Statement of Basis

Permit to Construct No. P-2014.0014
Project ID 62317

Rathdrum Power LLC
Rathdrum, Idaho

Facility ID 055-00045

Final

February 27, 2020
Christina Boulay
Permit Writer

The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01.et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
ASTM	American Society for Testing and Materials
BACT	Best Available Control Technology
BMP	best management practices
Btu	British thermal units
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CAS No.	Chemical Abstracts Service registry number
CBP	concrete batch plant
CEMS	continuous emission monitoring systems
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CI	compression ignition
CMS	continuous monitoring systems
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent emissions
COMS	continuous opacity monitoring systems
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
FEC	Facility Emissions Cap
GHG	greenhouse gas
GACT	Generally Available Control Technology
gph	gallons per hour
gpm	gallons per minute
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
HHV	higher heating value
HMA	hot mix asphalt
hp	horsepower
HRSG	heat recovery steam generator
hr/yr	hours per consecutive 12 calendar month period
ICE	internal combustion engines
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
iwg	inches of water gauge
km	kilometers
lb/hr	pounds per hour
lb/qtr	pound per quarter
m	meters
MACT	Maximum Achievable Control Technology
mg/dscm	milligrams per dry standard cubic meter
mg/L	milligrams per liter
MMBtu	million British thermal units
MMscf	million standard cubic feet
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants

NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NSPS	New Source Performance Standards
O&M	operation and maintenance
O_2	oxygen
PAH	polyaromatic hydrocarbons
PC	permit condition
PCB	polychlorinated biphenyl
PERF	Portable Equipment Relocation Form
PM	particulate matter
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
POM	polycyclic organic matter
ppm	parts per million
ppmw	parts per million by weight
PSD	Prevention of Significant Deterioration
psig	pounds per square inch gauge
PTC	permit to construct
PTC/T2	permit to construct and Tier II operating permit
PTE	potential to emit
PW	process weight rate
RAP	recycled asphalt pavement
RFO	reprocessed fuel oil
RICE	reciprocating internal combustion engines
Rules	*Rules for the Control of Air Pollution in Idaho*
scf	standard cubic feet
SCL	significant contribution limits
SCR	selective catalytic reduction
SIP	State Implementation Plan
SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO_2	sulfur dioxide
SO_x	sulfur oxides
TDS	Total dissolved solids
T/day	tons per calendar day
T/hr	tons per hour
T/yr	tons per consecutive 12 calendar month period
T2	Tier II operating permit
TAP	toxic air pollutants
TEQ	toxicity equivalent
T-RACT	Toxic Air Pollutant Reasonably Available Control Technology
ULSD	ultra-low sulfur diesel
U.S.C.	United States Code
VOC	volatile organic compounds
yd^3	cubic yards
$\mu g/m^3$	micrograms per cubic meter

FACILITY INFORMATION

Description

Rathdrum Power, LLC operates a combined cycle gas turbine electrical power generation facility located near Rathdrum, Idaho. The facility is operated in combined-cycle mode such that the hot exhaust gases from the General Electric Frame 7F turbine are discharged to the heat recovery steam generator (HRSG) to create steam which drives the steam turbine. The turbine and duct burners are fired with natural gas only and the facility can generate up to approximately 278 MW of electricity. The facility is equipped with supplemental firing capability in the form of "duct burner" which may add up to 230 MMBtu/hr of additional heat into the HRSG for power generation. Other equipment at the facility includes a mechanical draft cooling tower, evaporative cooling tower, auxiliary boiler, fuel pre-heater, emergency generator, and an emergency fire water pump. Emissions from the gas turbine and duct firing are controlled with selective catalytic reduction (SCR) and oxidation catalyst which are located within the HRSG, and NOx emissions are monitored by a continuous emissions monitoring system.

Permitting History

The following information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

January 31, 1995	P-940134, PTC for a new combined cycle natural gas-fired turbine power generation facility, Permit status (S)
September 29, 1995	P-950175, Name change for the facility, Permit status (S)
October 10, 1997	055-00045, Reissuance of PTC No. 055-00045, Permit status (S)
October 29, 1999	P-990042, Modification to PTC No. 055-00045, Permit status (S)
October 12, 2004	P-020116, Revision of PTC No. 055-00045, Permit status (S)
October 22, 2014	P-2014.0014, PTC modification to reallocate operational hours for the turbine duct burner and auxiliary boiler and to reduce carbon monoxide emission limits for the gas turbine stack, Permit status (A)
January 21, 2016	P-2014.0014, Administrative amendment to correct the reporting frequency, Permit status (A, but will become S upon issuance of this permit)
March 25, 2005	T1-020108, Initial Tier One Operating Permit, Permit status (S)
November 26, 2008	T1-2008.0166, Tier One Operating Permit administrative amendment to change the responsible official, Permit status (S)
February 12, 2010	T1-2009.0111, Tier One Operating Permit renewal, Permit status (S)
December 14, 2011	T1-2009.0111, Tier One Operating Permit administrative amendment to change the responsible official, Permit status (S)
February 2, 2015	T1-2014.0032, Tier One Operating Permit renewal, Permit status (S)
January 21, 2016	T1-2014.0032, Administrative amendment to change reporting frequency, Permit status (S)
February 27, 2020	T1-2019.0036, Tier One Operating Permit renewal, Permit status (A)

Application Scope

This PTC is for a modification at an existing Tier I facility. This modification adds one cooling tower and one evaporative tower to the permit and incorporates the $PM_{2.5/10}$ emissions to the facility-wide potential to emit. Both of these emission units were installed at the facility upon startup and included in the initial PTC application; however Idaho DEQ did not include the two emission units in the permit as an oversight. This permitting action corrects the oversight.

The applicant has proposed to:

- Incorporate the $PM_{2.5/10}$ emissions from the cooling and evaporative towers to the facility-wide potential to emit.

