment Plant (Facility #A0591) as required under Section I.F of the facilities Major Facility Review Permit issued December 19, 2012. The report covers the period from January 1, 2019 – June 30, 2019. One issue of non-compliance was noted during this monitoring period, and is discussed below.

On January 31, 2019, a digester gas release occurred from the low pressure gas holder pressure relief valve at the facility. The gas release was caused when a programmable logic controller (PLC) failed, resulting in a loss of automated controls over several components within the digester gas control system. The PLC was quickly replaced to stop the release within 90 minutes. Since then, a second PLC and updated software has been installed in the control system to provide redundant controls. If a PLC fails in this configuration, the second PLC will take over controls and should prevent a reoccurrence of this incident. BAAQMD issued Notice of Violation A56072 for this incident.

Several extended equipment outages occurred during this reporting period. Engine #2 (S-38) and the enclosed flares A-194 and A-195 did not operate during the entire reporting period. No annual source testing on engine #2 (S-38) was conducted since the engine was out of service. To isolate and repair a previously reported digester gas leak from an underground pipe, engines #1 and #3 were out of service from November 29, 2018 through March 27, 2019. The turbine was out of service from January 14, 2019 through February 23, 2019. The January monthly turbine test was not conducted since the turbine was offline during the allowable monthly test window in the permit (25-35 days after last test). The February monthly turbine test was conducted as soon as possible after the turbine came back online.

Jeff Gove, Director of Compliance and Enforcement

July 30, 2019

Page 2

Based on information and belief formed after reasonable inquiry, I certify that the statements and information in this report are true, accurate and complete.

If you have any questions about this report, please call Chris Dembiczak at (510) 287-0509.

Sincerely,



Eileen M. White, P.E.
Director of Wastewater

EMW:CD:bmy

Attachment

O:\WTD - Admin\Regulatory Compliance\BAAQMD\Transmittal letter Jan-June 2019.docx

**Major Facility Review (Title V)
Semi-Annual Monitoring Report**

for

**East Bay Municipal Utility District
Main Wastewater Treatment Plant
Facility #A0591**

Reporting Period: January 1, 2019 – June 30, 2019

Source	Monitoring Requirement	Limit	Monitoring Results
S-55 Boiler	Condition 20651 2. Shall not operate S-55 boiler when more than two of the three cogen engines S-37, S-38, or S-39 are operating 3. Boiler gross heat input 5a. NOx emission from boiler 5b. CO emission from boiler 18. Daily records of hours of operation, fuel consumption 19. Annual performance test for emission limits in 5	 20.41 MMBtu/hr 30ppm 50ppm	Condition met. See Attachment 1 for boiler and engine data. Condition met. See Attachment 2. Heat input ranged from 7.7-18.5 MMBtu/hr. See 19 for test results if annual tests run in monitoring period See Attachment 1 for hours and gas consumption. Condition met. Annual performance test completed on 12/17/18. Results below NOx and CO limits.
S-37, S-38, S-39 Cogeneration Engines	Condition 20651 Emission limits – 6. NOx emissions from S-38 7. POC emissions from S-38 8. CO emissions from S-38 9. Filterable particulate emissions from S-38 10. NOx emissions from S-37 & S-39 11. CO emissions from S-37 & S-39 13. Thermal throughput per engine 14. Combined hours of operation for S-37, S-38, and S-39 15. Combined diesel consumption for S-37, S-38, and S-39	 1.25 g/hp-hr 0.6 g/hp-hr 3.0 g/hp-hr 0.085 g/hp-hr 70 ppmvd 2000 ppmvd 25 MMBtu/hr 25,316 hours in any rolling 365 day period 150,000 gallons in any rolling 365 day period	For items 6-11 see 19 for test results if annual tests run in monitoring period Condition met. See Attachment 2. Condition met. 10,630 hours in last year. See Attachment 2. Jan-Jun 2019: 4,098 hours Jul-Dec 2018: 6,532 hours Condition met. 16,887 gallons in last year. See Attachment 2. Jan-Jun 2019: 6,319 gallons Jul-Dec 2018: 10,568 gallons

Source	Monitoring Requirement	Limit	Monitoring Results
S-37, S-38, S-39 Cogeneration Engines (continued)	18. Daily records of hours of operation, fuel consumption 19. Annual performance test for emission limits in 6-11		Condition met. See Attachment 1 for records. Condition met. Annual performance tests completed 4/11/19 and 6/11/19 for engine #1. Engine #2 was out of service during this reporting period, so no annual test was conducted. See Attachment 3 for summary reports.
S-48 Gasoline Dispensing Facility	Condition 25723 The Static Pressure Performance Test (CARB TP 201.3B) shall be successfully conducted at least once in each 12-month period.		Condition met. Completed on 10/3/18. Test record submitted with last report.
	Condition 21663 Annual gasoline throughput	334,000 gal per year	Condition met. 24,890 gal in last year. See Attachment 4. Jan-June 2019: 13,431 gal July-Dec 2018: 11,459 gal
S-50 Diesel Engine Back-up Generator	Condition 22830 1. Hours of operation	30 hours/year reliability-related hours	Condition met. Generator ran 0.1 hours in last 12 months. Refer to Attachment 5.
S-51 Diesel Engine Back-up Generator	Condition 22850 1. Hours of operation	50 hours/year reliability-related hours	Condition met. Generator ran 8.4 hours in last 12 months. Refer to Attachment 5.
S-53 Diesel Engine Back-up Generator	Condition 22830 1. Hours of operation	30 hours/year reliability-related hours	Condition met. Generator did not run in last 12 months. Refer to Attachment 5.
S-54 Diesel Engine Back-up Generator	Condition 22850 1. Hours of operation	50 hours/year reliability-related hours	Condition met. Generator did not run in last 12 months. Refer to Attachment 5.

Source	Monitoring Requirement	Limit	Monitoring Results
S-56 Turbine	Condition 24050 2. Total combined heat input 3. NOx emission limits 4. CO emission limit 5. SO2 emission limit 7. Annual turbine source test 8. Monthly NOx and CO test	389,820 MMBtu in any 12-month period 23 ppm (15-min) 34,400 lb (12-mo) 100 ppm (15-min) 92,200 lb (12-mo) 150 ppmv	Condition met. 300,203 MMBtu in last 12 months. Refer to Attachment 2. Jan-Jun 2019: 131,084 MMBtu Jul-Dec 2018: 169,119 MMBtu Emission limits met. Refer to Attachments 2 and 6. Annual mass emission: 4,404 lb Emission limits met. Refer to Attachments 2 and 6. Annual mass emission: 1,444 lb Emission limit met. Refer to Attachments 2 and 6. Condition met. Last annual test was 12/11/2018 and summary included in last report. Condition met. Monthly test results are located in Attachment 6. <i>Note: no test in January 2019 conducted since turbine was out of service during test window and most of February 2019.</i>
S-58 Diesel Engine Back-up Generator	Condition 22850 1. Hours of operation	50 hours/year reliability-related hours	Condition met. Generator did not run in last 12 months. Refer to Attachment 5.
S-100 Municipal Wastewater Treatment Plant	Condition 21759 1. Total wastewater flow	120 MGD monthly dry weather average 325 MGD monthly wet weather average	Condition met. Maximum wet weather monthly flow in period was 102 MGD influent. Maximum dry weather monthly flow was 61 MGD. See Attachment 7.

Source	Monitoring Requirement	Limit	Monitoring Results
<p>S-110 Headworks</p> <p>A-462 Carbon Scrubber</p> <p>A-463/A-464 Biotrickling Filters/Carbon Scrubbers</p>	<p>Condition 17335</p> <p>3. Inlet and outlet H₂S concentrations of carbon beds, as well as any other appropriate operating parameters shall be continuously monitored and reviewed on a daily basis to determine when carbon adsorption bed breakthrough is imminent or has been reached.</p>		<p>Monitoring results for inlet and outlet H₂S and any noted outages are in Attachment 8.</p> <p>Maintenance records for scrubber are in Attachment 9.</p>
<p>S-170 Sludge handling</p> <p>A-7/A-8 Atomized Mist Scrubbers</p>	<p>Condition 18006</p> <p>1. Monitor and record on a daily basis the activated sewage sludge throughput through S-170.</p>		<p>Sludge throughput is recorded in Attachment 10.</p> <p>Maintenance records for the scrubber are in Attachment 9.</p>

Source	Monitoring Requirement	Limit	Monitoring Results
S-180 Anaerobic Digesters Note: A-194, A-195 are enclosed flares A-190, A-191, A-192, and A- 193 are older “candlestick” flares	Condition 18860 2. Monthly inspection of digesters and gas management/venting prevention		Inspections conducted by Operations on daily rounds. <i>Digester gas vented from the LPGH on 1/31/2019 resulting in a Notice of Violation.</i>
	3. Sulfur content of digester gas	<200 ppmv annual average	Condition met. Refer to Attachment 11 for the H2S gas sampling records.
	4. Combined digester gas flow rate to combustion sources	<3,400 scfm annual average	Condition met. See Attachment 12 for combined digester gas flow rates.
	5. Combustion zone temperature monitoring to A-194, A-195	>1,500F, 3-hr average	A-194 and A-195 not operated in reporting period.
	6. Gas flow to A-194, A-195	<3,000 cfm, 1-hr average	A-194 and A-195 not operated in reporting period.
	7. Source testing of A-194, A-195 (every 8,760 hours of use or 5 years)		A-194 and A-195 not operated in reporting period.
	Emission limits for A-194, A-195		
	9. NOx limit	0.06 lb/MMBtu	A-194 and A-195 not operated in reporting period.
	10. CO limit	0.20 lb/MMBtu	
	11. H2S limit	0.032 lb/hour	
	12. Weekly sampling and testing of digester gas for H2S		Refer to Attachment 11.
	13. Hours of flaring per day		Refer to Attachment 1 for the hours of flaring per day.

Attachment Index:

- 1 Combustion Source Air Permit Data
- 2 Combustion Summaries – Boiler, Engines, Turbine, Flares
- 3 Annual Source Test Summaries: Engine #1
- 4 Gasoline Facility Throughput
- 5 Hours of Operation for Stand-by Emergency Generators
- 6 Turbine Monthly Test Results
- 7 Monthly Wastewater Summary
- 8 IPS Carbon Bed Inlet/Outlet H2S Readings
- 9 Odor Scrubber Maintenance Records for S-170 and S-110
- 10 Activated Sludge Throughput for S-170
- 11 Digester Gas H2S Sampling
- 12 Combined Digester Gas Combustion Volumes

ATTACHMENT 1

COMBUSTION SOURCE AIR PERMIT DATA

(engines, turbine, boiler, flares)

**DAILY REPORTS
JANUARY-JUNE 2019**



January - 2019

Daily Data for Air Permit

Elmer E. Ross Power Station

Date	Run Time, Hours				KiloWatt Hours Generated				Fuel Oil Used, gal				Gas, Roots Meter, cu ft			
	Eng 1	Eng 2	Eng 3	Total	Gen. 1	Gen 2	Gen 3	Total	Eng. 1	Eng. 2	Eng. 3	Total	Eng. 1	Eng. 2	Eng. 3	Total
1st	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2nd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3rd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15th	0.5	0	0.5	1.0	93	0	71	164	13	0	18	31	0	0	0	0
16th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21st	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22nd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23rd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31st	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	0.5	0	0.5	1.0	93	0	71	164	13	0	18	31	0	0	0	0

Sum of Engines 1.0

Sum of Engines 164

Sum of Engines 31

Sum of Engines 0



January - 2019

Daily Data for Air Permit

SD1 Flare Burners, Turbine, and Boiler

Date	Flares A-190,191,192,193		Flares A-194,195			Turbine			Boiler		Run Time Check	
	Run Time Hrs	Gas cu ft	Run Time Hrs	Gas cu ft	Peak 1-hr Flow, SCFM	Run Time Hrs	Power KWh	Gas cu ft	Run Time Hrs	Gas cu ft	Engine Hrs	Eng + Boiler Hrs
1st	24	712,991	0	0	0	24	91,572	1,670,857	24	347,494	0	24
2nd	14	485,828	0	0	0	24	91,950	1,682,012	24	286,290	0	24
3rd	24	1,200,009	0	0	0	24	91,559	1,648,413	24	453,600	0	24
4th	24	737,808	0	0	0	24	90,937	1,631,431	24	453,600	0	24
5th	24	1,094,134	0	0	0	24	87,278	1,607,369	24	453,600	0	24
6th	24	584,950	0	0	0	24	89,009	1,621,853	24	453,600	0	24
7th	23	707,327	0	0	0	24	88,877	1,644,715	24	453,600	0	24
8th	24	1,460,880	0	0	0	24	87,129	1,608,088	24	453,600	0	24
9th	24	1,880,056	0	0	0	24	86,228	1,562,810	24	453,600	0	24
10th	24	1,793,446	0	0	0	24	90,035	1,613,846	24	453,600	0	24
11th	24	1,381,070	0	0	0	24	88,286	1,618,795	24	453,600	0	24
12th	24	1,731,551	0	0	0	24	87,449	1,599,238	21	413,392	0	21
13th	24	792,003	0	0	0	24	88,591	1,614,265	24	413,556	0	24
14th	24	1,787,497	0	0	0	8.5	31,563	563,671	19	343,133	0	19
15th	24	3,174,307	0	0	0	0	0	0	24	453,600	1.0	25
16th	24	2,812,292	0	0	0	0	0	0	24	617,246	0	24
17th	24	2,362,067	0	0	0	0	0	0	24	761,865	0	24
18th	24	2,201,133	0	0	0	0	0	0	24	767,520	0	24
19th	24	2,186,135	0	0	0	0	0	0	24	757,926	0	24
20th	24	2,316,661	0	0	0	0	0	0	24	766,320	0	24
21st	24	2,652,478	0	0	0	0	0	0	24	679,808	0	24
22nd	24	2,393,655	0	0	0	0	0	0	24	526,560	0	24
23rd	24	2,057,085	0	0	0	0	0	0	24	681,281	0	24
24th	24	2,232,798	0	0	0	0.2	285	13,172	24	747,780	0	24
25th	24	2,395,421	0	0	0	0	0	0	24	727,530	0	24
26th	24	2,040,417	0	0	0	0	0	0	24	720,212	0	24
27th	24	2,282,191	0	0	0	0	0	0	24	730,080	0	24
28th	24	2,092,207	0	0	0	0	0	0	24	724,710	0	24
29th	24	1,848,097	0	0	0	0	0	0	24	708,480	0	24
30th	24	2,160,614	0	0	0	0	0	0	24	703,080	0	24
31st	23	2,411,011	0	0	0	0	0	0	24	683,541	0	24
Totals	731	55,968,120	0	0		321	1,190,750	21,700,534	735	17,643,804	1.0	736
					Maximum	0	Minimum				Maximum	25