Application Chronology

October 15, 2019	DEQ received an application and an application fee.
October 17, 2019	DEQ received the permit processing fee.
October 24, 2019	DEQ determined that the application was complete.
October 24, 2019	DEQ made available the draft permit and statement of basis for peer and regional office review.
November 1, 2019	DEQ made available the draft permit and statement of basis for applicant review.
November 18 – December 18, 2019	DEQ provided a public comment period on the proposed action.
January 9, 2020	DEQ provided the draft permit and statement of basis for EPA review.
February 27, 2020	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Permit Section	Sources	Control Equipment
1-3	Gas Turbine with Duct Burner: Manufacturer: General Electric Model:PG7241FA, with advanced dry low NO_X combustion (DLN III) Typical Operation: Base Load (70-100% load range) Normal Output from the turbine alone: 168 MW Nominal Output from turbine with duct burner: 278 MW Turbine Rated Heat Input: 1,682 MMBtu/hr Duct Burner Rated Heat Input: 230 MMBtu/hr Fuels: Natural Gas Exclusively	Selective Catalytic Reduction (SCR) with Aqueous Ammonia Injection: Manufacturer: Umicore Catalytic Oxidation: Manufacturer: Engelhard
	Auxiliary Boiler (startup boiler): Manufacturer: Vapor Power Model: TG5905AHK500LN with low-NO_x burners Rated output: 17,200 lb/hr of steam, 500 horsepower Rated heat input: 16.7 MMBtu/hr Fuel: Natural Gas	Dry Low NO_X (DLN) Burner
	Fuel pre-heater: Manufacturer: ATCO Model: 2E789 with low-NO_x burners Rated heat input: 4.0 MMBtu/hr Fuel: Natural Gas	None
	Diesel-fired emergency generator: Manufacturer: Detroit Diesel Model: 6063-TK35 Rated capacity: 550 horsepower	
	Diesel-fired emergency fire pump: Manufacturer: Clark-Detroit Diesel Model: PDFP06 horsepowerYR Rated Capacity: 550 horsepower	
	Cooling Tower: Manufacturer: GEA Model: 484834-S1-32-FCF Flow Rate: 57,000 GPM Total Dissolved Solids: 18,000 mg/L	Drift Eliminators Manufacturer: Brentwood Model: CF150Max Control Efficiency: 0.001%.
	Evaporative Tower: Manufacturer: Marley Model: 453-202 Capacity: 3,380 GPM Total Dissolved Solids: 70,000 mg/L	Manufacturer: Marley Model: 453-202 Control Efficiency: 0.01%.

Emissions Inventories

Potential to Emit

IDAPA 58.01.01 defines Potential to Emit as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is state or federally enforceable. Secondary emissions do not count in determining the potential to emit of a facility or stationary source.

Using this definition of Potential to Emit an emission inventory was developed for the Rathdrum Power LLC and reviewed by DEQ. Detailed calculations can be found in Appendix A of this statement of basis.

Pre-Project Potential to Emit

Pre-project Potential to Emit is used to establish the change in emissions at a facility as a result of this project.

The following table presents the pre-project potential to emit for all criteria pollutants from the turbine with duct burner, auxiliary boiler, and fuel pre-heater at the facility as submitted by the Applicant and reviewed by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 2 PRE-PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	$PM_{10}/PM_{2.5}$	SO_2	NO_X	CO	VOC
	T/yr[a]	T/yr[a]	T/yr[a]	T/yr[a]	T/yr[a]
Gas Turbine with Duct Burner [b]	40.1	10.66	95.4	95.50	5.30
Auxiliary Boiler	0.08	0.006	0.80	0.80	0.02
Fuel Pre-Heater	0.20	0.01	1.60	1.60	0.04
Diesel-fired emergency generator, 550 hp[c]	0.07	0.06	0.90	0.20	0.08
Diesel-fired emergency fire pump, 550 hp [c]	0.02	0.02	0.30	0.20	0.03
Pre-Project Totals	**40.47**	**10.76**	**99.00**	**98.30**	**5.47**

a) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.
b) After the implementation of Cold Day Software - a separate project.
c) Taken from Table 3-3 of 1999 PTC application.

Post Project Potential to Emit

Post project Potential to Emit is used to establish the change in emissions at a facility and to determine the facility's classification as a result of this project. Post project Potential to Emit includes all permit limits resulting from this project.

The following table presents the post project Potential to Emit for criteria pollutants from turbine with duct burner, cooling tower, evaporative tower, auxiliary boiler, and fuel pre-heater at the facility as submitted by the Applicant and reviewed by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit. The method used to calculate $PM_{2.5/10}$ emissions from the cooling and evaporative tower were taken from, "Calculating Realistic PM_{10} Emissions from Cooling Towers", an abstract by Joel Reisman and Gordon Frisbie.

Table 3 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	$PM_{10}/PM_{2.5}$	SO_2	NO_X	CO	VOC
	T/yr[a]	T/yr[a]	T/yr[a]	T/yr[a]	T/yr[a]
Gas Turbine with Duct Burner	40.1	10.66	95.4	95.50	5.30
Auxiliary Boiler	0.08	0.006	0.80	0.80	0.02
Fuel Pre-Heater	0.20	0.01	1.60	1.60	0.04
Diesel-fired emergency generator, 550 hp	0.07	0.06	0.90	0.20	0.08
Diesel-fired emergency fire pump, 550 hp	0.02	0.02	0.30	0.20	0.03
Cooling Tower	0.77	0.00	0.00	0.00	0.00
Evaporative Tower	0.18	0.00	0.00	0.00	0.00
Post Project Totals	**41.42**	**10.76**	**99.00**	**98.30**	**5.47**

a) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.

Change in Potential to Emit

The change in facility-wide potential to emit is used to determine if a public comment period may be required and to determine the processing fee per IDAPA 58.01.01.225. The following table presents the facility-wide change in the potential to emit for criteria pollutants.

Table 4 CHANGES IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	$PM_{10}/PM_{2.5}$	SO_2	NO_X	CO	VOC
	T/yr	T/yr	T/yr	T/yr	T/yr
Pre-Project Potential to Emit	40.47	10.76	99.00	98.30	5.47
Post Project Potential to Emit	41.42	10.76	99.00	98.30	5.47
Changes in Potential to Emit	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Non-Carcinogenic and Carcinogenic TAP Emissions

Pre- and post-project, as well as the change in, non-carcinogenic and Carcinogenic TAP emissions are presented in the following table. This project does not change the rated capacity of the any process equipment listed in Table 1.1 of the permit. Hourly emissions rates are unchanged. Therefore, there is no emissions increment for any non-carcinogenic toxic air pollutants (TAP) emissions that are based on 24-hour average.

Table 2 PRE- AND POST PROJECT POTENTIAL TO EMIT FOR NON-CARCINOGENIC TOXIC AIR POLLUTANTS

Non-Carcinogenic Toxic Air Pollutants	Pre-Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Post Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Change in 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Non-Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Arsenic[(a)]	1.54E-05	1.54E-05	0.0000	1.5E-06	Yes
Benzene[(a)]	1.62E-04	1.62E-04	0.0000	8.0E-04	No
Beryllium[(a)]	9.27E-07	9.27E-07	0.0000	2.8E-05	No
Cadmium[(a)]	8.49E-05	8.49E-05	0.0000	3.7E-06	Yes
Formaldehyde[(a)]	5.79E-03	5.79E-03	0.0000	5.1E-04	Yes
Nickel[(a)]	1.62E-04	1.62E-04	0.0000	2.7E-05	Yes
Phosphoric Acid	0.00E+00	1.00E-03	0.0010	0.067	No
Sulfuric Acid	0.00E+00	1.10E-02	0.0110	0.067	No
Sodium Hydroxide	0.00E+00	2.00E-03	0.0020	0.133	No
Benzo(a)pyrene[(a)]	9.27E-08	9.27E-08	0.0000	2.0E-06	No
Benz(a)anthracene[(a)]	1.39E-07	1.39E-07	0.0000	NA	No
Benzo(b)fluoranthene[(a)]	1.39E-07	1.39E-07	0.0000	NA	No
Benzo(k)fluoranthene[(a)]	1.39E-07	1.39E-07	0.0000	NA	No
Chrysene[(a)]	1.39E-07	1.39E-07	0.0000	NA	No
Dibenzo(a,h)anthracene[(a)]	9.27E-08	9.27E-08	0.0000	NA	No
Indeno(1,2,3-cd)pyrene[(a)]	1.54E-05	1.54E-05	0.0000	1.5E-06	No

a) Non-Carcinogenic and carcinogenic toxic air pollutants previously modeled in PTC No. 2014.0014 issued October 22, 2014.

This permitting project incorporates the toxic air pollutants of phosphoric acid, sulfuric acid, and sodium hydroxide from the cooling and evaporative towers. All of which has existed at the facility since start-up and was included in the initial PTC for the facility.

All changes in emissions rates for non-carcinogenic TAP were below EL (screening emissions level) as a result of this project. Therefore, modeling is not required for any non-carcinogenic TAP because none of the 24-hour average non-carcinogenic screening ELs identified in IDAPA 58.01.01.585 were exceeded.

Post Project HAP Emissions

According to the May 30, 2014, submittal and confirmed by DEQ, the uncontrolled HAP combined is less than 25 T/yr, and the maximum single HAP is less than 10 T/yr.

Ambient Air Quality Impact Analyses

Idaho Air Rules Section 203.02 states that "no permit to construct shall be granted for a new or modified stationary source or modified stationary source unless the applicant shows to the satisfaction of the Department" that the source or modification "would not cause or significantly contribute to a violation of any ambient air quality standard." Modeling requirements for a modification hinge on the quantity of increased emissions that could occur as a result of the modification. "Modification" is defined in Idaho Air Rules Section 006 as "Any physical change in, or change in the method of operation of, a stationary source or facility which results in an emission increase as defined in Section 007...". "Emission increase" is then identified in Section 007 as "the amount by which projected actual emissions exceed baseline actual emissions of an emissions unit.":

- The Cooling Tower and Evaporative Tower were identified in the originally submitted PTC application, but emissions were not calculated or analyzed;

- The Cooling Tower and Evaporative Tower were constructed as part of the original facility construction project;
- Current operation of the Cooling Tower and Evaporative Tower were not identified by DEQ as a violation of PTC requirements;
- The current project will primarily be administrative in nature, bringing the towers into a permit. There will be no new emission sources constructed or modified at the facility.

In this instance, there is no physical change, change in method of operation, or emission increase as defined by the rules. Therefore, a NAAQS compliance demonstration is not required for permit issuance.

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Kootenai County, which is designated as attainment or unclassifiable for $PM_{2.5}$, PM_{10}, SO_2, NO_2, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

Facility Classification

The AIRS/AFS facility classification codes are as follows:

For HAPs (Hazardous Air Pollutants) Only:

A = Use when any one HAP has permitted emissions > 10 T/yr or if the aggregate of all HAPS (Total HAPs) has permitted emissions > 25 T/yr.

SM80 = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits > 8 T/yr of a single HAP or ≥ 20 T/yr of Total HAPs.

SM = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits < 8 T/yr of a single HAP and/or < 20 T/yr of Total HAPs.

B = Use when the potential to emit (i.e. uncontrolled emissions and permitted emissions) are below the 10 and 25 T/yr HAP major source thresholds.

UNK = Class is unknown.

For All Other Pollutants:

A = Use when permitted emissions of a pollutant are > 100 T/yr.

SM80 = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are ≥ 80 T/yr.

SM = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are < 80 T/yr.

B = Use when the potential to emit (i.e. uncontrolled emissions and permitted emissions) are below the 100 T/yr major source threshold.

UNK = Class is unknown.

Table 3 REGULATED AIR POLLUTANT FACILITY CLASSIFICATION

Pollutant	Uncontrolled PTE (T/yr)	Permitted PTE (T/yr)	Major Source Thresholds (T/yr)	AIRS/AFS Classification
PM	>100	72.02	**100**	SM
PM_{10}	>100	41.40	**100**	SM
$PM_{2.5}$	>100	41.40	**100**	SM
SO_2	<100	10.76	**100**	B
NO_X	>100	99.00	**100**	SM80
CO	>100	98.30	**100**	SM80
VOC	<100	5.47	**100**	B
HAP (single)	<10	<	**10**	B
Total HAPs	<25	<	**25**	B

Previously established in PTC No. P-2014.0014 issued October 22, 2014, "Synthetic Minor" classification for criteria pollutants is defined as the uncontrolled Potential to Emit for criteria pollutants are above the applicable major source thresholds and the Potential to Emit for criteria pollutants fall below the applicable major source thresholds. The facility is "SM" because the allowable emissions specified in the facility's permit are less than 100 T/yr and the uncontrolled potential to emit is greater than 100 T/yr for NOx, CO, PM, and $PM_{2.5/10}$.

"Synthetic Minor" classification for HAP pollutants is defined as the uncontrolled Potential to Emit for HAP pollutants are above the applicable major source thresholds and the Potential to Emit for HAP pollutants fall below the applicable major source thresholds. The facility's the uncontrolled HAP combined is less than 25 T/yr and the maximum single HAP is less than 10 T/yr. Therefore, the facility is minor source for HAP emissions.

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201 ..... Permit to Construct Required

The permittee has requested that a PTC be issued to the facility for the existing emissions source. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401 ..... Tier II Operating Permit

The application was submitted for a permit to construct (refer to the Permit to Construct section), and an optional Tier II operating permit has not been requested. Therefore, the procedures of IDAPA 58.01.01.400–410 were not applicable to this permitting action.

Rule for Control of Odors (IDAPA 58.01.01.775)

Odorous gases shall not be emitted to the atmosphere in such quantities as to cause air pollution in accordance with IDAPA 58.01.01.775. This requirement is assured by Permit Condition 2.9.

Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.625 ..... Visible Emissions

The sources of PM emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by Permit Conditions 2.8.

Standards for New Sources (IDAPA 58.01.01.676)

IDAPA 58.01.01.676 ..... Standards for New Sources

The fuel burning equipment located at this facility, with a maximum rated input of ten (10) million BTU per hour or more, are subject to a particulate matter limitation of 0.015 gr/dscf of effluent gas corrected to 3% oxygen by volume when combusting gaseous fuels. Fuel-Burning Equipment is defined as any furnace, boiler, apparatus, stack and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer. This requirement is assured by Permit Conditions 2.10.

Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

IDAPA 58.01.01.301 ..... Requirement to Obtain Tier I Operating Permit

The facility is a Tier I source and has an existing Tier I operating permit because the facility is a phase II source of the acid rain program. This permit will be incorporated into Tier I operating permit in accordance with IDAPA 58.01.01.209.05.b.

No post project facility-wide emissions from this facility have a potential to emit greater than 100 tons per year for regulated air pollutants or 10 tons per year for any one HAP or 25 tons per year for all HAP combined.