February - 2019

Daily Data for Air Permit

Elmer E. Ross Power Station

Date	Run Time, Hours				KiloWatt Hours Generated				Fuel Oil Used, gal				Gas, Roots Meter, cu ft			
	Eng 1	Eng 2	Eng 3	Total	Gen. 1	Gen 2	Gen 3	Total	Eng. 1	Eng. 2	Eng. 3	Total	Eng. 1	Eng. 2	Eng. 3	Total
1st	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2nd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3rd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21st	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22nd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23rd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sum of Engines			0	Sum of Engines			0	Sum of Engines			0	Sum of Engines			0



February - 2019

Daily Data for Air Permit

SD1 Flare Burners, Turbine, and Boiler

Date	Flares A-190,191,192,193		Flares A-194,195			Turbine			Boiler		Run Time Check	
	Run Time Hrs	Gas cu ft	Run Time Hrs	Gas cu ft	Peak 1-hr Flow, SCFM	Run Time Hrs	Power KWh	Gas cu ft	Run Time Hrs	Gas cu ft	Engine Hrs	Eng + Boiler Hrs
1st	0	2,306,922	0	0	0	0	0	0	24	715,440	0	24
2nd	24	2,541,210	0	0	0	0	0	0	24	717,660	0	24
3rd	24	2,182,420	0	0	0	0	0	0	24	679,020	0	24
4th	24	2,081,907	0	0	0	0	0	0	24	685,995	0	24
5th	24	2,201,983	0	0	0	0	0	0	24	728,460	0	24
6th	24	2,233,542	0	0	0	0	0	0	24	767,520	0	24
7th	24	2,444,059	0	0	0	0	0	0	24	713,920	0	24
8th	24	2,150,612	0	0	0	0	0	0	24	712,650	0	24
9th	24	2,269,712	0	0	0	0	0	0	24	767,520	0	24
10th	24	1,878,122	0	0	0	0	0	0	24	763,740	0	24
11th	24	2,013,616	0	0	0	0	0	0	24	767,520	0	24
12th	24	2,963,324	0	0	0	0	0	0	20	450,970	0	20
13th	24	2,304,516	0	0	0	0	0	0	20	639,067	0	20
14th	24	2,170,940	0	0	0	0	0	0	24	767,520	0	24
15th	24	2,422,763	0	0	0	0	0	0	24	767,520	0	24
16th	24	1,907,958	0	0	0	0	0	0	24	767,520	0	24
17th	24	1,257,112	0	0	0	0	0	0	24	767,520	0	24
18th	24	1,691,037	0	0	0	0	0	0	24	767,520	0	24
19th	24	1,894,997	0	0	0	0	0	0	24	767,520	0	24
20th	24	1,637,877	0	0	0	0	0	0	24	767,520	0	24
21st	24	1,884,691	0	0	0	0	0	0	24	767,520	0	24
22nd	24	2,589,203	0	0	0	0	0	0	24	767,520	0	24
23rd	24	1,653,059	0	0	0	5	16,106	273,524	24	767,520	0	24
24th	2	35,564	0	0	0	24	101,564	1,622,264	24	723,025	0	24
25th	14	301,984	0	0	0	24	98,580	1,608,371	24	287,871	0	24
26th	24	1,241,969	0	0	0	24	101,160	1,591,096	24	261,505	0	24
27th	24	2,176,089	0	0	0	13	55,550	877,942	24	558,936	0	24
28th	24	1,669,821	0	0	0	24	104,302	1,609,484	24	435,117	0	24
Totals	616	54,107,011	0	0		114	477,262	7,582,682	664	19,051,136	0	664
			Maximum	0	Minimum						Maximum	24



March - 2019

Daily Data for Air Permit

Elmer E. Ross Power Station

Date	Run Time, Hours				KiloWatt Hours Generated				Fuel Oil Used, gal				Gas, Roots Meter, cu ft			
	Eng 1	Eng 2	Eng 3	Total	Gen. 1	Gen 2	Gen 3	Total	Eng. 1	Eng. 2	Eng. 3	Total	Eng. 1	Eng. 2	Eng. 3	Total
1st	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2nd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3rd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12th	0.2	0	0	0	0	0	0	0	27	0	0	27	0	0	0	0
13th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21st	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22nd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23rd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27th	4.0	0	2.0	6.0	7,935	0	6,356	14,290	34	0	23	56	127,229	0	101,907	229,136
28th	24	0	24	48	51,067	0	52,735	103,802	31	0	24	55	840,227	0	867,676	1,707,903
29th	24	0	24	48	51,029	0	52,100	103,129	30	0	29	59	842,731	0	860,429	1,703,160
30th	23	0	24	47	48,085	0	48,972	97,057	33	0	27	60	810,853	0	825,817	1,636,670
31st	12	0	24	36	15,846	0	46,051	61,897	21	0	25	46	276,535	0	803,680	1,080,215
Totals	87	0	98	185	173,961	0	206,215	380,176	176	0	128	304	2,897,575	0	3,459,510	6,357,085
	Sum of Engines		185		Sum of Engines		380,176		Sum of Engines		304		Sum of Engines		6,357,085	



March - 2019

Daily Data for Air Permit

SD1 Flare Burners, Turbine, and Boiler

Date	Flares A-190,191,192,193		Flares A-194,195			Turbine			Boiler		Run Time Check	
	Run Time Hrs	Gas cu ft	Run Time Hrs	Gas cu ft	Peak 1-hr Flow, SCFM	Run Time Hrs	Power KWh	Gas cu ft	Run Time Hrs	Gas cu ft	Engine Hrs	Eng + Boiler Hrs
1st	22	938,076	0	0	0	24	103,532	1,603,806	24	449,813	0	24
2nd	24	763,148	0	0	0	24	101,979	1,615,779	24	426,185	0	24
3rd	20	559,248	0	0	0	24	100,836	1,603,208	24	367,785	0	24
4th	22	992,677	0	0	0	24	102,114	1,637,034	24	376,846	0	24
5th	24	1,942,705	0	0	0	24	100,929	1,620,501	24	439,236	0	24
6th	24	1,931,525	0	0	0	18	72,685	1,160,271	24	471,220	0	24
7th	24	2,271,434	0	0	0	24	103,002	1,612,849	24	442,454	0	24
8th	24	2,175,866	0	0	0	24	104,485	1,616,540	24	425,615	0	24
9th	24	1,369,587	0	0	0	24	103,168	1,610,546	24	418,798	0	24
10th	23	740,710	0	0	0	23	98,860	1,547,740	23	350,680	0	23
11th	24	1,004,496	0	0	0	24	102,929	1,611,625	24	443,347	0	24
12th	24	1,539,467	0	0	0	24	101,932	1,598,671	24	352,071	0	24
13th	24	1,389,658	0	0	0	24	103,253	1,614,787	24	370,190	0	24
14th	24	2,016,814	0	0	0	24	102,232	1,597,807	24	465,054	0	24
15th	24	1,401,468	0	0	0	24	102,224	1,592,400	24	510,113	0	24
16th	24	1,163,585	0	0	0	24	101,182	1,606,157	24	487,438	0	24
17th	18	664,957	0	0	0	24	99,439	1,576,686	24	446,603	0	24
18th	15	655,363	0	0	0	24	97,860	1,602,783	24	414,602	0	24
19th	24	1,762,211	0	0	0	24	99,656	1,612,164	23	457,118	0	23
20th	24	1,763,381	0	0	0	24	100,532	1,587,642	24	580,520	0	24
21st	24	1,705,706	0	0	0	24	99,955	1,572,577	24	629,576	0	24
22nd	24	1,246,239	0	0	0	24	101,624	1,605,710	24	593,164	0	24
23rd	24	1,971,637	0	0	0	24	101,834	1,593,241	24	596,517	0	24
24th	24	1,081,339	0	0	0	24	102,316	1,585,719	24	473,918	0	24
25th	24	1,019,260	0	0	0	24	100,592	1,605,329	23	360,755	0	23
26th	24	1,649,541	0	0	0	24	100,851	1,625,494	24	404,290	0	24
27th	24	2,838,530	0	0	0	24	98,960	1,585,304	21	378,051	6	27
28th	24	1,579,803	0	0	0	24	101,122	1,573,166	0	0	48	48
29th	24	810,935	0	0	0	24	102,902	1,587,755	0	0	48	48
30th	6.8	127,950	0	0	0	24	98,956	1,524,874	0	0	47	47
31st	5.3	74,545	0	0	0	24	92,718	1,471,110	0	0	36	36
Totals	685	41,151,860	0	0		736	3,104,661	48,959,276	642	12,131,961	185	828

Maximum 0

Minimum

Maximum 48



April - 2019

Daily Data for Air Permit

Elmer E. Ross Power Station

Date	Run Time, Hours				KiloWatt Hours Generated				Fuel Oil Used, gal				Gas, Roots Meter, cu ft			
	Eng 1	Eng 2	Eng 3	Total	Gen. 1	Gen 2	Gen 3	Total	Eng. 1	Eng. 2	Eng. 3	Total	Eng. 1	Eng. 2	Eng. 3	Total
1st	22	0	24	46	47,863	0	50,050	97,913	40	0	37	77	808,226	0	845,150	1,653,376
2nd	24	0	24	48	51,114	0	52,081	103,195	36	0	34	70	843,563	0	859,525	1,703,088
3rd	24	0	24	48	49,721	0	50,165	99,886	32	0	32	64	837,003	0	844,476	1,681,479
4th	12	0	24	36	21,434	0	47,953	69,387	13	0	31	44	366,172	0	819,225	1,185,397
5th	24	0	24	48	50,694	0	51,781	102,475	38	0	61	99	838,735	0	856,709	1,695,444
6th	24	0	25	49	51,115	0	51,724	102,839	36	0	31	68	847,550	0	857,660	1,705,210
7th	24	0	23	47	46,201	0	45,620	91,822	37	0	33	70	788,827	0	778,903	1,567,730
8th	24	0	8	32	50,376	0	17,634	68,010	38	0	11	49	890,563	0	311,741	1,202,304
9th	24	0	24	48	51,059	0	50,650	101,709	36	0	32	68	862,937	0	856,032	1,718,969
10th	24	0	24	48	51,126	0	52,162	103,288	40	0	34	74	844,647	0	861,764	1,706,411
11th	24	0	24	48	51,183	0	52,229	103,412	36	0	28	64	844,941	0	862,205	1,707,146
12th	24	0	24	48	49,219	0	49,514	98,734	38	0	35	73	837,902	0	842,924	1,680,826
13th	24	0	24	48	41,062	0	42,792	83,855	37	0	34	71	739,484	0	770,641	1,510,125
14th	13	0	4	17	25,657	0	5,126	30,783	20	0	6	26	458,432	0	91,581	550,013
15th	16	0	12	28	31,325	0	25,472	56,797	46	0	33	79	550,374	0	447,528	997,902
16th	24	0	24	48	49,068	0	49,613	98,682	35	0	37	72	832,510	0	841,751	1,674,261
17th	24	0	24	48	51,058	0	51,753	102,812	38	0	32	70	848,613	0	860,169	1,708,781
18th	24	0	24	48	45,597	0	46,363	91,960	33	0	28	61	782,695	0	795,855	1,578,550
19th	24	0	24	48	50,617	0	51,822	102,438	40	0	36	75	836,989	0	856,912	1,693,901
20th	24	0	24	48	48,336	0	49,219	97,555	37	0	27	65	818,852	0	833,815	1,652,666
21st	22	0	18	40	37,519	0	32,321	69,840	42	0	24	66	655,645	0	564,810	1,220,455
22nd	15	0	14	29	34,028	0	29,293	63,321	43	0	39	82	582,593	0	501,526	1,084,119
23rd	24	0	24	48	51,044	0	49,799	100,844	38	0	16	55	867,084	0	845,931	1,713,015
24th	21	0	21	42	40,833	0	41,456	82,289	45	0	36	80	681,091	0	691,488	1,372,578
25th	24	0	24	48	51,132	0	51,763	102,895	38	0	37	75	845,913	0	856,358	1,702,271
26th	24	0	24	48	51,092	0	51,056	102,148	34	0	28	62	853,901	0	853,295	1,707,197
27th	24	0	23	47	45,567	0	42,396	87,964	37	0	42	79	790,755	0	735,728	1,526,483
28th	24	0	0	24	45,361	0	0	45,361	65	0	0	65	793,697	0	0	793,697
29th	21	0	10	31	46,389	0	22,501	68,890	39	0	17	56	800,953	0	388,497	1,189,451
30th	24	0	24	48	50,084	0	50,113	100,197	35	0	28	63	851,019	0	851,522	1,702,540
Totals	670	0	614	1,284	1,366,876	0	1,264,423	2,631,298	1,123	0	896	2,019	23,201,665	0	21,383,722	44,585,387
	Sum of Engines		1,284		Sum of Engines		2,631,298		Sum of Engines		2,019		Sum of Engines		44,585,387	