PSD Classification (40 CFR 52.21)

40 CFR 52.21 ..... Prevention of Significant Deterioration of Air Quality

The facility is not a major stationary source as defined in 40 CFR 52.21(b)(1), nor is it undergoing any physical change at a stationary source not otherwise qualifying under paragraph 40 CFR 52.21(b)(1) as a major stationary source, that would constitute a major stationary source by itself as defined in 40 CFR 52. Therefore in accordance with 40 CFR 52.21(a)(2), PSD requirements are not applicable to this permitting action. The facility is/is not a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a), and does not have facility-wide emissions of any criteria pollutant that exceed 250 T/yr.

NSPS Applicability (40 CFR 60)

This project does not change facility's applicability and requirements of 40 CFR 60. Refer to the statement of basis of the facility's initial Tier I operating permit for federal regulation analysis of these requirements. The facility has submitted Tier I operating permit renewal application July 15, 2019, and an analysis on NSPS requirements will be required in the Tier I operating permit renewal application.

NESHAP Applicability (40 CFR 61)

The facility is not subject to any NESHAP requirements in 40 CFR 61.

MACT/GACT Applicability (40 CFR 63)

This project does not change facility's applicability and requirements of 40 CFR 63. The facility has submitted Tier I operating permit renewal application July 15, 2019, and an analysis on 40 CFR 63 requirements will be required in the Tier I operating permit renewal application.

Permit Conditions Review

This section describes the permit conditions that have been added, revised, modified or deleted as a result of this permitting action. The following table shows how the new permit condition numbers correspond to the old permit condition numbers. The most current PTC template was used, and the general provisions have been replaced with the provisions in the current template.

Table 4 Old Permit Numbers Converted to New Permit Numbers

Old Permit Condition Number	New Permit Condition Number	Old Permit Condition Number	New Permit Condition Number
2.3	2.4	2.20	2.23
2.4	2.5	2.21	2.24
2.5	2.6	2.21.1	2.24.1
2.6	2.7	2.21.2	2.24.2
2.7	2.8	2.21.3	2.24.3
2.8	2.9	2.22	2.25
2.9	2.10	2.23	2.26
2.10	2.11	2.24	2.27
2.11	2.12	2.25	2.30
2.12	2.13	2.26	2.31
2.13	2.16	2.27	2.32
2.14	2.17	2.28	2.33
2.15	2.18	2.29	2.34
2.15.1	2.18.1	2.29.1	2.34.1
2.15.2	2.18.2	2.29.2	2.34.2
2.16	2.19	2.29.3	2.34.3
2.17	2.20	2.30	2.35
2.18	2.21	2.31	2.36
2.19	2.22	--	--

Permit Condition 1.1 through 1.3

Lists the scope of the permit, identifies the permit conditions that have been added, modified or revised, and states that the existing PTC will be replaced by this new PTC..

Table 1.1

Has been revised to include the existing cooling and evaporative towers.

Permit Condition 2.1

Process description has been revised to include the cooling and evaporative towers in the facility process.

Revised Permit Condition 2.2

Added a table listing the control devices for the gas turbine with duct burner, auxiliary boiler, cooling tower, and evaporative tower. The control device for the Auxiliary Boiler has always been a Dry Low NO_X (DLN) Burner. This error was found during the last Tier One Operating Permit Renewal.

Permit Condition 2.3 and Table 2.2

Emission limits and an emission limit table was added for the gas turbine with duct burner, auxiliary boiler, fuel pre-heater, diesel-fired emergency generator, diesel-fired emergency fire pump, cooling tower, and evaporative tower. These emissions are from PTC No. P-2014.0014, issued October 22, 2014, and in this permitting action. This permitting action did not change any emission limits. The cooling and evaporative towers were included in the initial PTC application; however Idaho DEQ did not incorporate them into the PTC. This permitting action takes the emissions established in the initial PTC application and includes them in the facility's permit to construct.

Permit Condition 2.8

Previous permit condition was labeled visible emissions; this permitting action used the current template which is listed as, "Opacity limit". This permit condition is otherwise unchanged.

Initial Permit Condition 2.14

This permit condition lists the emission control unit, control efficiency, and the maximum total dissolved solids specific to the cooling tower used to calculate the $PM_{2.5/10}$ emission limit. The maximum design flow rate will be used for the cooling tower, this will ensure compliance with the control efficiency and the total dissolved solids permit limit.

Initial Permit Condition 2.15

This permit condition lists the emission control unit, control efficiency, and the maximum total dissolved solids specific to the evaporative tower used to calculate the $PM_{2.5/10}$ emission limit. The maximum design flow rate will be used for the evaporative tower, this will ensure compliance with the control efficiency and the total dissolved solids permit limit.

Initial Permit Condition 2.28

Establishes the monitoring requirements for the cooling tower to ensure compliance with the control equipment, control efficiency, total dissolved solids, and circulation flow rate. Since the maximum design flow rate was used to establish the total dissolved solids permit limit, and the control efficiency of the tower, there shall not be a monitoring and recordkeeping requirements for the flow rate.

Initial Permit Condition 2.29

Establishes the monitoring requirements for the evaporative tower to ensure compliance with the control equipment, control efficiency, total dissolved solids, and circulation flow rate. Since the maximum design flow rate was used to establish the total dissolved solids permit limit, and the control efficiency of the tower, there shall not be a monitoring and recordkeeping requirements for the flow rate.

Initial Permit Condition 3.1

The duty to comply general compliance provision requires that the permittee comply with all of the permit terms and conditions pursuant to Idaho Code §39-101.

Initial Permit Condition 3.2

The maintenance and operation general compliance provision requires that the permittee maintain and operate all treatment and control facilities at the facility in accordance with IDAPA 58.01.01.211.

Initial Permit Condition 3.3

The obligation to comply general compliance provision specifies that no permit condition is intended to relieve or exempt the permittee from compliance with applicable state and federal requirements, in accordance with IDAPA 58.01.01.212.01.

Initial Permit Condition 3.4

The inspection and entry provision requires that the permittee allow DEQ inspection and entry pursuant to Idaho Code §39-108.

Initial Permit Condition 3.5

The permit expiration construction and operation provision specifies that the permit expires if construction has not begun within two years of permit issuance or if construction has been suspended for a year in accordance with IDAPA 58.01.01.211.02.

Initial Permit Condition 3.6

The notification of construction and operation provision requires that the permittee notify DEQ of the dates of construction and operation, in accordance with IDAPA 58.01.01.211.01 and 211.03.

Initial Permit Condition 3.7

The performance testing notification of intent provision requires that the permittee notify DEQ at least 15 days prior to any performance test to provide DEQ the option to have an observer present, in accordance with IDAPA 58.01.01.157.03.

Initial Permit Condition 3.8

The performance test protocol provision requires that any performance testing be conducted in accordance with the procedures of IDAPA 58.01.01.157, and encourages the permittee to submit a protocol to DEQ for approval prior to testing.

Initial Permit Condition 3.9

The performance test report provision requires that the permittee report any performance test results to DEQ within 60 days of completion, in accordance with IDAPA 58.01.01.157.04-05.

Initial Permit Condition 3.10

The monitoring and recordkeeping provision requires that the permittee maintain sufficient records to ensure compliance with permit conditions, in accordance with IDAPA 58.01.01.211.

Initial Permit Condition 3.11

The excess emissions provision requires that the permittee follow the procedures required for excess emissions events, in accordance with IDAPA 58.01.01.130-136.

Initial Permit Condition 3.12

The certification provision requires that a responsible official certify all documents submitted to DEQ, in accordance with IDAPA 58.01.01.123.

Initial Permit Condition 3.13

The false statement provision requires that no person make false statements, representations, or certifications, in accordance with IDAPA 58.01.01.125.

Initial Permit Condition 3.14

The tampering provision requires that no person render inaccurate any required monitoring device or method, in accordance with IDAPA 58.01.01.126.

Initial Permit Condition 3.15

The transferability provision specifies that this permit to construct is transferable, in accordance with the procedures of IDAPA 58.01.01.209.06.

Initial Permit Condition 3.16

The severability provision specifies that permit conditions are severable, in accordance with IDAPA 58.01.01.211.

PUBLIC REVIEW

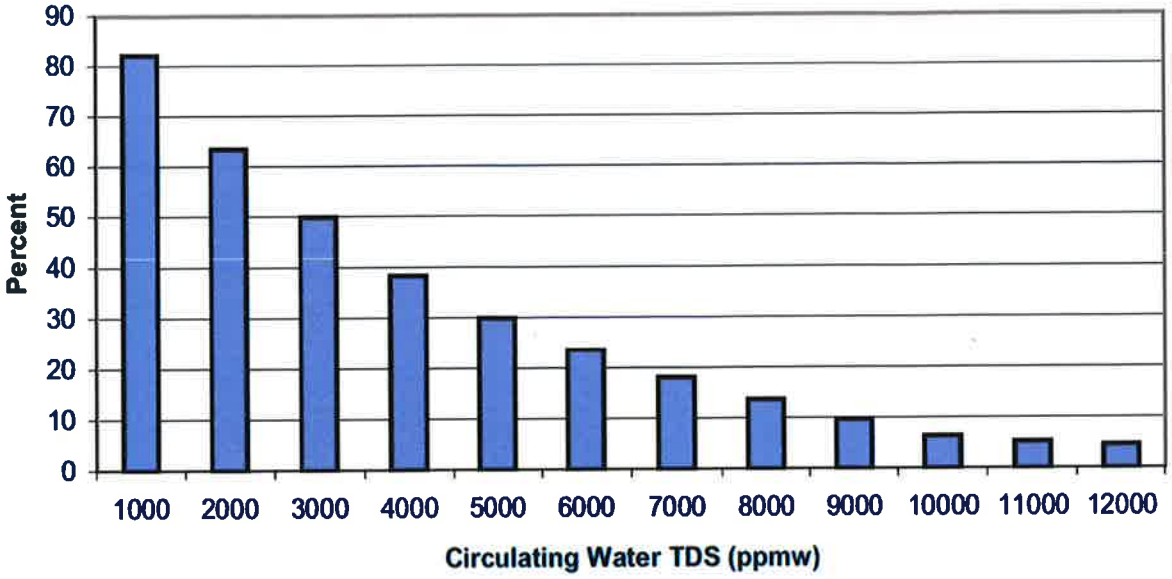
Public Comment Period

A public comment period was made available to the public in accordance with IDAPA 58.01.01.209.05.b. During this time, comments were submitted in response to DEQ's proposed action. Refer to the chronology for public comment period dates.

A response to public comments document has been crafted by DEQ based on comments submitted during the public comment period. That document is part of the final permit package for this permitting action.

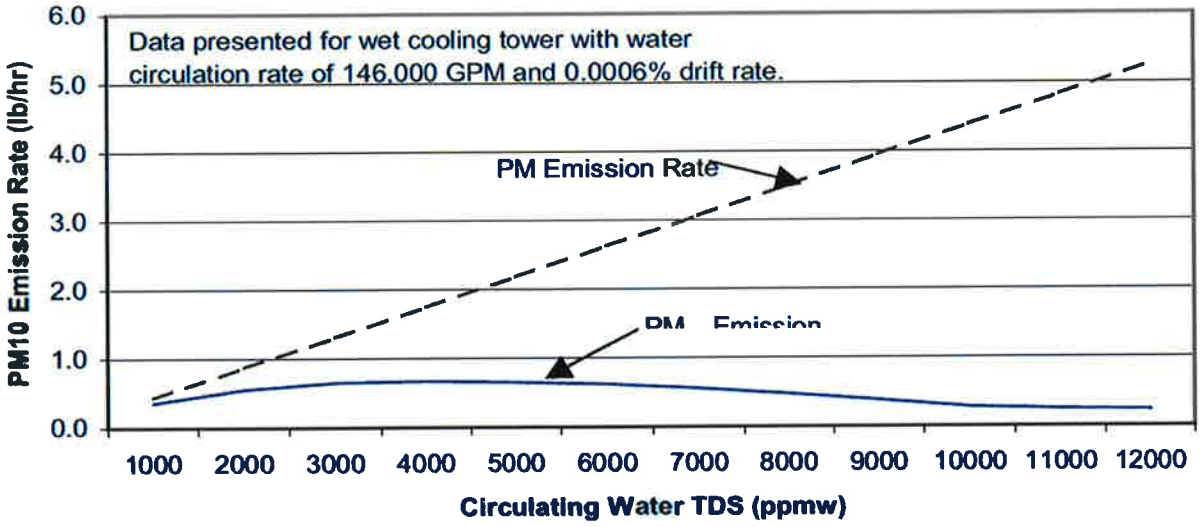
APPENDIX A – EMISSIONS INVENTORIES

Figure 1: Percentage of Drift PM that Evaporates to PM10



Reisman and Frisbie, 2001, Calculating Realistic PM10 Emissions From Cooling Towers. Greystone Environmental Consultants, Sacramento, CA., as presented at AWMA Conference in 2001.

Figure 2: PM_{10} Emission Rate vs. TDS



Wet Cooling Towers
Fugitive Emission Calculations
Reisman and Frisbie, 2001

Main Cooling Tower

Hours of Ops
8760

Expected Max TDS is 23000*70% = 16,100 ppm
Drift eliminator 0.001% **Assume no control**
Max water recirculation based on maximum of each pump: 28500 gpm each

Uncontrolled

Using Reisman and Frisbie		
Drift Rate %	**0.001**	**%**
TDS	**16100**	**ppm**
Water recirc rate	**57000**	**gpm**
Drift Rate	28539900	lb water/hour
PM emissions	459492.39	PM lb/hour
PM emissions per year	4025153336	pounds
PM emissions per year	2012576.668	Tons
PM10 fraction (see Tab Calc %PM10)	3.8	%
PM10 emissions	17460.71082	PM10 lb/hour
PM10 emissions per year	152955826.8	pounds
PM10 emissions per year	76477.91339	Tons

Assume PM2.5 = PM10

1. Assume maximum conductivity of 23000 uS/cm. 70% of conductivity = TDS of 16,100 ppm

2. Decrease **%PM10 Fraction** of 3.8% (Updated the cooling tower PM10 emissions calculations to incorporate more recent and representative droplet size distribution data for high-efficiency drift eliminator controlled cooling towers"). Scientific paper by Reisman and Frisbie citing EPRI data is included in the permit application and in the Technical Supporting Document.