April - 2019

Daily Data for Air Permit

SD1 Flare Burners, Turbine, and Boiler

Date	Flares A-190,191,192,193		Flares A-194,195			Turbine			Boiler		Run Time Check	
	Run Time Hrs	Gas cu ft	Run Time Hrs	Gas cu ft	Peak 1-hr Flow, SCFM	Run Time Hrs	Power KWh	Gas cu ft	Run Time Hrs	Gas cu ft	Engine Hrs	Eng + Boiler Hrs
1st	15	295,377	0	0	0	24	99,453	1,539,384	0	0	46	46
2nd	13	271,912	0	0	0	24	99,230	1,548,390	0	0	48	48
3rd	11	229,709	0	0	0	24	96,789	1,532,990	0	0	48	48
4th	11	178,500	0	0	0	24	88,082	1,425,995	0	0	36	36
5th	21	440,493	0	0	0	24	97,566	1,498,244	0	0	48	48
6th	20	439,223	0	0	0	24	96,516	1,518,580	0	0	49	49
7th	0	0	0	0	0	24	88,902	1,435,209	0	0	47	47
8th	17	558,484	0	0	0	24	97,544	1,578,081	0	0	32	32
9th	18	463,592	0	0	0	24	99,040	1,548,337	0	0	48	48
10th	19	1,026,700	0	0	0	24	100,622	1,565,235	0	0	48	48
11th	24	997,753	0	0	0	24	100,632	1,555,246	0.2	1,191	48	48
12th	14	225,488	0	0	0	24	93,110	1,512,632	0	0	48	48
13th	0.9	6,101	0	0	0	24	81,858	1,355,936	0	0	48	48
14th	6.1	41,212	0	0	0	24	98,460	1,581,126	11	163,721	17	28
15th	11	163,545	0	0	0	24	97,998	1,556,140	8.9	131,226	28	37
16th	12	205,880	0	0	0	24	96,229	1,517,616	0	0	48	48
17th	18	434,387	0	0	0	19	76,911	1,213,112	5.5	70,048	48	53
18th	14	171,274	0	0	0	12	46,400	742,135	4.6	45,542	48	53
19th	19	445,258	0	0	0	24	98,650	1,524,593	0	0	48	48
20th	1.0	6,660	0	0	0	24	90,588	1,443,793	0	0	48	48
21st	0.3	3,111	0	0	0	24	88,945	1,419,816	3.4	50,003	40	43
22nd	21	564,703	0	0	0	17	69,701	1,122,370	15	203,293	29	44
23rd	22	1,128,779	0	0	0	19	74,405	1,200,600	5.6	69,557	48	54
24th	24	1,946,895	0	0	0	0	0	0	18	209,117	42	60
25th	20	1,441,601	0	0	0	10	40,673	649,846	14	163,384	48	62
26th	24	692,246	0	0	0	24	99,605	1,559,919	0	0	48	48
27th	8.3	79,433	0	0	0	24	94,929	1,509,676	0	0	47	47
28th	18	403,860	0	0	0	24	97,237	1,577,809	14	208,855	24	38
29th	7.3	194,864	0	0	0	24	94,682	1,517,667	13	179,077	31	44
30th	6.9	144,841	0	0	0	24	96,299	1,514,389	0	0	48	48
Totals	414	13,201,880	0	0		653	2,601,056	41,264,866	113	1,495,014	1,284	1,397
					Maximum	0	Minimum				Maximum	62



May - 2019

Daily Data for Air Permit

Elmer E. Ross Power Station

Date	Run Time, Hours				KiloWatt Hours Generated				Fuel Oil Used, gal				Gas, Roots Meter, cu ft			
	Eng 1	Eng 2	Eng 3	Total	Gen. 1	Gen 2	Gen 3	Total	Eng. 1	Eng. 2	Eng. 3	Total	Eng. 1	Eng. 2	Eng. 3	Total
1st	24	0	0	24	48,827	0	49,076	97,903	39	0	37	75	835,719	0	839,974	1,675,693
2nd	24	0	24	48	48,091	0	49,528	97,619	31	0	32	64	803,496	0	827,502	1,630,998
3rd	24	0	24	48	49,202	0	50,986	100,188	42	0	29	72	809,432	0	838,779	1,648,211
4th	24	0	24	48	44,083	0	45,092	89,175	36	0	33	70	763,176	0	780,634	1,543,810
5th	8.0	0	24	32	11,282	0	34,192	45,474	44	0	26	70	200,061	0	606,299	806,360
6th	11	0	21	32	25,581	0	0	25,581	28	0	0	28	451,381	0	0	451,381
7th	25	0	14	39	49,768	0	29,575	79,342	37	0	34	71	866,091	0	514,677	1,380,768
8th	24	0	24	48	51,036	0	51,557	102,593	19	0	30	50	853,614	0	862,323	1,715,938
9th	24	0	24	48	49,634	0	49,767	99,401	37	0	34	71	845,134	0	847,407	1,692,542
10th	24	0	24	48	46,227	0	47,294	93,521	39	0	34	73	789,903	0	808,130	1,598,034
11th	24	0	24	48	50,607	0	51,059	101,666	36	0	27	63	844,962	0	852,509	1,697,470
12th	24	0	18	42	42,375	0	32,085	74,460	45	0	45	90	733,994	0	555,762	1,289,756
13th	17	0	8	25	36,826	0	17,661	54,487	23	0	11	34	634,769	0	304,424	939,193
14th	24	0	24	48	48,816	0	47,933	96,749	32	0	38	71	843,320	0	828,071	1,671,391
15th	24	0	24	48	50,901	0	50,264	101,164	39	0	32	71	861,054	0	850,278	1,711,331
16th	24	0	24	48	50,966	0	51,375	102,342	35	0	29	63	846,892	0	853,690	1,700,582
17th	24	0	24	48	50,976	0	51,637	102,612	39	0	55	94	842,299	0	853,223	1,695,522
18th	24	0	24	48	50,412	0	50,174	100,587	17	0	28	45	848,346	0	844,341	1,692,687
19th	24	0	14	38	40,669	0	23,808	64,477	40	0	42	82	730,076	0	427,390	1,157,466
20th	13	0	12	25	23,241	0	24,750	47,991	33	0	24	56	402,137	0	428,254	830,391
21st	24	0	24	48	47,799	0	47,662	95,461	38	0	27	65	820,419	0	818,068	1,638,486
22nd	24	0	24	48	50,997	0	50,221	101,218	36	0	36	72	858,900	0	845,823	1,704,723
23rd	24	0	24	48	50,918	0	51,039	101,957	36	0	25	61	847,756	0	849,771	1,697,527
24th	24	0	24	48	50,968	0	51,456	102,424	35	0	36	71	843,351	0	851,427	1,694,778
25th	24	0	24	48	48,505	0	48,299	96,804	38	0	32	70	825,747	0	822,232	1,647,979
26th	24	0	2.0	26	48,410	0	1,256	49,665	37	0	4	41	856,505	0	22,214	878,719
27th	24	0	12	36	44,977	0	22,086	67,063	32	0	18	50	807,720	0	396,626	1,204,346
28th	24	0	24	48	51,039	0	48,507	99,546	42	0	32	74	880,466	0	836,785	1,717,251
29th	24	0	24	48	50,996	0	50,458	101,454	38	0	28	65	855,142	0	846,112	1,701,254
30th	24	0	24	48	51,023	0	51,830	102,853	39	0	37	76	839,054	0	852,334	1,691,388
31st	24	0	24	48	51,101	0	52,091	103,191	40	0	30	70	836,748	0	852,961	1,689,709
Totals	698	0	629	1,327	1,416,253	0	1,282,717	2,698,970	1,102	0	927	2,029	24,077,664	0	21,718,022	45,795,686
	Sum of Engines		1,327		Sum of Engines		2,698,970		Sum of Engines		2,029		Sum of Engines		45,795,686	



May - 2019

Daily Data for Air Permit

SD1 Flare Burners, Turbine, and Boiler

Date	Flares A-190,191,192,193		Flares A-194,195			Turbine			Boiler		Run Time Check	
	Run Time Hrs	Gas cu ft	Run Time Hrs	Gas cu ft	Peak 1-hr Flow, SCFM	Run Time Hrs	Power KWh	Gas cu ft	Run Time Hrs	Gas cu ft	Engine Hrs	Eng + Boiler Hrs
1st	15	771,487	0	0	0	19	75,297	1,195,760	5.7	63,151	24	30
2nd	21	860,004	0	0	0	14	56,636	900,952	7.2	96,305	48	55
3rd	17	390,969	0	0	0	24	95,391	1,486,338	0	0	48	48
4th	5.2	76,860	0	0	0	24	88,392	1,418,831	0	0	48	48
5th	4.1	24,023	0	0	0	24	89,174	1,470,170	14	181,806	32	46
6th	13	206,986	0	0	0	24	98,484	1,618,507	24	283,217	32	56
7th	12	119,124	0	0	0	24	98,302	1,582,822	9.5	111,526	39	48
8th	23	787,736	0	0	0	24	99,561	1,571,295	0	0	48	48
9th	10	590,532	0	0	0	19	72,286	1,150,292	5.7	74,289	48	54
10th	19	958,903	0	0	0	13	51,460	825,163	7.1	85,247	48	55
11th	18	892,757	0	0	0	24	98,106	1,530,188	0	0	48	48
12th	0.8	10,764	0	0	0	24	88,233	1,432,264	1.5	24,331	42	43
13th	14	322,598	0	0	0	24	99,043	1,575,106	15	266,490	25	40
14th	10	107,252	0	0	0	24	94,416	1,501,197	0	0	48	48
15th	21	655,161	0	0	0	24	96,671	1,523,281	1.2	19,949	48	49
16th	24	1,293,362	0	0	0	24	99,880	1,555,925	0	0	48	48
17th	24	1,092,097	0	0	0	24	101,073	1,566,260	0	0	48	48
18th	20	928,502	0	0	0	24	100,156	1,570,936	0	0	48	48
19th	3.5	48,048	0	0	0	24	91,613	1,459,565	0.7	8,670	38	39
20th	4.9	90,021	0	0	0	24	96,224	1,523,556	12	220,639	25	37
21st	0.2	2,719	0	0	0	24	93,806	1,471,023	0	0	48	48
22nd	18	591,574	0	0	0	24	97,621	1,549,713	0	0	48	48
23rd	24	1,082,857	0	0	0	24	97,086	1,528,163	0	0	48	48
24th	22	593,805	0	0	0	24	98,374	1,539,208	0	0	48	48
25th	17	462,809	0	0	0	24	93,556	1,488,195	0	0	48	48
26th	10	163,154	0	0	0	24	98,660	1,559,708	0	0	26	26
27th	4.6	38,886	0	0	0	22	83,878	1,370,783	1.7	19,893	36	38
28th	24	1,076,249	0	0	0	0	0	0	24	270,712	48	72
29th	24	1,896,207	0	0	0	0	0	0	24	246,494	48	72
30th	24	1,937,630	0	0	0	11	44,457	713,148	12	126,331	48	60
31st	21	748,498	0	0	0	24	97,905	1,533,493	0	0	48	48
Totals	468	18,821,572	0	0		650	2,595,739	41,211,842	165	2,099,049	1,327	1,492