Reisman and Frisbie, 2001, *Calculating Realistic PM10 Emissions From Cooling Towers*. Greystone Environmental Consultants, Sacramento, CA., as presented at AWMA Conference in 2001.

ZLDS Evaporative Tower

Hours of Ops
8760

Max TDS is 70,000 ppm
Drift eliminator 0.01% **Assume no control**
Max water 3380 gpm

2 sets of baffles, OEM

Uncontrolled

Using Reisman and Frisbie		
Drift Rate %	**0.01**	**%**
TDS	**70000**	**ppm**
Water recirc rate	**3380**	**gpm**
Drift Rate	1692366	lb water/hour
PM emissions	118465.62	PM lb/hour
PM emissions per year	1037758831	pounds
PM emissions per year	518879.4156	Tons
PM10 fraction (see Tab Calc %PM10)	0.3	%
PM10 emissions	355.39686	PM10 lb/hour
PM10 emissions per year	3113276.494	pounds
PM10 emissions per year	1556.638247	Tons

Assume PM2.5 = PM10

1. Assume TDS of **70,000 ppm**.

2. Decrease **%PM10 Fraction** of **0.3%** (Updated the cooling tower PM10 emissions calculations to incorporate more recent and representative droplet size distribution data for high-efficiency drift eliminator controlled cooling towers"). Scientific paper by Reisman and Frisbie citing EPRI data is included in the permit application and in the Technical Supporting Document.

Reisman and Frisbie, 2001, *Calculating Realistic PM10 Emissions From Cooling Towers*. Greystone Environmental Consultants, Sacramento, CA., as presented at AWMA Conference in 2001.

Wet Cooling Towers
Fugitive Emission Calculations
Reisman and Frisbie, 2001

Main Cooling Tower

Hours of Ops
8760

Expected Max TDS is 23000*70% = 16,100 ppm
Drift eliminator 0.001%
Max water recirculation based on maximum of each pump: 28500 gpm each

Using Reisman and Frisbie

Drift Rate %	**0.001**	**%**
TDS	**16100**	**ppm**
Water recirc rate	**57000**	**gpm**
Drift Rate	285.399	lb water/hour
PM emissions	4.594924	PM lb/hour
PM emissions per year	40251.53	pounds
PM emissions per year	20.12577	Tons
PM10 fraction (see Tab Calc %PM10)	3.8	%
PM10 emissions	0.174607	PM10 lb/hour
PM10 emissions per year	1529.558	pounds
PM10 emissions per year	0.764779	Tons

Assume PM2.5 = PM10

1. Assume maximum conductivity of 23000 uS/cm. 70% of conductivty = TDS of 16,100 ppm

2. Decrease **%PM10 Fraction of 3.8%** (Updated the cooling tower PM10 emissions calculations to incorporate more recent and representative droplet size distribution data for high-efficiency drift eliminator controlled cooling towers"). Scientific paper by Reisman and Frisbie citing EPRI data is included in the permit application and in the Technical Supporting Document.

Reisman and Frisbie, 2001, *Calculating Realistic PM10 Emissions From Cooling Towers*. Greystone Environmental Consultants, Sacramento, CA., as presented at AWMA Conference in 2001.

ZLDS Evaporative Tower

Hours of Ops
8760

Max TDS is 70,000 ppm
Drift eliminator 0.01%
Max water 3380 gpm

2 sets of baffles, OEM

Using Reisman and Frisbie

Drift Rate %	**0.01**	**%**
TDS	**70000**	**ppm**
Water recirc rate	**3380**	**gpm**
Drift Rate	169.2366	lb water/hour
PM emissions	11.84656	PM lb/hour
PM emissions per year	103775.9	pounds
PM emissions per year	51.88794	Tons
PM10 fraction (see Tab Calc %PM10)	0.3	%
PM10 emissions	0.03554	PM10 lb/hour
PM10 emissions per year	311.3276	pounds
PM10 emissions per year	0.155664	Tons

Assume PM2.5 = PM10

1. Assume TDS of **70,000** ppm.

2. Decrease **%PM10 Fraction of 0.3%** (Updated the cooling tower PM10 emissions calculations to incorporate more recent and representative droplet size distribution data for high-efficiency drift eliminator controlled cooling towers"). Scientific paper by Reisman and Frisbie citing EPRI data is included in the permit application and in the Technical Supporting Document.

Reisman and Frisbie, 2001, *Calculating Realistic PM10 Emissions From Cooling Towers*. Greystone Environmental Consultants, Sacramento, CA., as presented at AWMA Conference in 2001.

Assumptions:

Density of drift water droplets =	1.0	g/cm3
Density of solid particles* =	2.7	g/cm3
(*Based on density of sodium chloride)		
TDS Concentration =	16100	ppmw

Diameter of Drift Droplet (µm)	Solid Particle Diameter (µm)	EPRI % Mass Diameter	% Mass Less Than 10µm	
10	1.813	0.000		
20	3.627	0.196		
30	5.440	0.226		
40	7.253	0.514		
50	9.067	1.816		
60	10.880	5.702		3.8
70	12.694	21.348		
90	16.320	49.812		
110	19.947	70.509		
130	23.574	82.023		
150	27.201	88.012		
180	32.641	91.032		
210	38.081	92.468		
240	43.521	94.091		
270	48.961	94.689		
300	54.401	96.288		
350	63.468	97.011		
400	72.535	98.340		
450	81.602	99.071		
500	90.669	99.071		
600	108.802	100.000		

Assumptions:

Density of drift water droplets =	1.0	g/cm3
Density of solid particles* =	2.7	g/cm3
(*Based on density of sodium chloride)		
TDS Concentration =	70000	ppmw

Diameter of Drift Droplet (µm)	Solid Particle Diameter (µm)	EPRI % Mass Diameter	% Mass Less Than 10µm	
10	2.960	0.000		
20	5.919	0.196		
30	8.879	0.226		
40	11.839	0.514		0.3
50	14.798	1.816		
60	17.758	5.702		
70	20.718	21.348		
90	26.637	49.812		
110	32.556	70.509		
130	38.476	82.023		
150	44.395	88.012		
180	53.274	91.032		
210	62.153	92.468		
240	71.032	94.091		
270	79.911	94.689		
300	88.790	96.288		
350	103.589	97.011		
400	118.387	98.340		
450	133.186	99.071		
500	147.984	99.071		
600	177.581	100.000		

Jan 1, 2018 - Dec 31, 2018

Aux Boiler	
Hours	124
Fuel kscf	579.065

Gas Turbine	
Hours	6799
Fuel kscf	10896664
Fuel MMBtu	11254609
CEMs NOx	72

Gas BTU's	1046

Gas Htr Hrs	6795

Diesels		
DFP Hours		13.98
DG Hours		2.89

Gas Turbine		
Cold Start		17

Populated by internal Calculations
Submitted State EI Data Entry
Required Data for Calculations

	GH	Aux	CT	GT	FRD	DFP	EDG	PE	
SO2	0.01	0.00	0.00	3.40	0.00	0.00	0.00	0.00	3.41
NOx	0.42	0.01	0.00	72.00	0.00	0.04	0.02	3.62	76.11
PM10	0.10	0.00	13.47	7.85	0.02	0.00	0.00	0.00	21.44
VOC	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
									101.03

Gas Turbine	
Hr. to Rata	3828.7
Hr. from Rata	2976.83
New PM10	4.1

Gas Turbine + Duct Burner CEMs Data		
51063.6	Jan	1175761
27354	Feb	628114
53678.4	Mar	1233839
32896	Apr	757258
14927	May	342357
10337.4	Jun	238299
53546.9	Jul	1232291
52244.8	Aug	1201444
51021.6	Sep	1172684
39974.9	Oct	920360
46439.6	Nov	1067908
55776	Dec	1284294
489260.2	klbs/mmbtu	11254609
10896664	kscf	

Aux boiler CEMs Data	
2	Jan
5	Feb
0	Mar
4	Apr
7	May
4	Jun
1	Jul
0	Aug
0	Sep
2	Oct
1	Nov
0	Dec
26	klbs
579.06	kscf

Diesel Fire Hours	
0.81	Jan
0.97	Feb
1.19	Mar
0.87	Apr
1.06	May
2.94	Jun
0.89	Jul
1.25	Aug
0.92	Sep
0.96	Oct
1.17	Nov
0.95	Dec
13.98	hours

Diesel Gen Hours	
0.25	Jan
0.25	Feb
0.2	Mar
0.25	Apr
0.23	May
0.27	Jun
0.23	Jul
0.29	Aug
0.23	Sep
0.22	Oct
0.27	Nov
0.2	Dec
2.89	hours

CT-1 ACT

ACTUAL
Emission From Gas Turbine - Jan 1, 2018 - Dec 31, 2018
Stack Test (date noted below) & AP-42 4/00

		Annual			Hourly		Starts	Number	NOx	CO
	Hrs	Fuel Use(kscf)	Heat Input (MMBtu)		Fuel Use (kscf)	Heat Input			lbs/start	lbs/start
General Electric PG7241FA	*6799*	*10,896,664*	*11,254,609*		1582.54	1655.33	Cold	17	0	1087
Natural Gas Avg Btu/SCF		*1046.00*								
January 1 to August 8	3828.7	Total Heat Input	11254609							
August 8 to Dec 31	2976.83									

					Emissions			Startup Emissions		Total Emissions
Criteria Pollutants	Factor	Units	Source	Formula ID	lbs/yr	tons/yr	*lb/hr*	lbs/yr	tons/yr	
PM-10(includes condensibles)	4.1	lb/hr	Test - August 2016	1	15697.67	7.85	**6.089**			
SO2	0.000804095	lb/MMBtu	CEMS		6798.86	3.40	***1.000***			
NOx (w/duct burners)	0.029	lb/MMBtu	CEMs							
NOx (w/o duct burners)	N/A	lb/MMBtu	CEMS							
Total NOx			CEMS		144000.00	*72.00*	***21.180***			
VOC	0	lb/hr	Test - Dec 2001	1	0.00	0.00	**0.000**			
Methane	2.3	lb/MMSCF	AP-42	4	25062.33	12.53	**3.686**			
Ethane	3.1	lb/MMSCF	AP-42	4	33779.66	16.89	**4.968**			
HAP										
Ammonia	16.53	lb/hr	Test - August 2017	1	112387.47	56.19	**16.530**			
Acetaldehyde	4.60E-03	lb/hr	Mnfr	1	31.28	1.56E-02	**0.005**			
Benzene	5.90E-02	lb/hr	Mnfr	1	401.14	2.01E-01	**0.059**			
Formaldehyde	2.00E-05	lb/MMBtu	AP-42	3	225.09	1.13E-01	**0.033**			

Formula

1	E = F * Hours of operation
2	E = Cs*DSCFH
3	E = F * HI
4	E=F * Fuel (mmscf)

Where:
E = Emission Rate
F = Emission Factor
Cs = 1.194 E-7 lb/DSCF NOx; 7.268 E-8 lb/DSCF CO; 4.41 E-8 lb/DSCF NH3
Note - Values in italics obtained from EDR as submitted to EPA-CAMD

2018 4th Qtr. CAMD Report

Number of hours	6857
Operating time (hours)	6798.47
SO2 tons	3.4
CO2 tons	668953.2
Heat Input (mmbtu)	11256503
NOX rate (#/mmbtu)	0.016

GAS HTR1-ACT

Emission from Gas Heater - Actual Emissions Jan 1 2018 - Dec 31 2018
(AP-42 7/98)

	Hrs	Annual Fuel Use(kscf)	Heat Input(MMBtu)	Rating (MMBtu/hr)
GasTech Heater	6795	25984.7	27180	4

Natural Gas Avg BTU/SCF 1046.00

		Gas Heater Emissions			
Criteria Pollutants			lbs	tons	*lb/hr*
PM-10	7.6	lb/million ft^3	197.48	0.10	**0.029**
SO2	0.6		15.59	0.01	**0.002**
NOx	32		831.51	0.42	**0.122**
CO	84		2182.72	1.09	**0.321**
VOC	5.5		142.92	0.07	**0.021**

Notes:

Gas Heater factors are based on AP-42 1.4 (7/98) Natural Gas Combustion

DSL-ACT

Emissions from Diesel Engines (AP-42 10/96) Jan 1, 2018 - Dec 31, 2018

	HP	Run Hrs	Heat Input	HP-Hrs	Fuel Thruput
Diesel Fire Pump	185	13.98	18104100	2586.3	0.13 KGAL
Diesel Generator	550	2.89	11126500	1589.5	0.08 KGAL
Conversion, BTU /hp-hr	7,000				
Diesel BTU/GAL	137000				

				Emissions (lbs)					
				lbs/hr		lbs/yr		Emissions (tons)	
Criteria Pollutants	Source	Factor		Fire Pump	Emerg. Gen.	Fire Pump	Emerg. Gen.	Fire Pump	Emerg. Gen.
PM-10	AP-42	2.20E-03	lb/hp-hr	0.41	1.21	5.69	3.50	0.00	0.00
NOx		0.031		5.74	17.05	80.18	49.27	0.04	0.02
SO2		2.05E-03		0.38	1.13	5.30	3.26	0.00	0.00
TOC(VOC)		2.47E-03		0.46	1.36	6.39	3.93	0.00	0.00

BLR-ACT

Emission from Aux Boiler (AP-42 7/98)

Jan 1, 2018 - Dec 31, 2018

	Hrs	Annual Fuel Use(kscf)	Heat Input(MMBtu)	Rating (MMBtu/hr)
Vapor Power Boiler	124	579.1	605.7016	21.5