Maximum 0

Minimum

Maximum 72



June - 2019

Daily Data for Air Permit

Elmer E. Ross Power Station

Date	Run Time, Hours				KiloWatt Hours Generated				Fuel Oil Used, gal				Gas, Roots Meter, cu ft			
	Eng 1	Eng 2	Eng 3	Total	Gen. 1	Gen 2	Gen 3	Total	Eng. 1	Eng. 2	Eng. 3	Total	Eng. 1	Eng. 2	Eng. 3	Total
1st	24	0	24	48	48,297	0	48,499	96,796	34	0	27	61	819,877	0	823,310	1,643,187
2nd	6.0	0	24	30	7,656	0	46,810	54,466	9	0	56	65	132,423	0	809,603	942,026
3rd	10	0	24	34	21,529	0	47,755	69,284	22	0	25	48	370,753	0	822,394	1,193,147
4th	24	0	24	48	49,512	0	49,400	98,913	33	0	33	66	839,908	0	838,013	1,677,921
5th	25	0	24	49	51,154	0	50,110	101,263	38	0	29	68	863,951	0	846,317	1,710,268
6th	24	0	25	49	50,863	0	49,771	100,634	33	0	22	56	863,506	0	844,957	1,708,463
7th	24	0	24	48	51,083	0	50,696	101,780	37	0	33	70	863,068	0	856,531	1,719,599
8th	24	0	23	47	43,737	0	48,085	91,822	51	0	25	76	749,073	0	823,542	1,572,614
9th	13	0	25	38	21,144	0	45,210	66,354	28	0	33	61	381,918	0	816,607	1,198,525
10th	20	0	24	44	40,362	0	47,551	87,913	38	0	30	68	720,127	0	848,396	1,568,523
11th	22	0	23	45	48,582	0	49,119	97,702	44	0	22	66	842,065	0	851,371	1,693,436
12th	24	0	24	48	51,036	0	51,114	102,151	37	0	35	72	859,432	0	860,740	1,720,171
13th	24	0	24	48	50,977	0	51,092	102,069	36	0	30	66	857,255	0	859,195	1,716,450
14th	22	0	21	43	44,861	0	43,885	88,747	45	0	42	87	748,168	0	731,887	1,480,055
15th	24	0	24	48	50,288	0	50,841	101,129	39	0	25	64	825,239	0	834,304	1,659,543
16th	22	0	10	32	38,415	0	16,492	54,907	30	0	20	50	672,657	0	288,776	961,433
17th	18	0	10	28	38,307	0	20,817	59,123	37	0	21	58	670,641	0	364,440	1,035,081
18th	24	0	24	48	50,994	0	48,876	99,870	35	0	30	66	869,808	0	833,688	1,703,496
19th	24	0	24	48	51,009	0	49,485	100,494	35	0	29	64	861,654	0	835,918	1,697,572
20th	24	0	24	48	50,992	0	50,618	101,610	36	0	33	69	845,758	0	839,554	1,685,312
21st	24	0	24	48	51,037	0	51,624	102,661	34	0	25	58	832,511	0	842,085	1,674,596
22nd	24	0	24	48	43,214	0	44,310	87,523	39	0	35	74	742,282	0	761,102	1,503,385
23rd	24	0	3.0	27	41,193	0	2,376	43,569	55	0	5	60	755,962	0	43,605	799,567
24th	24	0	10	34	46,419	0	23,954	70,373	43	0	15	58	810,565	0	418,286	1,228,850
25th	24	0	24	48	51,078	0	50,393	101,471	33	0	33	66	849,210	0	837,833	1,687,043
26th	24	0	24	48	51,066	0	51,667	102,733	37	0	30	67	832,371	0	842,169	1,674,540
27th	24	0	24	48	50,980	0	51,277	102,257	35	0	25	60	838,706	0	843,593	1,682,300
28th	24	0	25	49	51,033	0	50,695	101,727	34	0	38	71	845,998	0	840,395	1,686,393
29th	24	0	24	48	49,489	0	50,004	99,493	37	0	29	66	820,276	0	828,808	1,649,084
30th	22	0	10	32	37,714	0	15,489	53,203	32	0	25	56	665,706	0	273,403	939,109
Totals	660	0	641	1,301	1,334,022	0	1,308,015	2,642,036	1,078	0	858	1,936	22,650,869	0	22,160,818	44,811,687
	Sum of Engines		1,301		Sum of Engines		2,642,036		Sum of Engines		1,936		Sum of Engines		44,811,687	



June - 2019

Daily Data for Air Permit
SD1 Flare Burners, Turbine, and Boiler

Date	Flares A-190,191,192,193		Flares A-194,195			Turbine			Boiler		Run Time Check	
	Run Time Hrs	Gas cu ft	Run Time Hrs	Gas cu ft	Peak 1-hr Flow, SCFM	Run Time Hrs	Power KWh	Gas cu ft	Run Time Hrs	Gas cu ft	Engine Hrs	Eng + Boiler Hrs
1st	8.2	62,172	0	0	0	24	93,776	1,500,270	0	0	48	48
2nd	3.6	19,557	0	0	0	24	92,862	1,534,961	0	0	30	30
3rd	1.4	13,942	0	0	0	24	93,114	1,537,023	0	0	34	34
4th	14	291,390	0	0	0	24	95,254	1,528,986	0	0	48	48
5th	15	173,003	0	0	0	24	94,825	1,539,335	0	0	49	49
6th	24	1,178,362	0	0	0	24	97,063	1,564,406	0	0	49	49
7th	20	741,572	0	0	0	22	86,871	1,369,539	2.1	25,410	48	50
8th	13	318,076	0	0	0	24	88,924	1,468,251	0	0	47	47
9th	12	541,316	0	0	0	15	51,241	862,046	9.2	115,493	38	47
10th	21	357,691	0	0	0	19	70,141	1,231,755	4.8	46,132	44	49
11th	17	635,722	0	0	0	24	89,565	1,509,459	0	0	45	45
12th	24	942,344	0	0	0	24	93,161	1,517,707	0	0	48	48
13th	10	236,946	0	0	0	24	94,483	1,525,507	0	0	48	48
14th	17	667,335	0	0	0	24	96,497	1,543,879	1.4	21,744	43	44
15th	19	670,642	0	0	0	24	96,135	1,503,839	0	0	48	48
16th	7.2	36,350	0	0	0	24	88,199	1,424,051	15	186,207	32	47
17th	23	250,883	0	0	0	24	97,741	1,605,803	5.6	74,810	28	34
18th	15	195,546	0	0	0	24	98,187	1,586,984	0	0	48	48
19th	14	218,089	0	0	0	24	97,882	1,570,323	0	0	48	48
20th	24	1,642,643	0	0	0	24	97,127	1,549,923	0	0	48	48
21st	23	904,379	0	0	0	24	96,951	1,520,245	0	0	48	48
22nd	5.1	31,759	0	0	0	24	89,055	1,415,258	0	0	48	48
23rd	4.9	24,255	0	0	0	24	82,738	1,369,160	0	0	27	27
24th	6.2	43,347	0	0	0	24	91,707	1,473,678	0	0	34	34
25th	21	536,698	0	0	0	24	94,603	1,513,726	0	0	48	48
26th	24	656,242	0	0	0	24	97,327	1,518,821	0	0	48	48
27th	24	1,037,425	0	0	0	24	97,078	1,520,749	0	0	48	48
28th	24	1,063,131	0	0	0	24	95,949	1,528,036	0	0	49	49
29th	17	283,603	0	0	0	24	93,462	1,486,852	0	0	48	48
30th	1.5	8,526	0	0	0	24	88,819	1,441,190	0	0	32	32
Totals	455	13,782,947	0	0		704	2,740,735	44,261,762	38	469,796	1,301	1,339
			Maximum	0	Minimum						Maximum	50

Attachment 2 - Combustion Device Summaries

EBMUD Main Wastewater Plant

January 1 - June 30, 2019

Engine Thermal Throughput - Thermal Mass Meter, Common Engine Digester Gas Line

Turbine Operation				Data Source	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Semi-annual Totals	Limits
Run Time	Total	hrs	metered		321	114	736	653	650	704	3,178	
Digester Gas	Total	cu ft	metered		21,700,534	7,582,682	48,959,276	41,264,866	41,211,842	44,261,762	204,980,961	
Thermal Throughput ³	Total	MMBTU			13,831	4,893	32,094	27,050	25,878	27,337	131,084	389,820 MMBTU HHV per 12-Month period
	Total	MMBTU/hr			43.1	43.0	43.6	41.4	39.8	38.9	x	
Nitrogen Oxide ⁴	Max	ppm	sampled		-	6.3	5.4	7.8	3.7	3.8	x	23 ppm at any time
Carbon Monoxide ⁴	Max	ppm	sampled		-	3.7	4.9	4.5	0.3	0.9	x	100
Sulfur Dioxide ⁴	Max	ppm	sampled		-	2.8	4.7	3.7	2.0	0.1	x	150
Nitrogen Oxide	Total	lbs	calc'd		Based on last annual source test mass load rate (0.61 lbs/hr) x run time (4,041+3,178hrs)-->						4,404	34,400 lbs per 12-Month period
Carbon Monoxide	Total	lbs	calc'd		Based on last annual source test mass flow rate (0.2 lbs/hr) x run time (4,041+3,178hrs)-->						1,444	92,200
Engine Operation												
Run Time	Eng #1	hrs	metered		0.5	-	87	670	698	660	2,116	
	Eng #2	hrs	metered		-	-	-	-	-	-	-	
	Eng #3	hrs	metered		0.5	-	98	614	629	641	1,983	
	Total	hrs	sum		1	-	185	1,284	1,327	1,301	4,098	25,316 hr/365 days
Diesel Fuel ¹	Eng #1	gal	calc'd		13	-	176	1,123	1,102	1,078	3,492	
	Eng #2	gal	calc'd		-	-	-	-	-	-	-	
	Eng #3	gal	calc'd		18	-	128	896	927	858	2,827	
	Total	gal	sum		31	-	304	2,019	2,029	1,936	6,319	150,000 gal/365 days
Digester Gas ²	Eng #1	cu ft	metered		-	-	2,897,575	23,201,665	24,077,664	22,650,869	72,827,774	
	Eng #2	cu ft	metered		-	-	-	-	-	-	-	
	Eng #3	cu ft	metered		-	-	3,459,510	21,383,722	21,718,022	22,160,818	68,722,072	
	Total	cu ft	sum		-	-	6,357,085	44,585,387	45,795,686	44,811,687	141,549,845	
Thermal Throughput ³	Eng #1	MMBTU/hr			3.7	-	22.1	22.9	21.9	21.4	x	25 MMBTU/hr
	Eng #2	MMBTU/hr			-	-	-	-	-	-	x	25 MMBTU/hr
	Eng #3	MMBTU/hr			4.9	-	23.3	23.0	21.9	21.5	x	25 MMBTU/hr
Natural Gas	Total	cu ft	metered		-	-	-	-	-	-	-	
Boiler Operation												
Run Time	Boiler	hrs	metered		735	664	642	113	165	38	2,357	
Digester Gas	Boiler	cu ft	metered		17,643,804	19,051,136	12,131,961	1,495,014	2,099,049	469,796	52,890,761	
Thermal Thruput ³	Boiler	MMBTU/hr			15.3	18.5	12.4	8.7	8.0	7.7	x	20.41 MMBTU/hr
Flare Operation (A-190,191,192,193)												
Run Time	Flares	hrs	metered		731	616	685	414	468	455	3,369	
Digester Gas	Flares	cu ft	metered		55,968,120	54,107,011	41,151,860	13,201,880	18,821,572	13,782,947	197,033,390	
Thermal Thruput ³	Flares	MMBTU/hr			48.8	56.7	39.4	20.9	25.3	18.7	x	
Flare Operation (A-194,195)												
Run Time	Flares	hrs	metered		-	-	-	-	-	-	-	
Digester Gas	Flares	cu ft	metered		-	-	-	-	-	-	-	
Thermal Thruput ³	Flares	MMBTU/hr			-	-	-	-	-	-	x	
Max Total Flow	Flares	scfm	metered		-	-	-	-	-	-	x	3,000 scfm
Digester Gas HHV	Grab	BTU/scf	sampled		637	645	656	656	628	618	x	

(1) Diesel use per engine (gal) = diesel withdrawn from common storage tank daily (gal) x ratio of fuel used per engine (single day tank level / sum of all day tanks)

(2) Digester gas usage (cf) = DCS/PI flow data from common engine line meter (scfm) x minutes of gas flow x (engine hours/sum of engine hours)

(3) Thermal Throughput calculations use High Heat Value of the monthly Digester Gas Sample combined with Diesel High Heat Value of 138,690 BTU/gal or Natural Gas HHV of 1020 BTU/scf as applicable.

(4) Monthly turbine exhaust check - ppm corrected to 15% O2

ATTACHMENT 3

ANNUAL SOURCE TEST RESULTS

- Engine #1 (S-37), 4/11/19 by Blue Sky Environmental
- Engine #1 (S-57), 6/11/19 by BAAQMD

TABLE #1

**EBMUD
Engine #1 (S-37)
2,313 kW**

RUN	1	2	3	AVERAGE	LIMITS
Test Date	4/11/19	4/11/19	4/11/19		
Test Time	0830-0900	0916-0946	1017-1047		
Standard Temp., °F	70	70	70		
Generator kW	2,245	2,107	2,239	2,197	
Engine kW	2,363	2,218	2,357	2,313	
Engine BHp	3,167	2,972	3,158	3,099	
Fuel Flow Rate, DSCFM (nat gas)	0.0	0.0	0.0	0.0	
Fuel Flow Rate, DSCFM (dig gas)	611.2	573.3	568.1	584.2	
WOBBE Btu/cf	656	658	656	657	
Gas Fd-Factor @ 68°F, DSCFM	9,140	9,136	9,140	9,139	
Flow Rate, DSCFM (Method 19)	9,835	9,181	9,101	9,372	
Oxygen, O ₂ , %	13.1	13.0	13.0	13.0	
Carbon Dioxide, CO ₂ , %	5.7	5.7	5.8	5.7	
NO _x , ppm	34.2	32.5	34.1	33.6	
NO_x, ppm @ 15% O₂	25.8	24.4	25.5	25.2	70
NO _x , lbs/hr (M19)	2.40	2.13	2.21	2.25	
NO _x , lbs/day	57.66	51.18	53.10	53.98	
NO _x , g/Bhp-hr	0.34	0.33	0.32	0.3	
CO, ppm	332.3	338.9	338.1	336.4	
CO, ppm @ 15% O₂	250.6	253.8	253.1	252.5	2000
CO, lbs/hr (M19)	14.20	13.52	13.37	13.69	
CO, lbs/day	340.73	324.44	320.79	328.7	
CO, g/Bhp-hr	2.03	2.06	1.92	2.01	

WHERE,

ppm = Parts Per Million Concentration
 Lbs/hr = Pound Per Hour Emission Rate
 Tstd. = Standard Temp. (°R = °F+460)
 MW = Molecular Weight
 DSCFM = Dry Standard Cubic Feet Per Minute
 NO_x = Oxides of Nitrogen as NO₂ (MW = 46)
 CO = Carbon Monoxide (MW = 28)

CALCULATIONS,

PPM @ 15% O₂ = ppm * 5.9 / (20.9 - %O₂)
 PPM @ 3% O₂ = ppm * 17.9 / (20.9 - %O₂)
 Lbs/hr = ppm x 8.223 E-05 x DSCFM x MW / Tstd. °R
 Lbs/day = Lbs/hr * 24
 g/Bhp-hr = Lbs/hr * 453.6 / BHp
 Engine Bhp = Engine kW * 1.34
 Engine kW = Generator kW / 0.95

Distribution: Firm Permit Services Requester	BAY AREA AIR QUALITY MANAGEMENT DISTRICT 375 Beale Street, Suite 600 San Francisco, California 94105 (415) 771-6000	Report No. <u>19150</u> Test Date: <u>06/11/19</u>
	SUMMARY OF SOURCE TEST RESULTS	Test Times: Run A: <u>1013 – 1043</u> Run B: <u>1057 – 1127</u> Run C: <u>1141 – 1211</u>

Source Information		BAAQMD
Firm Name and Address: East Bay Municipal Utility District 2020 Wake Avenue Oakland, CA 94607	Firm Representative and Title: Maura Bonnarens Wastewater Treatment Division Manager Phone No. (510) 287-1023	Source Test Team: B. Kino G. Bradbury
Permit Conditions: NO _x < 70 ppmv at 15% O ₂ CO < 2,000 ppmv at 15% O ₂ TRS in Fuel < 200 ppmv Heat Input < 25 MM btu/hr	Sources: Multi-Fuel Cogeneration Engine # 1 (S-37) Site No. A0591 Permit Con. # 20651/18860 Operates 24 hr/day & 365 day/year	Permit Services / Enforcement A. Borja Test Requested by: J. Bovee, (CDS, Title V)

Operating Parameters: The engine's average output was 2,093 KW. The engine consumed an estimated average of 615 SCFM of digester gas fuel, with an average heating value of 516 BTU/SCF.

Applicable Regulations: 2-6-307, 9-1-302 & 9-8-302	Further Evaluation Recommended: NO
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Source Test Results and Comments:

METHOD	PARAMETER	OUTLET RESULTS	BAAQMD LIMITS Regulation / Permit
ST-17	Volumetric Flowrate, SDCFM	6,773	
	Estimated Heat Input, mmbtu/hr	19	None / 25
ST-14	Oxygen, dry volume %	11.9	
ST- 5	Carbon Dioxide, dry volume %	7.1	
	Carbon Dioxide, lb/hr	3,263	
ST- 6	Carbon Monoxide, dry ppmv	311	
	Carbon Monoxide, dry ppmv Corrected to 15% Oxygen	206	2,000 / 2,000
	Carbon Monoxide, lb/hr	9.1	
	Carbon Monoxide, g/hp-hr	1.5	
ST- 7	Methane, dry ppmv	2,269	
	Methane, lb/hr	38.1	
	Non-methane Organic Compounds (NMOC), dry ppmv (as C ₁)	<25	
	Non-methane Organic Compounds, lb/hr	<0.4	
	Non-methane Organic Compounds, g/hp-hr	<0.07	
ST-13A	Oxides of Nitrogen (NO _x), dry ppmv	32.2	
	Oxides of Nitrogen, dry ppmv Corrected to 15% Oxygen	21.3	70 / 70
	Oxides of Nitrogen, lb/hr	1.56	
	Oxides of Nitrogen, g/hp-hr	0.25	
	Nitric Oxide, dry ppmv	14.7	
	Nitrogen Dioxide, dry ppmv	17.5	
ST-19A	Sulfur Dioxide, dry ppmv	8	300 / None
	Sulfur Dioxide, lb/hr	0.53	
	Total Reduced Sulfur (TRS) in Fuel, Estimated ppmv	87	None / 200

Note: A "<" indicates values that are less than the method detection limit.

NO COMMERCIAL USE OF THESE RESULTS IS AUTHORIZED

Air Quality Engineer <i>B. Kino</i> B. Kino	Date 6/24/19	Supervising Air Quality Engineer <i>E. Ko</i> E. Ko	Date 6/24/19	Air Quality Engineering Manager <i>J. Bovee</i> J. Bovee	Date 7/1/19
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Attachment 4
Gasoline Facility Throughput (S-48)

SD-1 GASOLINE DISPENSING FACILITY
Maintenance Center (4,000 Gal)
As of June 30, 2019

MONTH	GALLONS RECEIVED	RECEIVED YR-TO-DATE	GALLONS ISSUED	ISSUED YR-TO-DATE	COMMENTS
JAN 19	2450	2450	2025	2025	
FEB 19	984	3434	1756	3781	
MAR 19	3450	6884	2453	6234	
APR 19	2460	9344	2495	8729	
MAY 19	2180	11524	2327	11056	
JUN 19	1200	12724	2375	13431	Use issued for air permit throughput
JUL 19					
AUG 19					
SEP 19					
OCT 19					
NOV 19					
DEC 19					
Total					

ATTACHMENT 5

Hours of Operation for Stand-by Emergency Generators

January 1, 2019 – June 30, 2019

Source	Location	Hours Meter Begin	Hours Meter End	Emergency Use Hours	Reliability-related Hours	Limit on reliability-related Hours
S-50	North of PGS	138.0	138.1	0	0.1	30
S-51	Dechlorination	706.0	709.3	0	3.3	50
S-53	West of Admin Bldg	105.9	105.9	0	0	30
S-54	East Bayshore RWP	36	36	0	0	50
S-58	North of Maintenance	17.0	17.0	0	0	50

July 1, 2018 – December 31, 2018

Source	Location	Hours Meter Begin	Hours Meter End	Emergency Use Hours	Reliability-related Hours	Limit on reliability-related Hours
S-50	North of PGS	138.0	138.0	0	0	30
S-51	Dechlorination	700.9	706.0	0	5.1	50
S-53	West of Admin Bldg	105.9	105.9	0	0	30
S-54	East Bayshore RWP	36	36	0	0	50
S-58	North of Maintenance	17.0	17.0	0	0	50

July 1, 2018 – June 30, 2019 (last 12 months total)

Source	Location	Hours Meter Begin	Hours Meter End	Emergency Use Hours	Reliability-related Hours	Limit on reliability-related Hours
S-50	North of PGS	138.0	138.1	0	0.1	30
S-51	Dechlorination	700.9	709.3	0	8.4	50
S-53	West of Admin Bldg	105.9	105.9	0	0	30
S-54	East Bayshore RWP	36	36	0	0	50
S-58	North of Maintenance	17.0	17.0	0	0	50

ATTACHMENT 6

**TURBINE MONTHLY TEST
RESULTS**

TABLE # 1

**EBMUD-FEBRUARY
DG TURBINE #1 (S-56)
4294 kW**

RUN	1	LIMITS
Test Date	2/28/19	
Test Time	1205-1220	
Turbine kW	4,294	
Fuel Flow Rate, DSCFM	1,106	
Oxygen, O ₂ , %	16.3	
NO _x , ppm	4.9	
NO_x, ppm @ 15% O₂	6.3	23
CO, ppm	2.9	
CO, ppm @ 15% O₂	3.7	100
SO ₂ , ppm	2.2	
SO₂, ppm @ 15% O₂	2.8	150

WHERE,

ppm = Parts Per Million Concentration
 NO_x = Oxides of Nitrogen as NO₂ (MW = 46)
 CO = Carbon Monoxide (MW = 28)
 SO₂ = Sulfur Dioxide (MW= 64)

CALCULATIONS,

PPM @ 15% O₂ = ppm * 5.9 / (20.9 - %O₂)

TABLE # 1

**EBMUD-MARCH
DG TURBINE #1 (S-56)
4249 kW**

RUN	1	LIMITS
Test Date	3/29/19	
Test Time	1215-1230	
Turbine kW	4,249	
Fuel Flow Rate, DSCFM	1,099	
Oxygen, O ₂ , %	16.4	
NO _x , ppm	4.1	
NO_x, ppm @ 15% O₂	5.4	23
CO, ppm	3.7	
CO, ppm @ 15% O₂	4.9	100
SO ₂ , ppm	3.6	
SO₂, ppm @ 15% O₂	4.7	150

WHERE,

ppm = Parts Per Million Concentration
 NO_x = Oxides of Nitrogen as NO₂ (MW = 46)
 CO = Carbon Monoxide (MW = 28)
 SO₂ = Sulfur Dioxide (MW= 64)

CALCULATIONS,

PPM @ 15% O₂ = ppm * 5.9 / (20.9 - %O₂)

TABLE # 1

**EBMUD-APRIL
DG TURBINE #1 (S-56)
4115 kW**

RUN	1	LIMITS
Test Date	4/26/19	
Test Time	1210-1225	
Turbine kW	4,115	
Fuel Flow Rate, DSCFM	1,078	
Oxygen, O ₂ , %	16.6	
NO _x , ppm	5.7	
NO_x, ppm @ 15% O₂	7.8	23
CO, ppm	3.3	
CO, ppm @ 15% O₂	4.5	100
SO ₂ , ppm	2.7	
SO₂, ppm @ 15% O₂	3.7	150

WHERE,

ppm = Parts Per Million Concentration
 NO_x = Oxides of Nitrogen as NO₂ (MW = 46)
 CO = Carbon Monoxide (MW = 28)
 SO₂ = Sulfur Dioxide (MW= 64)

CALCULATIONS,

PPM @ 15% O₂ = ppm * 5.9 / (20.9 - %O₂)

TABLE # 1

**EBMUD-MAY 2019
DG TURBINE #1 (S-56)
4098 kW**

RUN	1	LIMITS
Test Date	5/24/19	
Test Time	1306-1321	
PGS-2 Turbine kW	4098 kW	
PGS-2 Fuel Flow Rate, DSCFM	1,064	
Oxygen, O ₂ , %	16.5	
NO _x , ppm	2.8	
NO_x, ppm @ 15% O₂	3.7	23
CO, ppm	0.2	
CO, ppm @ 15% O₂	0.3	100
SO ₂ , ppm	1.5	
SO₂, ppm @ 15% O₂	2.0	150

WHERE,

ppm = Parts Per Million Concentration
 NO_x = Oxides of Nitrogen as NO₂ (MW = 46)
 CO = Carbon Monoxide (MW = 28)
 SO₂ = Sulfur Dioxide (MW= 64)

CALCULATIONS,

PPM @ 15% O₂ = ppm * 5.9 / (20.9 - %O₂)

TABLE # 1

**EBMUD-JUN 2019
DG TURBINE #1 (S-56)
4110 kW**

RUN	1	LIMITS
Test Date	6/18/19	
Test Time	0800-0816	
PGS-2 Turbine kW	4110 kW	
PGS-2 Fuel Flow Rate, DSCFM	1,064	
Oxygen, O ₂ , %	16.6	
NO _x , ppm	2.8	
NO_x, ppm @ 15% O₂	3.8	23
CO, ppm	0.6	
CO, ppm @ 15% O₂	0.9	100
SO ₂ , ppm	0.1	
SO₂, ppm @ 15% O₂	0.1	150

WHERE,

ppm = Parts Per Million Concentration
 NO_x = Oxides of Nitrogen as NO₂ (MW = 46)
 CO = Carbon Monoxide (MW = 28)
 SO₂ = Sulfur Dioxide (MW= 64)

CALCULATIONS,

PPM @ 15% O₂ = ppm * 5.9 / (20.9 - %O₂)

ATTACHMENT 7

MAIN WASTEWATER TREATMENT PLANT FLOWS

East Bay Municipal Utility District

MONTHLY WASTEWATER MONITORING SUMMARY JUNE 2019

STATION: WWTP INFLUENT - INF-001
 STATION: WWTP EFFLUENT - EFF-001
 FLOWS & CONVENTIONAL POLLUTANTS (R2-2015-0018)

INFLUENT (MGD)				EFFLUENT (MGD)				CBOD					TSS					Oil and Grease					
3-mo				3-mo				Inf	Eff		# excs/ # of	%	Inf	Eff	Eff	# excs/ # of	%	Eff	Eff				
Max	Min	Dry	Season	Max	Min	Dry	Season	(INF-001)	mg/L	Max	Analyses	Removal	mg/L	mg/L	Max	Analyses	Removal	mg/L	mg/L				
Mo.	Daily	Daily	Avg	Mo.	Daily	Daily	Avg	Month	Month	Week	Mo.	Week	Month	Month	Week	Mo.	Week	Month	Month	Daily			
Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Max		
Limits:				120				25	40			Min 85		30	45			Min 85	10	20			
Jan	74	180	50		68	164	42	296	6	11	0/1	0/4	98%	443	8	12	0/1	0/4	98%				
Feb	102	224	61		97	221	57	218	9	15	0/1	0/4	96%	325	11	18	0/1	0/4	97%	< 2.2	< 2.2		
Mar	88	146	66		83	143	57	254	6	9	0/1	0/5	98%	502	8	10	0/1	0/5	99%				
Apr	61	71	48		56	65	45	362	7	10	0/1	0/4	98%	887	9	12	0/1	0/4	99%				
May	61	110	46		56	108	39	580	8	10	0/1	0/4	99%	2541	10	12	0/1	0/4	99.6%	< 2.1	< 2.1		
Jun	51	57	48		48	52	45	519	10	12	0/1	0/5	98%	2406	14	16	0/1	0/5	99%				
Jul																							
Aug																							
Sep																							
Oct																							
Nov																							
Dec																							
Avg	73	131	53		68	126	48	372	8	11			98%	1184	10	13			99%	< 2.2	< 2.2		
Max	102	224	66		97	221	57	580	10	15			99%	2541	14	18			99.6%	< 2.2	< 2.2		
Min	51	57	46		48	52	39	218	6	9			96%	325	8	10			97%	< 2.1	< 2.1		
Exc/Analyses	0/0										0/6	0/26	0/6						0/6	0/26	0/6	0/2	0/2

Exc / Analyses = number of exceedances / number of analyses

ATTACHMENT 8 -- IPS Scrubber Inlet and Outlet H2S Readings, ppm

	Coarse Scrubber		Fine Scrubber		Coarse Scrubber		Fine Scrubber	
	Inlet Avg	Outlet Avg	Inlet Avg	Outlet Avg	Inlet Max	Outlet Max	Inlet Max	Outlet Max
01-Jan-19	1.7	0.0	0.0	0.0	4.3	0.0	0.0	0.0
02-Jan-19	3.3	0.0	0.0	0.0	7.3	0.0	0.0	0.0
03-Jan-19	2.6	0.0	0.0	0.0	5.7	0.0	0.0	0.0
04-Jan-19	1.9	0.0	0.0	0.0	8.4	0.0	0.0	0.0
05-Jan-19	4.8	0.0	0.0	0.0	10.3	0.0	0.0	0.0
06-Jan-19	2.6	0.0	0.0	0.0	4.6	0.0	0.0	0.0
07-Jan-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
08-Jan-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
09-Jan-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10-Jan-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11-Jan-19	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0
12-Jan-19	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0
13-Jan-19	0.5	0.0	0.0	0.0	1.7	0.0	0.0	0.0
14-Jan-19	0.7	0.0	0.0	0.0	2.3	0.0	0.0	0.0
15-Jan-19	0.9	0.0	0.0	0.0	2.6	0.0	0.0	0.0
16-Jan-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17-Jan-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18-Jan-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19-Jan-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20-Jan-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21-Jan-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22-Jan-19	0.2	0.0	0.0	0.0	6.7	0.0	0.0	0.0
23-Jan-19	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
24-Jan-19	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
25-Jan-19	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
26-Jan-19	0.5	0.0	0.0	0.0	2.3	0.6	0.0	0.0
27-Jan-19	0.2	0.0	0.0	0.0	1.7	0.0	0.0	0.0
28-Jan-19	0.4	0.0	0.0	0.0	1.6	0.0	0.0	0.0
29-Jan-19	0.5	0.0	0.0	0.0	2.3	0.0	0.0	0.0
30-Jan-19	1.3	0.0	0.0	0.0	2.0	0.0	0.0	0.0
31-Jan-19	0.6	0.0	0.0	0.0	2.4	0.0	0.0	0.0

Monthly Avg 0.7 0.0 0.0 0.0
 Monthly Max 10.3 0.6 0.0 0.0

	Coarse Scrubber		Fine Scrubber		Coarse Scrubber		Fine Scrubber	
	Inlet Avg	Outlet Avg	Inlet Avg	Outlet Avg	Inlet Max	Outlet Max	Inlet Max	Outlet Max
01-Feb-19	1.3	0.0	0.0	0.0	3.6	1.1	0.0	0.0
02-Feb-19	0.1	0.0	0.0	0.0	1.7	0.0	0.0	0.0
03-Feb-19	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0
04-Feb-19	0.1	0.0	0.0	0.0	1.6	0.0	0.0	0.0
05-Feb-19	0.0	0.0	0.0	2.8	0.1	0.0	0.0	10.0
06-Feb-19	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
07-Feb-19	0.0	0.0	0.0	0.0	1.6	0.4	0.0	0.0
08-Feb-19	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0
09-Feb-19	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
10-Feb-19	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
11-Feb-19	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
12-Feb-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13-Feb-19	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
14-Feb-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-Feb-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16-Feb-19	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
17-Feb-19	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
18-Feb-19	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
19-Feb-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20-Feb-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21-Feb-19	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
22-Feb-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23-Feb-19	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0
24-Feb-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25-Feb-19	0.1	0.0	0.0	0.0	3.8	0.0	0.0	0.0
26-Feb-19	0.1	0.0	0.0	0.0	1.7	0.0	0.0	0.0
27-Feb-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28-Feb-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Monthly Avg 0.1 0.0 0.0 0.1
 Monthly Max 3.8 1.1 0.0 10.0

Feb-05: Power failure, meter hunting 0-10-0-10 etc until power cycled.

ATTACHMENT 8 -- IPS Scrubber Inlet and Outlet H2S Readings, ppm

	Coarse Scrubber		Fine Scrubber		Coarse Scrubber		Fine Scrubber	
	Inlet Avg	Outlet Avg	Inlet Avg	Outlet Avg	Inlet Max	Outlet Max	Inlet Max	Outlet Max
01-Mar-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
02-Mar-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
03-Mar-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
04-Mar-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
05-Mar-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
06-Mar-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
07-Mar-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
08-Mar-19	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
09-Mar-19	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
10-Mar-19	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
11-Mar-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12-Mar-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13-Mar-19	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0
14-Mar-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-Mar-19	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0
16-Mar-19	0.3	0.0	0.0	0.0	4.1	0.0	0.0	0.0
17-Mar-19	0.2	0.0	0.0	0.0	1.6	0.0	0.0	0.0
18-Mar-19	0.3	0.0	0.0	0.0	1.6	0.0	0.0	0.0
19-Mar-19	0.7	0.0	0.0	0.0	1.9	0.0	0.0	0.0
20-Mar-19	0.3	0.0	0.0	0.0	1.7	0.0	0.0	0.0
21-Mar-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22-Mar-19	0.0	0.0	0.0	0.0	2.9	0.0	0.0	0.0
23-Mar-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24-Mar-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25-Mar-19	1.2	0.0	0.0	0.0	4.6	0.0	0.0	0.0
26-Mar-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27-Mar-19	0.0	0.0	1.0	0.0	1.6	0.0	364.0	0.0
28-Mar-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29-Mar-19	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0
30-Mar-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31-Mar-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Monthly Avg 0.1 0.0 0.0 0.0
 Monthly Max 4.6 0.0 364.0 0.0

	Coarse Scrubber		Fine Scrubber		Coarse Scrubber		Fine Scrubber	
	Inlet Avg	Outlet Avg	Inlet Avg	Outlet Avg	Inlet Max	Outlet Max	Inlet Max	Outlet Max
01-Apr-19	0.2	0.0	0.0	0.0	1.7	0.0	0.0	0.0
02-Apr-19	0.2	0.0	0.0	0.0	2.6	0.8	0.0	0.0
03-Apr-19	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0
04-Apr-19	0.2	0.0	0.0	0.0	1.6	0.0	0.0	0.0
05-Apr-19	0.4	0.0	0.0	0.0	1.7	0.0	0.0	0.0
06-Apr-19	0.1	0.0	0.0	0.0	1.6	0.0	0.0	0.0
07-Apr-19	0.1	0.0	0.0	0.0	1.7	0.0	0.0	0.0
08-Apr-19	0.2	0.0	0.0	0.0	1.6	0.0	0.0	0.0
09-Apr-19	0.4	0.0	0.0	0.0	1.7	0.0	0.0	0.0
10-Apr-19	0.2	0.0	0.0	0.0	1.6	0.0	0.0	0.0
11-Apr-19	0.6	0.0	0.0	0.0	1.6	0.0	0.0	0.0
12-Apr-19	0.6	0.0	0.0	0.0	1.7	0.0	0.0	0.0
13-Apr-19	0.9	0.0	0.0	0.0	1.8	0.0	0.0	0.0
14-Apr-19	0.6	0.0	0.0	0.0	1.7	0.0	0.0	0.0
15-Apr-19	0.8	0.0	0.0	0.0	1.8	0.0	0.0	0.0
16-Apr-19	0.7	0.0	0.0	0.0	2.6	0.0	0.0	0.0
17-Apr-19	0.6	0.0	0.0	0.0	2.9	0.0	0.0	0.0
18-Apr-19	0.2	0.0	0.0	0.0	3.0	0.0	0.0	0.0
19-Apr-19	1.9	0.0	0.0	0.0	5.0	0.0	0.0	0.0
20-Apr-19	1.3	0.0	0.0	0.0	3.8	0.0	0.0	0.0
21-Apr-19	0.5	0.0	0.0	0.0	1.9	0.0	0.0	0.0
22-Apr-19	0.9	0.0	0.0	0.0	4.0	0.0	0.0	0.0
23-Apr-19	1.9	0.0	0.0	0.0	5.3	0.0	0.0	0.0
24-Apr-19	0.3	0.0	0.0	0.0	4.3	0.0	0.0	0.0
25-Apr-19	0.9	0.0	0.0	0.0	4.2	0.0	0.0	0.0
26-Apr-19	0.5	0.0	0.0	0.0	5.9	0.0	0.0	0.0
27-Apr-19	0.4	0.0	0.0	0.0	2.0	0.0	0.0	0.0
28-Apr-19	0.4	0.0	0.0	0.0	1.7	0.0	0.0	0.0
29-Apr-19	2.2	0.0	0.0	0.0	5.9	0.0	0.0	0.0
30-Apr-19	1.3	0.0	0.0	0.0	2.9	0.0	0.0	0.0

Monthly Avg 0.7 0.0 0.0 0.0
 Monthly Max 5.9 0.8 0.0 0.0

ATTACHMENT 8 -- IPS Scrubber Inlet and Outlet H2S Readings, ppm

	Coarse Scrubber		Fine Scrubber		Coarse Scrubber		Fine Scrubber	
	Inlet Avg	Outlet Avg	Inlet Avg	Outlet Avg	Inlet Max	Outlet Max	Inlet Max	Outlet Max
01-May-19	0.9	0.0	0.0	0.0	3.7	0.0	0.0	0.0
02-May-19	0.7	0.0	0.0	0.0	4.3	0.0	0.0	0.0
03-May-19	0.6	0.0	0.0	0.0	2.4	0.0	0.0	0.0
04-May-19	0.2	0.0	0.0	0.0	1.7	0.0	0.0	0.0
05-May-19	0.9	0.0	0.0	0.0	2.9	0.0	0.0	0.0
06-May-19	2.7	0.0	0.0	0.0	5.4	0.0	0.0	0.0
07-May-19	1.1	0.0	0.0	0.0	5.1	0.0	0.0	0.0
08-May-19	0.6	0.0	0.0	0.0	3.2	0.0	0.0	0.3
09-May-19	1.9	0.0	0.0	0.0	3.6	0.0	0.0	0.0
10-May-19	0.3	0.0	0.0	0.0	3.5	0.0	0.0	0.0
11-May-19	0.5	0.0	0.0	0.0	1.6	0.0	0.0	0.0
12-May-19	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0
13-May-19	1.1	0.0	0.0	0.0	2.9	0.0	0.0	0.0
14-May-19	0.8	0.0	0.0	0.0	3.4	0.0	0.0	0.0
15-May-19	1.4	0.0	0.0	0.0	2.3	0.0	0.0	0.0
16-May-19	0.4	0.0	0.0	0.0	3.7	0.0	0.0	0.0
17-May-19	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
18-May-19	0.6	0.0	0.0	0.0	3.0	0.0	0.0	0.0
19-May-19	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0
20-May-19	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0
21-May-19	0.1	0.0	0.0	0.0	1.6	0.0	0.0	0.0
22-May-19	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0
23-May-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24-May-19	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0
25-May-19	0.1	0.0	0.0	0.0	1.6	0.0	0.0	0.0
26-May-19	0.2	0.0	0.0	0.0	1.7	0.0	0.0	0.0
27-May-19	0.5	0.0	0.0	0.0	1.7	0.0	0.0	0.0
28-May-19	0.6	0.0	0.0	0.0	2.7	0.0	0.0	0.0
29-May-19	1.7	0.0	0.0	0.0	3.7	0.0	0.0	0.0
30-May-19	2.0	0.0	0.0	0.0	3.7	0.0	0.0	0.0
31-May-19	0.6	0.0	0.0	0.0	2.8	0.0	0.0	0.0

Monthly Avg 0.7 0.0 0.0 0.0
 Monthly Max 5.4 0.0 0.0 0.3

	Coarse Scrubber		Fine Scrubber		Coarse Scrubber		Fine Scrubber	
	Inlet Avg	Outlet Avg	Inlet Avg	Outlet Avg	Inlet Max	Outlet Max	Inlet Max	Outlet Max
01-Jun-19	0.5	0.0	0.0	0.0	1.6	0.0	0.0	0.0
02-Jun-19	0.7	0.0	0.0	0.0	2.3	0.0	0.0	0.0
03-Jun-19	1.0	0.0	0.0	0.0	7.1	0.0	0.0	0.0
04-Jun-19	1.3	0.0	0.0	0.0	6.1	0.0	0.0	0.0
05-Jun-19	1.7	0.0	0.0	0.0	3.2	0.0	0.0	0.0
06-Jun-19	1.4	0.0	0.0	0.0	2.8	0.0	0.0	0.0
07-Jun-19	1.9	0.0	0.0	0.0	4.2	0.0	0.0	0.0
08-Jun-19	1.6	0.0	0.0	0.0	4.7	0.0	0.0	0.0
09-Jun-19	1.9	0.0	0.0	0.0	3.7	0.0	0.0	0.0
10-Jun-19	2.1	0.0	0.0	0.0	4.9	0.0	0.0	0.0
11-Jun-19	1.5	0.0	0.0	0.0	6.9	0.0	0.0	0.0
12-Jun-19	1.5	0.0	0.0	0.0	5.9	0.0	0.0	0.0
13-Jun-19	1.9	0.0	0.0	0.0	7.9	0.0	0.0	0.0
14-Jun-19	2.5	0.0	0.0	0.0	8.4	0.0	0.0	0.0
15-Jun-19	2.6	0.0	0.0	0.0	7.9	0.0	0.0	0.0
16-Jun-19	1.4	0.0	0.0	0.0	4.0	0.0	0.0	0.0
17-Jun-19	1.2	0.0	0.0	0.0	4.2	0.0	0.0	0.0
18-Jun-19	1.8	0.0	0.0	0.0	4.4	0.0	0.0	0.0
19-Jun-19	2.0	0.0	0.0	0.0	3.8	0.0	0.0	0.0
20-Jun-19	2.2	0.0	0.0	0.0	3.4	0.0	0.0	0.0
21-Jun-19	1.8	0.0	0.0	0.0	4.0	0.0	3.2	0.0
22-Jun-19	2.2	0.0	0.0	0.0	4.8	0.0	0.0	0.0
23-Jun-19	1.4	0.0	0.0	0.0	2.8	0.0	0.0	0.0
24-Jun-19	2.2	0.0	0.0	0.0	5.8	0.0	0.0	0.0
25-Jun-19	4.0	0.0	0.0	0.0	8.2	0.0	0.0	0.0
26-Jun-19	3.5	0.0	0.0	0.0	4.9	0.0	0.0	0.0
27-Jun-19	2.8	0.0	0.0	0.0	6.7	0.0	0.0	0.0
28-Jun-19	1.7	0.0	0.0	0.0	3.4	0.0	0.0	0.0
29-Jun-19	2.5	0.0	0.0	0.0	4.4	0.0	0.0	0.0
30-Jun-19	1.3	0.0	0.0	0.0	4.1	0.0	0.0	0.0

Monthly Avg 1.9 0.0 0.0 0.0
 Monthly Max 8.4 0.0 3.2 0.0

ATTACHMENT 8 -- IPS Scrubber Inlet and Outlet H2S Readings - Related Outages

Influent Pump Station Odor Scrubber Outage Table

Start	Finish	Duration	Reason
03-Feb-19 20:14	03-Feb-19 22:30	2:15	Power failure multiple locations at IPS including EF-10, flow restored earlier than fan turned back on
05-Feb-19 07:52	05-Feb-19 09:23	1:31	Power failure multiple locations at IPS including EF-10, flow restored earlier than fan turned back on
13-Mar-19 08:04	13-Mar-19 08:22	0:18	Maintenance work on fine scrubber EF-10
17-Apr-19 08:34	17-Apr-19 09:52	1:17	Coarse scrubber offline for contractor removal of old equipment
07-Jun-19 14:26	08-Jun-19 19:50	<u>29:24</u>	Power failure at IPS including EF-10, flow restored earlier than fan turned back on
	Total Down Time	<u><u>34:46</u></u>	

ATTACHMENT 9 - ODOR SCRUBBER MAINTENANCE RECORDS - S-170, S-110

Headworks Odor Scrubber Maintenance Work Orders Jan - Jun 2019

Area	Wonum	Description	Assetnum	Dept	Status	Type	Report Date	Reported By
W-12	2019013842	replace and calibrate sensors for new IPS OCS <> TASK: Replace and calibrate (3) Rosemount 369P/369PVP pH sensors (W12-IRR-AIT-128, W12-IRR-AIT-113, and W12-IRR-AIT-213) for the new IPS Odor Control System. Contact Sarah Plummer for acquisition of (3) spare pH sensors.	W-12-MISC-000-00	IN	COMP	PJ	1/22/2019	LSERVANDE
W-12	2019027031	IPS wide electrical failure that affects multiple breakers	W-12-MCC-P2A-00	EL	DONE	BD	2/4/2019	SZUBRZYC
W-12	2019041142	BTF Odor Control System Nutrient tank pump #1 is not drawing from tank when pump is operating	W-12-MISC-000-00	MEN	DONE	CM	3/7/2019	RHELMERS
W-12	2019041155	EF-102 at BTF odor control system makes squealing noise	W-12-MISC-000-00	MEN	DONE	CM	3/8/2019	RHELMERS
W-12	2019041163	EF-10 is still running but making an extreme amount of noise even after greasing bearings	W-12-OCU-002	MEN	DONE	CM	3/9/2019	JMOUNT
W-12	2019041213	Loose belts on IPS Odor Control fans w12-fan-sf-13 and w12-fan-sf-02.	W-12-FAN-SF2-01	MEN	DONE	CM	3/13/2019	JCOHEN
W-12	2019041376	Fine screen and course screen building gas detection alarm buzzer is not working	W-12-MISC-000-00	IN	COMP	CM	3/28/2019	RHELMERS
W-12	2019054279	SF-2 can't start. Mechanical maintenance suspects electrical issues. <i>Note: Equipment locked out due to Construction, returning to service July/August 2019</i>	W-12-FAN-SF2-01	EL	INPRG	CM	4/6/2019	RHELMERS
W-12	2019054280	SF-13 won't start. Mechanical maintenance suspects electrical issues.	W-12-MISC-000-00	EL	COMP	CM	4/6/2019	RHELMERS
W-12	2019054281	EF-9 won't start. Damper valve shows tripped. Won't reset. <i>Note: Equipment locked out due to Constrution, returning to service in July/August 2019</i>	W-12-MISC-000-00	EL	INPRG	CM	4/6/2019	RHELMERS
W-12	2019054282	SF-11 belt sheaves not secured	W-12-MISC-000-00	MEN	DONE	CM	4/6/2019	RHELMERS
W-12	2019054290	H2S meter at IPS sample station needs to be calibrated. Meter is bouncing up and down randomly. Please repair as necessary. Thank you	W-12-INS-000-00	IN	COMP	CM	4/8/2019	MSCHMITZ
W-12	2019054315	Motor room supply fan #2 (SF-05-00) belt makes intermittent squealing noise	W-12-FAN-SF5-00	MEN	DONE	CM	4/13/2019	RHELMERS
W-12	2019070610	Fan belt very loose, thanks.	W-12-FAN-SF4-00	MEN	COMP	CM	5/5/2019	JCOHEN
W-12	2019070611	Supply fans 14, 15 above Rag bin room, loose belts. NOT Fan #2.	W-12-FAN-SF2-01	MEN	COMP	CM	5/5/2019	JCOHEN
W-12	2019083967	Biotrickling filter odor scrubber local control panel screen is blank. Needs password for access.	W-12-MISC-000-00	IN	COMP	CM	6/15/2019	RHELMERS
W-12	2019084001	BTF odor scrubber pH meter AIT-128 needs calibration	W-12-MISC-000-00	IN	COMP	CM	6/19/2019	RHELMERS
W-12	2019084062	BTF#2 irrigation panel makeup water throttle valve doesn't close	W-12-MISC-000-00	IN	APPR	CM	6/27/2019	RHELMERS

Thickening/Dewatering Odor Scrubber Maintenance Work Orders Jan - Jun 2019

Area	Wonum	Description	Assetnum	Dept	Status	Type	Report Date	Reported By
W-30	2019013910	Odor scrubber belt cracked and worn out.	W-30-FAN-301-00	MEN	COMP	CM	1/30/2019	HTON
W-25	2019027033	Hypo leaking at the pressure gauge inside the odor scrubber panel on the right. Minor leak.	W-25-MISC-000-00	MEN	COMP	CM	2/4/2019	WLOCONTE
W-30	2019027203	Low flow of hypo to rotometer for odor scrubber. Complianace requirement.	W-30-TKS-301-00	MEN	DONE	CM	2/21/2019	HTON
W-25	2019083940	air handling unit is leaking water into MCC room DWB ground level air handling unit leaking into mcc room for centrifuge #5. Electricians noticed it and felt uneasy which makes us operators very very	W-25-AHU-001-01	ST	COMP	BD	6/12/2019	VWAGNER

ATTACHMENT 10 -- S-170 Waste Activated Sludge Throughput

2019 January - June Gravity Belt Thickener Summary Flow Table

Note: Kgal=1,000 gallons

Daily Flows	January	February	March	April	May	June
	Kgal	Kgal	Kgal	Kgal	Kgal	Kgal
1st	1,601	1,881	1,732	2,145	1,687	2,014
2nd	1,702	2,018	1,487	2,255	1,259	2,016
3rd	1,105	2,183	1,781	2,148	1,860	1,983
4th	1,598	2,216	2,079	1,982	2,013	2,160
5th	2,169	2,165	1,864	2,218	1,967	1,974
6th	2,111	2,176	1,924	2,235	2,166	1,908
7th	1,838	2,196	1,925	2,060	1,792	2,147
8th	2,210	2,047	1,675	2,157	1,879	2,233
9th	2,016	2,001	1,384	2,063	1,516	2,239
10th	2,113	2,116	1,523	2,144	1,182	2,220
11th	2,072	2,131	1,636	1,904	1,794	2,313
12th	2,168	1,932	1,823	1,959	1,709	1,997
13th	1,976	1,474	2,070	2,233	1,571	1,471
14th	2,166	1,875	2,126	2,091	1,766	1,627
15th	2,071	1,442	1,827	2,256	1,736	1,442
16th	1,876	1,549	1,521	2,219	1,759	1,508
17th	1,859	1,594	1,815	1,498	1,938	1,698
18th	1,650	1,378	1,828	993	2,112	1,345
19th	2,190	1,348	2,115	2,044	1,760	1,111
20th	2,038	688	1,934	2,040	1,885	1,695
21st	1,786	1,853	1,391	1,801	1,970	1,624
22nd	1,187	1,920	1,331	1,996	1,766	1,561
23rd	1,869	1,512	1,886	1,692	1,780	1,652
24th	1,824	1,755	1,725	1,348	1,318	1,533
25th	1,357	2,200	1,862	1,969	2,253	1,434
26th	1,439	1,805	2,068	1,872	1,888	1,510
27th	1,726	1,444	1,938	1,917	1,770	1,258
28th	1,671	1,588	1,851	1,829	1,860	1,164
29th	1,849		1,687	1,835	1,615	1,331
30th	2,017		1,837	2,082	1,698	1,022
31st	2,138		1,875		1,886	
Monthly Total	57,391	50,488	55,520	58,985	55,155	51,190
Semi-Annual Total	328,730					

Gravity Belt Thickener and Dewatering Centrifuge Odor Scrubber Outage Table

Start	Finish	Duration	Reason
04-Feb-19 08:03	04-Feb-19 08:39	0:36	THK scrubber off-line for belt change
25-Apr-19 08:00	25-Apr-19 10:15	2:15	THK scrubber off-line for hypo leak repair
08-May-19 08:00	08-May-19 08:30	0:30	THK scrubber off-line for installation of pressure gauge
23-May-19 07:30	23-May-19 07:40	0:10	THK scrubber off-line for maintenance
Total Down Time		<u>3:31</u>	

ATTACHMENT 11 - DIGESTER GAS SAMPLING DATA

EBMUD Biogas H2S
January - June 2019

2019	Cogen Feed H2S (ppm)	365 Day Avg H2S (ppm)
1/1/2019	212	142
1/2/2019	200	142
1/3/2019	270	142
1/4/2019	252	143
1/5/2019	294	143
1/6/2019	154	144
1/7/2019	174	144
1/8/2019	230	144
1/9/2019	174	145
1/10/2019	158	145
1/11/2019	152	145
1/12/2019	240	145
1/13/2019	184	146
1/14/2019	186	146
1/15/2019	180	146
1/16/2019	186	147
1/17/2019	96	147
1/18/2019	110	147
1/19/2019	52	147
1/20/2019	54	147
1/21/2019	92	147
1/22/2019	160	147
1/23/2019	124	147
1/24/2019	132	147
1/25/2019	104	147
1/26/2019	98	147
1/27/2019		147
1/28/2019	90	147
1/29/2019	64	147
1/30/2019	68	147
1/31/2019	80	147
2/1/2019	68	147
2/2/2019	60	147
2/3/2019	108	147
2/4/2019	72	147
2/5/2019	58	147
2/6/2019	52	147
2/7/2019	58	147
2/8/2019	40	147
2/9/2019	54	146
2/10/2019	56	146
2/11/2019	20	146
2/12/2019		146
2/13/2019		146
2/14/2019		146
2/15/2019	36	145
2/16/2019	76	145
2/17/2019	104	145
2/18/2019	114	145
2/19/2019	52	145
2/20/2019	40	145
2/21/2019	266	145
2/22/2019	122	146
2/23/2019	58	146
2/24/2019	88	146
2/25/2019	72	146
2/26/2019	54	146
2/27/2019	74	146
2/28/2019	86	145

2019	Cogen Feed H2S (ppm)	365 Day Avg H2S (ppm)
3/1/2019	80	145
3/2/2019	96	145
3/3/2019	78	145
3/4/2019	38	145
3/5/2019	18	145
3/6/2019	26	145
3/7/2019		145
3/8/2019	128	145
3/9/2019	112	145
3/10/2019	108	145
3/11/2019	114	145
3/12/2019	114	145
3/13/2019	112	146
3/14/2019	150	146
3/15/2019	202	146
3/16/2019	198	146
3/17/2019	170	147
3/18/2019	172	147
3/19/2019	200	147
3/20/2019	188	147
3/21/2019	168	148
3/22/2019	160	148
3/23/2019	152	148
3/24/2019	112	148
3/25/2019	122	148
3/26/2019		148
3/27/2019		148
3/28/2019	124	148
3/29/2019	114	148
3/30/2019	108	148
3/31/2019	104	148
4/1/2019		148
4/2/2019	104	148
4/3/2019	112	148
4/4/2019	102	148
4/5/2019	124	148
4/6/2019	130	148
4/7/2019	116	149
4/8/2019	108	149
4/9/2019	110	149
4/10/2019	104	150
4/11/2019	108	150
4/12/2019	120	150
4/13/2019	118	150
4/14/2019	118	150
4/15/2019	160	150
4/16/2019	134	150
4/17/2019	132	151
4/18/2019	166	151
4/19/2019	186	151
4/20/2019	144	151
4/21/2019	148	152
4/22/2019	160	152
4/23/2019	172	152
4/24/2019	130	152
4/25/2019	174	152
4/26/2019	234	153
4/27/2019	214	153
4/28/2019	186	153
4/29/2019	194	153
4/30/2019	176	154

2019	Cogen Feed H2S (ppm)	365 Day Avg H2S (ppm)
5/1/2019	182	154
5/2/2019	216	154
5/3/2019	202	155
5/4/2019	192	155
5/5/2019	170	155
5/6/2019	180	155
5/7/2019	140	156
5/8/2019	172	156
5/9/2019	154	156
5/10/2019	178	156
5/11/2019	228	156
5/12/2019	190	157
5/13/2019	170	157
5/14/2019	182	157
5/15/2019	172	158
5/16/2019	198	158
5/17/2019	130	158
5/18/2019	154	158
5/19/2019	150	158
5/20/2019	184	158
5/21/2019		158
5/22/2019		158
5/23/2019	190	158
5/24/2019	174	159
5/25/2019	208	159
5/26/2019	166	159
5/27/2019	152	159
5/28/2019	166	159
5/29/2019		159
5/30/2019	150	159
5/31/2019	164	159
6/1/2019		159
6/2/2019	154	159
6/3/2019	150	159
6/4/2019	130	159
6/5/2019	122	159
6/6/2019	132	159
6/7/2019	146	159
6/8/2019	150	159
6/9/2019	134	159
6/10/2019	152	159
6/11/2019	146	159
6/12/2019	154	159
6/13/2019	214	159
6/14/2019	182	159
6/15/2019	172	159
6/16/2019	152	159
6/17/2019	154	159
6/18/2019	148	159
6/19/2019	140	159
6/20/2019	164	159
6/21/2019	162	159
6/22/2019	150	159
6/23/2019	130	159
6/24/2019	134	159
6/25/2019	114	159
6/26/2019	114	159
6/27/2019	112	158
6/28/2019	138	158
6/29/2019	154	158
6/30/2019	144	158

ATTACHMENT 12 - TOTAL DIGESTER GAS COMBUSTION

**EBMUD Biogas to Combustion Devices
January - June 2019**

2019	Total Combustion, SCFM		
	Daily Max	Daily Avg	365-Day Avg
1/1/2019	2,323	1,897	2,230
1/2/2019	2,516	1,706	2,231
1/3/2019	2,818	2,293	2,231
1/4/2019	2,324	1,961	2,229
1/5/2019	2,543	2,191	2,227
1/6/2019	2,171	1,848	2,225
1/7/2019	2,375	1,949	2,225
1/8/2019	2,899	2,446	2,227
1/9/2019	3,202	2,706	2,228
1/10/2019	3,008	2,681	2,229
1/11/2019	2,721	2,398	2,228
1/12/2019	3,361	2,600	2,230
1/13/2019	2,392	1,958	2,230
1/14/2019	2,556	1,871	2,230
1/15/2019	3,134	2,519	2,233
1/16/2019	2,690	2,382	2,234
1/17/2019	2,570	2,169	2,234
1/18/2019	2,345	2,062	2,234
1/19/2019	2,618	2,044	2,233
1/20/2019	2,598	2,141	2,234
1/21/2019	3,075	2,314	2,235
1/22/2019	2,593	2,028	2,236
1/23/2019	2,354	1,902	2,234
1/24/2019	3,708	2,079	2,233
1/25/2019	2,407	2,169	2,233
1/26/2019	2,360	1,917	2,230
1/27/2019	2,589	2,092	2,230
1/28/2019	2,477	1,956	2,230
1/29/2019	2,040	1,775	2,229
1/30/2019	2,592	1,989	2,229
1/31/2019	3,387	2,151	2,228
2/1/2019	2,498	2,099	2,227
2/2/2019	2,831	2,263	2,227
2/3/2019	2,369	1,987	2,227
2/4/2019	2,429	1,922	2,227
2/5/2019	2,346	2,035	2,228
2/6/2019	4,031	2,084	2,226
2/7/2019	2,658	2,193	2,225
2/8/2019	2,491	1,988	2,223
2/9/2019	2,753	2,109	2,222
2/10/2019	2,148	1,835	2,221
2/11/2019	2,435	1,931	2,221
2/12/2019	2,970	2,371	2,223
2/13/2019	3,244	2,044	2,221
2/14/2019	2,490	2,041	2,219
2/15/2019	2,783	2,215	2,217
2/16/2019	2,346	1,858	2,216
2/17/2019	1,745	1,406	2,214
2/18/2019	2,246	1,707	2,214
2/19/2019	2,304	1,849	2,214
2/20/2019	2,408	1,670	2,212
2/21/2019	2,174	1,842	2,211
2/22/2019	2,925	2,331	2,209
2/23/2019	2,634	1,871	2,205
2/24/2019	2,147	1,654	2,202
2/25/2019	1,900	1,527	2,202
2/26/2019	2,718	2,149	2,202
2/27/2019	3,321	2,509	2,202
2/28/2019	3,154	2,579	2,201

3,400 Annual Average Limit

2019	Total Combustion, SCFM		
	Daily Max	Daily Avg	365-Day Avg
3/1/2019	2,621	2,079	2,199
3/2/2019	2,217	1,948	2,197
3/3/2019	2,047	1,763	2,195
3/4/2019	2,721	2,089	2,195
3/5/2019	3,448	2,779	2,197
3/6/2019	3,311	2,474	2,197
3/7/2019	3,611	3,005	2,198
3/8/2019	3,413	2,929	2,199
3/9/2019	3,037	2,360	2,199
3/10/2019	2,155	1,912	2,198
3/11/2019	2,473	2,125	2,199
3/12/2019	3,313	2,424	2,200
3/13/2019	3,159	2,343	2,199
3/14/2019	3,689	2,833	2,198
3/15/2019	3,314	2,433	2,196
3/16/2019	2,583	2,262	2,195
3/17/2019	2,415	1,867	2,192
3/18/2019	2,553	1,856	2,192
3/19/2019	3,431	2,661	2,194
3/20/2019	3,326	2,730	2,195
3/21/2019	3,294	2,714	2,196
3/22/2019	3,229	2,392	2,195
3/23/2019	3,634	2,890	2,195
3/24/2019	2,739	2,181	2,195
3/25/2019	2,648	2,073	2,196
3/26/2019	3,940	2,555	2,198
3/27/2019	4,306	3,335	2,200
3/28/2019	4,707	2,582	2,200
3/29/2019	2,964	2,508	2,199
3/30/2019	2,542	1,958	2,197
3/31/2019	2,002	1,616	2,196
4/1/2019	2,525	2,090	2,196
4/2/2019	2,838	2,324	2,198
4/3/2019	2,846	2,389	2,198
4/4/2019	2,887	1,948	2,196
4/5/2019	2,881	2,531	2,196
4/6/2019	2,975	2,546	2,196
4/7/2019	2,233	2,093	2,196
4/8/2019	3,340	2,307	2,198
4/9/2019	3,142	2,586	2,200
4/10/2019	3,732	2,989	2,201
4/11/2019	3,492	2,962	2,201
4/12/2019	2,870	2,365	2,199
4/13/2019	2,309	1,992	2,196
4/14/2019	2,181	1,627	2,195
4/15/2019	2,592	1,975	2,195
4/16/2019	2,896	2,353	2,196
4/17/2019	3,106	2,377	2,196
4/18/2019	2,649	1,760	2,194
4/19/2019	3,127	2,544	2,194
4/20/2019	2,565	2,152	2,194
4/21/2019	2,466	1,876	2,193
4/22/2019	2,931	2,057	2,194
4/23/2019	3,694	2,838	2,196
4/24/2019	4,096	2,452	2,197
4/25/2019	3,530	2,742	2,197
4/26/2019	3,202	2,736	2,197
4/27/2019	2,751	2,159	2,197
4/28/2019	2,828	2,078	2,197
4/29/2019	3,246	2,131	2,199
4/30/2019	2,954	2,326	2,200

2019	Total Combustion, SCFM		
	Daily Max	Daily Avg	365-Day Avg
5/1/2019	3,854	2,574	2,201
5/2/2019	3,258	2,423	2,202
5/3/2019	3,022	2,448	2,203
5/4/2019	2,798	2,111	2,200
5/5/2019	2,166	1,724	2,198
5/6/2019	2,570	1,778	2,198
5/7/2019	2,669	2,218	2,199
5/8/2019	3,219	2,830	2,200
5/9/2019	3,543	2,436	2,200
5/10/2019	3,343	2,408	2,200
5/11/2019	3,889	2,862	2,202
5/12/2019	2,480	1,915	2,202
5/13/2019	3,183	2,156	2,203
5/14/2019	2,853	2,278	2,205
5/15/2019	3,405	2,716	2,206
5/16/2019	3,888	3,160	2,209
5/17/2019	3,670	3,023	2,210
5/18/2019	3,706	2,912	2,212
5/19/2019	2,760	1,858	2,211
5/20/2019	2,606	1,851	2,212
5/21/2019	2,377	2,162	2,214
5/22/2019	3,341	2,671	2,216
5/23/2019	3,281	2,992	2,218
5/24/2019	3,292	2,658	2,218
5/25/2019	3,138	2,499	2,218
5/26/2019	2,265	1,807	2,217
5/27/2019	2,582	1,829	2,217
5/28/2019	3,555	2,129	2,218
5/29/2019	3,172	2,669	2,220
5/30/2019	4,120	3,103	2,222
5/31/2019	3,463	2,758	2,224
6/1/2019	2,575	2,226	2,225
6/2/2019	1,999	1,734	2,224
6/3/2019	2,545	1,906	2,225
6/4/2019	3,222	2,430	2,227
6/5/2019	2,773	2,377	2,227
6/6/2019	4,136	3,091	2,229
6/7/2019	3,566	2,678	2,229
6/8/2019	3,305	2,333	2,228
6/9/2019	3,167	1,887	2,228
6/10/2019	2,816	2,225	2,229
6/11/2019	3,534	2,666	2,231
6/12/2019	3,283	2,903	2,233
6/13/2019	3,126	2,416	2,234
6/14/2019	3,508	2,579	2,235
6/15/2019	3,296	2,663	2,236
6/16/2019	2,117	1,811	2,234
6/17/2019	2,825	2,060	2,235
6/18/2019	2,901	2,421	2,237
6/19/2019	3,000	2,421	2,238
6/20/2019	4,198	3,387	2,240
6/21/2019	3,386	2,847	2,241
6/22/2019	2,371	2,049	2,240
6/23/2019	1,892	1,523	2,239
6/24/2019	2,455	1,907	2,240
6/25/2019	3,189	2,595	2,242
6/26/2019	3,107	2,673	2,242
6/27/2019	3,378	2,945	2,243
6/28/2019	3,400	2,971	2,245
6/29/2019	2,879	2,375	2,245
6/30/2019	1,900	1,659	2,245