Natural Gas Avg BTU/SCF 1046.00

Aux Boiler Emissions

Criteria Pollutants			lbs	tons	lb/hr
PM-10	7.6	lb/million ft^3	4.40	0.0022	**0.035**
SO2	0.6		0.35	0.0002	**0.003**
NOx	32		18.53	0.0093	**0.149**
VOC	5.5		3.18	0.0016	**0.026**

Notes:

Gas Heater factors are based on AP-42 1.4 (7/98) Natural Gas Combustion

Jan 1, 2018 - Dec 31, 2018

Paved Roads
Fugitive Emission Calculations
AP-42 Section 13.2.1 11/06

FACTORS	VEHICLE/WK	126	ROAD LENGTH	0.5	mi (doubled for roundtrip)
	ANNUAL VMT =	6552			

E = k(sL/2)^0.065 (W/3)^1.5 - C

	PM <30 mics	PM<10 mics	PM<2.5 mics	
k=	0.082	0.016	0.0024	lb/VMT
sL=	0.015			g/m2
W=	1.8			tons
C=	0.00047	0.00047	0.00036	lb/VMT
E=	0.0273	0.0049	0.0005	lb/VMT

k=base emission factor for particle size range
sL=road surface silt loading
W=average weight (tons) of the vehicles traveling road
C=emission factor for exhaust, brake wear and tire wear
E= Partculate emission factor

PM-30 EMISSION	=	**178.59**	LB/YR	**0.089** TPY
PM-10 EMISSION	=	**32.37**	LB/YR	**0.016** TPY
PM-2.5 EMISSION	=	**2.96**	LB/YR	**0.001** TPY

Wet Cooling Towers
Fugitive Emission Calculations
Reisman and Frisbie, 2001

	Hours of Ops
Unit 1 Cooling Tower	6799

Using Reisman and Frisbie			Key inputs:
Drift Rate	4306.02	lb water/hour	**86,000 gpm max recirc, 0.01% drift rate, TDS= 20,000 ppm PM10 Fraction = 0.023*PM** [Note 2]
PM emissions per Tow	86.1204	PM lb/hour	
PM10 emissions per Tc	1.980769	PM10 lb/hour	
Current PM10 emissior	3.961538	PM10 lb/hour	
	13.46725	TPY PM10 total	

1. Assume TDS of **20,000** ppm.
2. Decrease **%PM10 Fraction** of **2.3%** (Updated the cooling tower PM10 emissions calculations to incorporate more recent and representative droplet size distribution data for high-efficiency drift eliminator controlled cooling towers"). Scientific paper by Reisman and Frisbie citing EPRI data is included in the permit application and in the Technical Supporting Document.

Note 2: Reisman and Frisbie, 2001, *Calculating Realistic PM10 Emissions From*

Portable Equipment
AP-42
June 4, 2018- June 15, 2018

Diesel Generator	**HP**	**Run Hours**
	972	240

	lbs/hr.	lbs/year	Emission Tons
NOx	30.14	7233.46	3.62
PM	2.14	513.34	0.00
SO2	1.99	478.34	0.00
VOC	2.40	576.34	0.00

O&M Data

Nox	**CO**	**PM**	**SO2**	
2.6	0.11	0.075	N/A	g/hp-hr

APPENDIX B – FACILITY DRAFT COMMENTS

The following comments were received from the facility on November 8, 2019:

PTC

Facility Comment: Page 3, add the specifics of the Cooling Tower drift eliminators

Manufacturer: Brentwood

Model: CF150Max

Control Efficiency: 0.001%.

DEQ Response: The specifics of the Cooling Tower drift eliminators have been added.

Facility Comment: Selective Catalytic Reduction (SCR) with Aqueous Ammonia Injection: Manufacturer: Umicore. The manufacturer of the SCR catalyst on pg. 7 was replace in June of 2019 and the DLN control on the Aux. boiler pg.65 was an error that was found during our review. The Tier I application that we submitted in July is correct with the SCR manufacturer and Aux. boiler DLN.

DEQ Response: The manufacturer has been changed to Umicore

Facility Comment: Page 4, change the control device for the Aux Boiler from, Flue Gas Recirculation to Dry Low NOx (DLN) Burner. The manufacturer of the SCR catalyst on pg. 7 was replace in June of 2019 and the DLN control on the Aux. boiler pg.65 was an error that was found during our review. The Tier I application that we submitted in July is correct with the SCR manufacturer and Aux. boiler DLN.

DEQ Response: The control device for the Auxiliary Boiler has been changed to a Dry Low NOX (DLN) Burner.

Facility Comment: Page 8, 2.14 Second and Third bullets, change the control efficiency from 0.01% to 0.001%. (Updated application page with corrected control efficiency and specifications sheet for the drift eliminator attached to this message.)

DEQ Response: The control efficiency for the Cooling Tower has been revised to 0.001%. The emissions Inventory in the application used 0.001%

Facility Comment: Page 12, 2.28 and 2.29, change monitor and record the circulating flow rate to, the maximum design circulating flow rate of the cooling tower will be used to demonstrate compliance for all monitoring requirements.

DEQ Response: This change has been made. The emissions inventory used the maximum design flow rate for the cooling and evaporative towers. Since the maximum design flow rate was used, there shall be no monitoring and recordkeeping for the flow rate. This flow rate also set the control efficiency and the total dissolved solids content. Only the total dissolved solids content shall be monitored and recorded.

Statement of Basis

Facility Comment: Page 7, add the specifics of the Cooling Tower drift eliminators

Manufacturer: Brentwood

Model: CF150Max

Control Efficiency: 0.001%

DEQ Response: The specifics of the Cooling Tower drift eliminators have been added.

Facility Comment: Selective Catalytic Reduction (SCR) with Aqueous Ammonia Injection: Manufacturer: Umicore. The manufacturer of the SCR catalyst on pg. 7 was replace in June of 2019 and the DLN control on the Aux. boiler pg.65 was an error that was found during our review. The Tier I application that we submitted in July is correct with the SCR manufacturer and Aux. boiler DLN.

DEQ Response: The manufacturer has been changed to Umicore

APPENDIX C – PROCESSING FEE

PTC Processing Fee Calculation Worksheet

Instructions:
Fill in the following information and answer the following questions with a Y or N. Enter the emissions increases and decreases for each pollutant in the table.

Company:	Rathdrum Power LLC
Address:	9924 W. Lancaster Road
City:	Rathdrum
State:	Idaho
Zip Code:	83858
Facility Contact:	Richard Ihrig
Title:	Plant Manager
AIRS No.:	221112

N	Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N
Y	Did this permit require engineering analysis? Y/N
N	Is this a PSD permit Y/N (IDAPA 58.01.01.205.04)

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO_x	0.0	0	0.0
SO_2	0.0	0	0.0
CO	0.0	0	0.0
PM10	0.9	0	0.9
VOC	0.0	0	0.0
Total:	0.0	0	**0.9**
Fee Due	**$ 1,000.00**		

Comments: