Technical Analysis Report

For the terms and conditions of
Minor Permit AQ0267MSS10

Issued to ConocoPhillips Alaska, Inc.

For the Central Production Facility #1

Alaska Department of Environmental Conservation
Air Permits Program

Prepared by Brittany Crutchfield

Preliminary – September 15, 2021

1. INTRODUCTION

This Technical Analysis Report (TAR) provides the Alaska Department of Environmental Conservation's (Department's) basis for issuing Minor Permit AQ0267MSS10 to ConocoPhillips Alaska, Inc. for the Central Production Facility #1. Their application is classified under 18 AAC 50.502(c)(3) for changes to an existing stationary source that will cause an emission increase greater than 10 tpy SO_2. ConocoPhillips Alaska, Inc. requested the permit under 18 AAC 50.508(6) in order to revise terms or conditions previously established in a Title I Permit. Minor Permit AQ0267MSS10 revises Construction Permit AQ0267CPT01 and rescinds Minor Permit AQ0267MSS06. The TAR for both permits remains

2. STATIONARY SOURCE DESCRIPTION

The Central Production Facility **#1** is an existing stationary source. The emissions unit (EU) inventory consists of 14 turbines, four heaters, two emergency generators, seven freeze protection pumps, five emergency flares, two incinerators, 14 drill site or production heaters, five storage tanks, a topping plant, three IC engines, a mobile gasoline storage/dispensing tank, and a rock crusher unit.

ConocoPhillips Alaska, Inc. currently operates under Operating Permit AQ0267TVP01, Revision 2 under a permit shield (a renewal application for the operating permit is pending).

3. PERMITTING HISTORY AND BACKGROUND ON H_2S LIMITS

Air Quality Control Permit to Operate No. 9373-AA004 issued to ARCO Alaska Inc. on May 11, 1993 and then on January 3, 1997 established ambient air quality limit of 200 ppmv H_2S to address field gas souring. At the time, the Department determined that this was not considered a physical chant or a change in the method of operations, so PSD review was not required, but that increment was being consumed so ambient limits were necessary. These limits were included in Exhibit B of Air Quality Control Permit to Operate No. 9373-AA004 and has been carried forward into Construction Permit 267CP01 and Operating Permit No. AQ0267TVP01, Revision 4. Exhibit B of Construction Permit 267CP01 indicates that the 200 ppmv H_2S limit for EUs 1 through 3 and 8 through 13 as, "Carried forward. EPA PSD BACT and 10/7/97 permit revision." However, permit documentation does not indicate that the H_2S content of the fuel gas was established as a BACT limit itself. A BACT limit for SO_2 was established as a ton per year limit, but a short-term limit on H_2S concentration was not established as BACT.

For EUs 14 and 17, Prevention of Significant Deterioration Construction Permit No. 9773-AC016 was issued February 13, 1998. In the TAR for this permit, the 200 ppmv H_2S on a 24-hour average limit was established as SO_2 BACT. This requirement was carried forward into Construction Permit No. 267CP01 and Operating Permit No. AQ0267TVP01, Revision 4. For ambient air quality protection purposes ConocoPhillips Alaska, Inc.is establishing a 300 ppmv H_2S limit in Minor Permit AQ0267MSS10.

EU 16 is subject to the requirements of 40 C.F.R. 60 Subpart J, and is therefore subject to a limit of 162 ppmv H_2S. For ambient air quality protection purposes ConocoPhillips Alaska, Inc.is establishing a 300 ppmv H_2S limit Minor Permit AQ0267MSS10.

Minor Permit No. AQ0267MSS01 issued August 5, 2005 has since been revised and rescinded by the issuance of Minor Permit No. AQ0267MSS06 issued March 28, 2014. Minor Permit No. AQ0267MSS01 established an H_2S limit for EUs 42, 46, and 47 for PSD major modification avoidance. Since the issuance of Minor Permit No. AQ0267MSS06, EUs 42, 46, and 47 have been installed and their combined SO_2 potential to emit (PTE) based on 500 ppmv H_2S is less than the PSD permitting thresholds. For ambient air quality protection purposes ConocoPhillips Alaska, Inc.is establishing a 500 ppmv H_2S limit in Minor Permit AQ0267MSS10.

4. APPLICATION DESCRIPTION

ConocoPhillips Alaska, Inc. submitted their application on Month DD, 20YY. The requested changes are as follows:

- Revise H_2S limits in Construction Permit AQ0267CPT01; and
- Rescind H_2S limits in Minor Permit AQ0267MSS06.

5. CLASSIFICATION FINDINGS

Based on the review of the application, the Department finds that:

1. Minor Permit AQ0267MSS10 is classified under 18 AAC 50.502(c)(3) for beginning a physical change to or a change in the method of operation of an existing stationary source with a potential to emit greater than 10 tons per year of SO_2.
2. Minor Permit AQ0267MSS10 is classified under 18 AAC 50.508(6) to revise or rescind terms and conditions of a Title I permit.

6. APPLICATION REVIEW FINDINGS

Based on the review of the application, the Department finds that:

1. ConocoPhillips Alaska, Inc.'s minor permit application for the Central Production Facility #1 contains the elements listed in 18 AAC 50.540.
2. The minor permit no longer needs to include the conditions associated with the *State Emissions Standards*, since those provisions are part of the Title V Operating Permit AQ0267TVP02, Revision 1. The minor permit likewise does not need to include the *General Recordkeeping, Reporting, and Certification* conditions, or the *Standard Conditions*, except as required under 18 AAC 50.544(a)(5).
3. ConocoPhillips Alaska, Inc. is not requesting a change to the annual SO_2 BACT limits.
4. The actual-to-projected-actual test is used only to determine the PSD applicability of the emissions increases, it is not used to establish a PSD avoidance limit for H_2S.
5. The 24-month period of January 2019 to December 2020 was selected for the baseline actual emissions. ConocoPhillips Alaska, Inc. believes that this 24-month period represents the highest SO_2 emission rates from gas burning equipment and the highest average fuel gas H_2S concentrations in the last 10 years. Choosing the highest SO_2 emission rates for the baseline is consistent with 40 C.F.R. 52.21(b)(48)(i), which indicates ConocoPhillips Alaska, Inc. may select any consecutive 24 month period within the 10-year period immediately preceding the date that the Department received the complete permit application.

6. ConocoPhillips Alaska, Inc.fulfilled the 18 AAC 5.540(k)(3) requirement by submitting an updated ambient SO_2 air quality analysis with the application. The analysis demonstrates that increasing the H_2S limits will not cause or contribute to a violation of the 3-hour, 24-hour, and annual SO_2 AAAQS.
7. ConocoPhillips Alaska, Inc.stated that the fuel gas H_2S limits in Construction Permit 267CP01 are not BACT limits. The Department concurs with ConocoPhillips Alaska, Inc.'s position and agrees that ConocoPhillips Alaska, Inc.'s request to change the fuel gas H_2S limits is not subject to BACT review as the BACT limits are for SO_2 emissions, not H_2S concentrations. The H_2S limits can therefore be changed without readdress the SO_2 BACT limits and can be revised by a Title I permit revision under 18 AAC 50.508(6). This decision is consistent with Minor Permit AQ0171MSS02.
8. For EUs 14 and 17 the previously established 200 ppmv H_2S concentration on a 24-hour average limit for BACT listed in Section 6 is still applicable even though the ambient air quality protection limit is higher.
9. EU 16 is still subject to the NSPS requirements even though the ambient air quality protection limit is higher.
10. Increasing H_2S limits does not directly threaten compliance with the annual SO_2 BACT limits because actual SO_2 emissions are a function of both the H_2S concentration and the volume of fuel gas combusted.
11. Because the net emissions increase is approximately 39.6 tpy SO_2, which is greater than 50 percent of the PSD-significant emissions threshold of 40 tpy, the provisions of 40 C.F.R. 52.21(r)(6) will apply to Central Production Facility #1 because there is a "reasonable possibility" that a major modification may result from the project.
12. ConocoPhillips Alaska, Inc. did request that owner requested limits (ORLs) for EUs 42, 46 and 47 in Minor Permit AQ0267MSS06 be removed. The ORL included a maximum combined rating of the EUs prior to their installation. ConocoPhillips Alaska, Inc. included a revised PTE for these EUs assuming 500 ppmv fuel sulfur content which the Department believes is a conservative estimation. The Department agrees that the combined rating of EUs 42, 46 and 47 are below the limit and therefore no longer require the ORLs for H_2S or heat input. Therefore, with this issuance of Minor Permit AQ0267MSS10, the H_2S limit established in Minor Permit No. AQ0267MSS01 and carried forward in Minor Permit AQ0267MSS06 is no longer needed.
13. ConocoPhillips Alaska, Inc provided updated emissions calculations not including emissions from EUs that have been removed from service since the issuance of Minor Permit AQ0267MSS07. Therefore, though only SO_2 was affected with this permitting action, emissions for NOx, CO, VOC, and PM were reduced.

7. EMISSIONS SUMMARY AND PERMIT APPLICABLITY

ConocoPhillips Alaska, Inc. provided emission calculations for **Central Production Facility #1** with the application for Minor Permit AQ0267MSS10.

Table 2 shows the PSD permit applicability of the project with respect to SO_2 emissions. The project has no effect on other regulated pollutant emissions and does not trigger the need for step two of the two-step PSD applicability procedure. Baseline actual SO_2 emissions in tpy are calculated using baseline actual H_2S concentrations in ppmv in combination with the amount of fuel combusted.

Table 2 – PSD Permit Applicability, (tpy)

Description	SO_2 (tpy)
Baseline Actuals (BAE)	107.3
Projected Actuals (PAE)	146.9
PAE-BAE	**39.6**
PSD Step 1 Increase	39.6
PSD Significance Level	40
PSD Review Required?	No

Table Notes:

Step 1 PSD permit applicability conducted in accordance with 40 C.F.R. 52.21(a)(2)(iv)(c).

Step 1 PSD permit applicability determined only based on SO_2 emissions from EUs 1 through 17, 29 through 33, 35 (gas-fired burners only), 37 through 40, and 42 through 49.

Table 3 shows the emissions summary and permit applicability with assessable emissions from the stationary source. Emission factors and detailed calculations for SO_2 are provided in Appendix A.

A summary of the potential to emit (PTE) and assessable PTE, as determined by the Department, is shown in Table 3 below.

Table 3 – Emissions Summary and Permit Applicability, tons per year (tpy)

Parameter	NOx	CO	VOC	PM-2.5	PM-10	SO_2
PTE before Modification[a]	3,333.6	1,079.2	468.6	128.9	128.9	321.7
PTE after Modification	3,263.0	1,048.2	464.9	115.3	115.3	340.6
Change in PTE	-70.6	-31	-3.7	-13.6	-13.6	18.9
18 AAC 50.502(c)(3) Permit Thresholds	10	N/A	N/A	10	10	10
502(c)(3) Applicable?	N	N/A	N/A	N	N	Y
Title V Permit Thresholds	100	100	100	100	100	100
Title V Permit Required?	Y	Y	Y	Y	Y	Y
Assessable Emissions [b] [c]	3,263	1,048	465	115	115	341
Total Assessable[d]	4,767					

Table Notes:

[a] – PTE before modification is from the Technical Analysis Report for Permit AQ0267MSS07

[b] – Assessable emissions include fugitive emissions.

[c] – Assessable emissions include any pollutant greater than or equal to 10 tpy.

[d] – PM-10 emissions include PM-2.5 emissions. Therefore, PM-2.5 is not counted in total assessable emissions.

8. REVISIONS TO PERMIT CONDITIONS

Table 4 below lists the requirements carried over from Construction Permit 267CP01 into Minor Permit **AQ0267MSS10**.

Table 4 – Comparison of 267CP01 to **AQ0267MSS10** Conditions[2]

Permit 267CP01 Condition No.	Description of Requirement	Permit AQ0267MSS10 Condition No.	How Condition was Revised
Exhibit B	Emission and Operating Limits	Section 6	SO_2 limits were not revised but the H_2S content limit was revised. Revisions to each limit is documented in the tables included in Condition 9.

Table 5 below lists the requirements carried over from Minor Permit AQ0267MSS06 into Minor Permit **AQ0267MSS10**.

Table 5 – Comparison of AQ0267MSS06 to **AQ0267MSS10** Conditions[3]

Permit AQ0267MSS06 Condition No.	Description of Requirement	Permit AQ0267MSS10 Condition No.	How Condition was Revised
3	NOx ORL for EUs 1-3	Condition 8	Condition was revised to include EU IDs.
4	Production Heater Input Limit	None	Condition removed as the EUs installed as DS1E and DS1J Production Heaters (EUs 42, 46, and 47) authorized under AQ0267MSS06 have a combined heat input of less than the limit established.
5	Fuel Gas H_2S Content Limit	None	This condition is no longer required as the EUs installed as DS1E and DS1J at the stationary source (EUs 42, 46, and 47) do not require an H_2S limit in order to avoid PSD permitting.
6	SO_2 Emission Limit	None	This condition is no longer required as the EUs installed as DS1E and DS1J at the stationary source (EUs 42, 46, and 47) have a combined SO_2 PTE of less than 35 tpy.

[2] This table does not include all standard and general conditions.

9. PERMIT CONDITIONS

The bases for the standard and general conditions imposed in Minor Permit AQ0267MSS10 are described below.

Cover Page

18 AAC 50.544(a)(1) requires the Department to identify the stationary source, Permittee, and contact information. The Department provided this information on the cover page of the permit.

Section 1: Permit Administration

Minor Permit AQ0267MSS10 only revises portions of Construction Permit 267CP01. Condition 1 states that the terms and conditions of Construction Permit 267CP01 are still in effect except as revised by Minor permit AQ0267MSS10.

Minor Permit AQ0267MSS10 rescinds Minor Permit AQ0267MSS06 as stated in Condition 2.

Section 2: Emissions Unit Inventory

The EUs authorized and/or restricted by this permit are listed in Table 1 of the permit. Unless otherwise noted in the permit, the information in Table 1 is for identification purposes only. Condition 3 is a general requirement to comply with AS 46.14 and 18 AAC 50 when installing a replacement EU.

Section 3: Fee Requirements

18 AAC 50.544(a)(2) requires the Department to include a requirement to pay fees in accordance with 18 AAC 50.400 – 18 AAC 50.499 in each minor permit issued under 18 AAC 50.542. The Department used the Standard Permit Condition (SPC) I language for Minor Permit AQ0267MSS10.

Section 4: Ambient Air Quality Protection Requirements

Condition 7, Ambient Air Quality Protection Requirements

18 AAC 50.544(a)(3) and 18 AAC 50.544(a)(6) require the Department to include conditions to protect air quality, when warranted. The Department determined that conditions are warranted to protect the 1-hour, 3-hour, and annual SO_2 AAAQS, and the 3-hour, 24-hour, and annual Class II maximum allowable increases (increment) for the reasons described in Appendix B of this TAR.

Section 6: Revisions to Previous Permit Actions

As discussed in the 6section of this TAR, the H_2S fuel content limits are not the BACT limits established for the stationary source. Therefore the Department has revised the H_2S limits established in Exhibit B of Construction Permit 267CP01 as indicated in the tables included in Condition 9. Condition 9 revises only the H_2S limits, the other limits established in Exhibit B of Construction Permit 267CP01 remain unchanged.

Section 7: SO_2 Emissions Monitoring, Recordkeeping, & Reporting

The provisions of 40 C.F.R. 52.21(r)(6) apply with respect to any regulated NSR pollutant emitted from projects for existing emissions units at a major stationary source in

circumstances where there is a reasonable possibility that a project that is not part of a major modification may result in a significant emissions increase of that pollutant. The requirements include additional monitoring, recordkeeping, and reporting during the 10-year contemporaneous period after the application was submitted (i.e., the project baseline date). Condition 10 requires monitoring of the quantity of fuel gas consumed by EUs 1 through 17, 29 through 33, 35, 37 through 40, and 42 through 49 as well as calculating the total calendar month and total calendar year SO_2 emissions. The Permittee is also required to calculate the net change in SO_2 emissions each calendar year, which will determine if the project was actually a major modification under 40 C.F.R. 52.21(b)(2). Conditions 11 and 12 include specific recordkeeping and reporting requirements.

Section 8: General Recordkeeping, Reporting, and Certification Requirements

Condition 13, Certification

18 AAC 50.205 requires the Permittee to certify any permit application, report, affirmation, or compliance certification submitted to the Department. This requirement is reiterated as a standard permit condition in 18 AAC 50.345(j). Minor Permit AQ0267MSS10 uses the standard condition language, but also expands it by allowing the Permittee to provide electronic signatures.

Condition 14 Submittals

Condition 14 clarifies where the Permittee should send their reports, certifications, and other submittals required by the permit. The Department included this condition from a practical perspective rather than a regulatory obligation.

Section 9: Standard Permit Conditions

Conditions 15 – 20, Standard Permit Conditions

18 AAC 50.544(a)(5) requires each minor permit issued under 18 AAC 50.542 to contain the standard permit conditions in 18 AAC 50.345, as applicable. 18 AAC 50.345(a) clarifies that subparts (c)(1) and (2), and (d) through (o), may be applicable for a minor permit.

The Department included all of the minor permit-related standard conditions of 18 AAC 50.345 in Minor Permit AQ0267MSS10. The Department incorporated these standard conditions as follows:

- 18 AAC 50.345(c)(1) and (2) is incorporated as Condition 15 of Section 9 (Standard Permit Conditions);
- 18 AAC 50.345(d) through (h) is incorporated as Conditions 16 through 20, respectively, of Section 9 (Standard Permit Conditions); and
- As previously discussed, 18 AAC 50.345(j) is incorporated as Condition 13 of Section 7 (Recordkeeping, Reporting, and Certification Requirements).

10. PERMIT ADMINISTRATION

ConocoPhillips Alaska, Inc. may operate in accordance with Minor Permit AQ0267MSS10 once a revision to the permit application for Operating Permit AQ0267TVP02 has been received by the Department.

APPENDIX A: EMISSIONS CALCULATIONS

Table A-1 presents details of the EUs, their characteristics, and emissions. Potential emissions are estimated using maximum annual operation for all fuel burning equipment as defined in 18 AAC 50.990(39) subject to any operating limits.

Table A-1 – SO_2 Emissions Summary, in Tons Per Year (TPY)

EU ID	Unit ID/ Description	Maximum Rating or Capacity	Operating Limits	SO_2 PTE[1]
1	GE Frame 3 (MS3002K-HE) Gas Lift Compressor	16,260 hp ISO	300 ppmv H_2S	109.0
2	GE Frame 3 (MS3002K-HE) Gas Lift Compressor	16,260 hp ISO	300 ppmv H_2S	
3	GE Frame 3 (MS3002K-HE) Gas Lift Compressor	16,260 hp ISO	300 ppmv H_2S	
8	EGT (Ruston) TB5000 Electric Generator (Dual fired)	4,900 hp ISO	300 ppmv H_2S	
9	EGT (Ruston) TB5000 Electric Generator (Dual fired)	4,900 hp ISO	300 ppmv H_2S	
10	EGT (Ruston) TB5400 Water Injection Pump	5,400 hp ISO	300 ppmv H_2S	
11	EGT (Ruston) TB5400 Water Injection Pump	5,400 hp ISO	300 ppmv H_2S	
12	EGT (Ruston) TB5400 Water Injection Pump (Dual fired)	5,400 hp ISO	300 ppmv H_2S	
13	EGT (Ruston) TB5400 Water Injection Pump (Dual fired)	5,400 hp ISO	300 ppmv H_2S	
4	EGT (Ruston) TB5000 Electric Generator (Dual fired)	4,900 hp ISO	300 ppmv H_2S	10.38
5	EGT (Ruston) TB5000 Electric Generator (Dual fired)	4,900 hp ISO	300 ppmv H_2S	10.38
6	EGT (Ruston) TB5000 Electric Generator (Dual fired)	4,900 hp ISO	300 ppmv H_2S	10.38
7	EGT (Ruston) TB5000 Electric Generator (Dual fired)	4,900 hp ISO	300 ppmv H_2S	10.38
14	GE Frame 6 (PG6561 B) Gas Turbine Electric Generator	53,500 hp (39,930 kW) ISO	200 ppmv H_2S 24-hr average (BACT Limit)	65.6
15	Broach Emergency Heater (Dual fired)	27.8 MMBtu/hr [heat input, LHV]	300 ppmv H_2S 0.25 %S liquid fuel	5.28 1.86
17	Kvaerner Process Systems Fuel Gas Heater	9.7 MMBtu/hr [heat input, LHV]	200 ppmv H_2S	1.30
29	McGill Emergency Flare	1.6 MMscf/day (Pilot/Purge/Assist) Combined Total for all flares	300 ppmv H_2S	14.78
30	Kaldair I-58-VS Emergency Flare/Control vDevice (LP)		300 ppmv H_2S	
31	Kaldair I-87-FS Emergency Flare (HP)		300 ppmv H_2S	
32	McGill Emergency Flare		300 ppmv H_2S	
33	McGill Emergency Flare		300 ppmv H_2S	

EU ID	Unit ID/ Description	Maximum Rating or Capacity	Operating Limits	SO_2 PTE[1]
35	Comptro Incinerator w/ supplemental gas-fired burners: Primary Burner #1 Primary Burner #2 Secondary Burner	1,300 lb/hr 0.8 MMBtu/hr 0.8 MMBtu/hr 2.0 MMBtu/hr	300 ppmv H_2S	7.58
16	Born Crude Heater (KUTP)	44.4 MMBtu/hr [heat input, LHV]	300 ppmv H_2S	33.0
37	Latoka Drill Site Heater (1A)	16.4 MMBtu/hr [heat input, LHV]	500 ppmv H_2S	
38	Latoka Drill Site Heater (1B)	16.4 MMBtu/hr [heat input, LHV]	500 ppmv H_2S	
39	CE NATCO Drill Site Heater (1C)	14.5 MMBtu/hr [heat input, LHV]	500 ppmv H_2S	
40	CE NATCO Drill Site Heater (1D)	19.6 MMBtu/hr [heat input, LHV]	500 ppmv H_2S	
43	BS & B Drill Site Heater (1F)	14.9 MMBtu/hr [heat input, LHV]	500 ppmv H_2S	
44	BS & B Drill Site Heater (1G)	14.9 MMBtu/hr [heat input, LHV]	500 ppmv H_2S	
45	Latoka Drill Site Heater (1H)	16.4 MMBtu/hr [heat input, LHV]	500 ppmv H_2S	
48	BS&B Drill Site Heater (1Q)	21.0 MMBtu/hr [heat input, LHV]	500 ppmv H_2S	
49	BS&B Drill Site Heater (1R)	17.2 MMBtu/hr [heat input, LHV]	500 ppmv H_2S	
42	GTS Energy Production Heater (1E)	30.0 MMBtu/hr [heat input, LHV]	500 ppmv H_2S	10.08
46	Petrochem Development Production Heater (1J)	36.8 MMBtu/hr [heat input, LHV]	500 ppmv H_2S	12.36
47	Petrochem Development Production Heater (1J)	36.8 MMBtu/hr [heat input, LHV]	500 ppmv H_2S	12.36
			TOTAL	314.72

Table Notes:
[1] SO_2 emissions calculated using mass balance

APPENDIX B: MODELING REPORT

Alaska Department of Environmental Conservation

Air Permit Program

Review of

ConocoPhillips Alaska, Inc.'s

Ambient Demonstration

for the

CPF1 H_2S Limits Increase Project

Minor Permit AQ0267MSS10

Prepared by: Jesse R. Jack

August 31, 2021

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1. INTRODUCTION

This report summarizes the Alaska Department of Environmental Conservation's (Department's) findings regarding the ambient demonstration submitted by ConocoPhillips Alaska, Inc. (CPAI) for the CPF1 H_2S Limits Increase Project. CPAI submitted this analysis in support of their May 3, 2021 minor permit application (AQ0267MSS10). CPAI demonstrated that operating the Central Processing Facility 1 (CPF1) emissions units (EUs) within the restrictions listed in this report will not cause or contribute to a violation of the 1-hour, 3-hour, 24-hour, and Annual Sulfur Dioxide (SO_2) Alaska Ambient Air Quality Standards (AAAQS) established in 18 AAC 50.010. Additionally, CPAI demonstrated that the project will not cause or contribute to a violation of the 3-hour, 24-hour, and Annual SO_2 maximum allowable increases (increments) described in 18 AAC 50.020.

2. PROJECT BACKGROUND

The following sub-sections provide additional background on the proposed project and application materials.

2.1. Project Location and Description

CPF1 is an existing stationary source located in the Kuparuk area of Alaska's North Slope. CPAI presently operates CPF1 under AQ0267MSS05, AQ0267MSS06, AQ0267MSS07 and AQ0267TVP01 Revision 4. These permits contain conditions established to protect ambient air quality which limit the hydrogen sulfide (H_2S) content of gaseous fuel. CPAI is proposing to increase those limits to 300 parts per million by volume (ppmv) for production facility equipment fuel, and 500 ppmv for drill site equipment fuel.

2.2. Project Classification

CPAI's minor permit application is classified under 18 AAC 50.502(c)(3) for SO_2. In accordance with the application information requirements of 18 AAC 50.540(c)(2)(A), applicants must provide an ambient AAAQS analysis for each triggered pollutant. CPAI fulfilled this requirement by submitting an AAAQS analysis for 1-hour, 3-hour, 24-hour, and Annual SO_2 with their minor permit application.

CPAI's minor permit application is also classified under 18 AAC 50.508(6) due to their request to revise terms or conditions previously established in a permit issued under the Title I provisions of the Clean Air Act. Applicants subject to this provision must include the effects of revising those terms or conditions on the underlying ambient demonstration, per 18 AAC 50.540(k)(3)(C). CPAI wants to revise conditions established in Construction Permit No. 9773-AC016, AQ0267CP01, and AQ0267MSS06, to protect the SO_2 standards and increments. CPAI therefore fulfilled the 18 AAC 50.540(k)(3)(C) showing requirement by submitting an updated ambient demonstration with their minor permit application.

2.3. Modeling Protocol Submittal

The Department does not typically require a modeling protocol to be submitted with minor permit applications.[1] However, a protocol is helpful to ensure that the modeling tools, procedures, input data, and assumptions that are used by an applicant are consistent with both State and Federal guidance.

CPAI did not submit a modeling protocol for the CPF1 H_2S Limits Increase Project. However, they and their consultant, SLR International Corporation (SLR), discussed several key aspects with the Department prior to conducting the ambient analysis. Their approach to their ambient analysis also closely follows that of their previously-permitted project for Central Processing Facility #3 (minor permit AQ0171MSS03).

2.4. Application Submittal

The Department received CPAI's permit application and ambient demonstration on May 3, 2021. SLR prepared the application and ambient analysis on their behalf.

3. SOURCE IMPACT ANALYSIS

CPAI used computer analysis (modeling) to predict the ambient SO_2 air quality impacts. The Department's findings regarding CPAI's analysis are discussed below.

3.1. Approach

CPAI conducted cumulative analyses to demonstrate compliance with the AAAQS and increments. They did not perform a project-only analysis for comparison to the significant impact levels (SILs), instead opting to perform cumulative analyses for each of the applicable averaging periods. They also assumed that all permanent EUs were increment-consuming, and opted to omit increment-expanding activities from their modeling; this simplified their analyses by obviating the need to develop separate parameters for their AAAQS and increment modeling (see sections 3.7.2 and 3.9 for more details).

CPF1 is aggregated with a number of nearby oilfield drill sites. CPAI is also requesting increases to existing H_2S limits for EUs at these aggregated drill sites in their application for AQ0267MSS10. Two of these drill sites – DS1E and DS1J – are located in close proximity to CPF1 and are sites where large heaters may be installed in the future. Rather than simply modeling these sites as off-site sources, CPAI chose to conduct near-field analyses in which DS1E and DS1J are explicitly modeled in order to account for the larger heaters, and to represent impacts from increased SO_2 emissions at the aggregated drill sites.

3.2. Model Selection

There are a number of air dispersion models available to applicants and regulators. The U.S. Environmental Protection Agency (EPA) lists these models in their *Guideline on Air Quality Models* (Guideline), which the Department has adopted by reference in 18 AAC 50.040(f).

[1] The Department may request an applicant submit a modeling protocol in accordance with 18 AAC 50.540(c)(2).

CPAI used EPA's AERMOD Modeling System (AERMOD) for their ambient analysis. AERMOD is an appropriate modeling system for this permit application.

The AERMOD Modeling System consists of three major components: AERMAP, used to process terrain data and develop elevations for the receptor grid and EUs; AERMET, used to process the meteorological data; and the AERMOD dispersion model, used to estimate the ambient pollutant concentrations.

CPAI used the versions of AERMET and AERMOD that were current at the time they prepared their application (versions 19191). However, EPA updated AERMOD and AERMET on April 22, 2021. The latest versions are now AERMOD and AERMET versions 21112.

The Department does not generally require applicants update their ambient demonstrations if there is a subsequent model update, unless there is reason to believe that it would affect the outcome of the modeling demonstration. The Department reviewed EPA's Model Change Bulletins and determined that the revisions regard optional features, non-pertinent algorithms, and other changes that would lead to decreased estimates. The Department also conducted a sensitivity analysis by running the modeled input files in the latest version of AERMOD and AERMET. It found that none of the changes in the latest versions of the model software warrant an updated modeling analysis.

CPAI assumed all terrain elevations were zero rather than running AERMAP, which is common practice for new source review modeling on the North Slope coastal plain.

The Department finds that CPAI selected appropriate models for their ambient analysis.

3.3. Modeling Domain

The modeling domain is used to help establish and limit the receptor grid and offsite emissions inventory. CPAI used a reasonable modeling domain for their ambient demonstration. The modeling domain is described on page 5 of Attachment E of their permit application.

3.4. Meteorological Data

CPAI continued to use the same meteorological data set as used in support of their CPF3 permit, AQ0171MSS03. These data consist of three years of data collected at Nuiqsuit during the calendar years of 2016, 2017 and 2019. These data represent the plume transport conditions of the CPF1 EUs. CPAI continued to use the datasets processed with the previous version of AERMET, as discussed above; the Department reprocessed the meteorological data using the current version of AERMET (version 21112) and the previously approved AERMET settings and determined that CPAI's modeling continues to demonstrate compliance with the AAAQS and increments.

CPAI's continued used of this processed data set is appropriate. Additional information regarding the Department's quality assurance review of the Nuiqsut data, and the surface

parameters used by CPAI to process the data, can be found in Appendix B of the Technical Analysis Report for Minor Permit AQ0171MSS03.

3.5. Coordinate System

Air quality models need to know the relative location of the EUs, structures (if applicable), and receptors, in order to properly estimate ambient pollutant concentrations. Therefore, applicants must use a consistent coordinate system in their modeling analysis.

CPAI used the Universal Transverse Mercator (UTM) grid for their coordinate system. This is the most commonly used approach in AERMOD assessments. The UTM system divides the world into 60 zones, extending north-south, and each zone is 6 degrees wide in longitude. The modeled EUs, structures, and receptors are all located in UTM Zone 6. CPAI used the North American Datum of 1983 reference for each UTM coordinate.

3.6. Terrain

Terrain features can influence the dispersion of exhaust plumes from EUs and the resulting ambient air concentrations of the pollutants being emitted. Digitized terrain elevation data is, therefore, generally included in a modeling analysis, unless the entire modeling domain is over water or the terrain features are so slight that a flat terrain assumption can be made. AERMOD's terrain preprocessor, AERMAP, uses terrain data to obtain the base elevations for the modeled EUs, buildings, and receptors; and to calculate a "hill height scale" for each receptor.

CPAI did not include terrain data in their modeling analysis because the entire modeling domain is composed of featureless terrain. This approach is common on Alaska's north slope, and is acceptable for this project.

3.7. EU Inventory

CPAI modeled the EUs listed in Table 1. The EU locations are shown in figures 2-2, 2-5 and 2-6 of Appendix E to their application. CPAI characterized all EUs as point sources, as the emissions from each source will pass through an exhaust stack.

Table 1. Modeled EU Inventory

EU ID	Stack ID	Description	Cumulative Rating
1	C2101A1	Gas Lift Compressor Turbine (bypass stack)	16,260 hp ISO
	C2101A2	Gas Lift Compressor Turbine (WHRU stack)	
2	C2101B1	Gas Lift Compressor Turbine (bypass stack)	16,260 hp ISO
	C2101B2	Gas Lift Compressor Turbine (WHRU stack)	
3	C2101C1	Gas Lift Compressor Turbine (bypass stack)	16,260 hp ISO
	C2101C2	Gas Lift Compressor Turbine (WHRU stack)	
4	G201A1	Ruston Generator Turbine (bypass stack)	4,900 hp ISO
	G201A2	Ruston Generator Turbine (WHRU stack)	
5	G201B1	Ruston Generator Turbine (bypass stack)	4,900 hp ISO
	G201B2	Ruston Generator Turbine (WHRU stack)	
6	G201C1	Ruston Generator Turbine (bypass stack)	4,900 hp ISO
	G201C2	Ruston Generator Turbine (WHRU stack)	
7	G201D1	Ruston Generator (bypass stack)	4,900 hp ISO
	G201D2	Ruston Generator (WHRU stack)	
8	G3201E	Ruston Generator	4,900 hp ISO
9	G3201F	Ruston Generator	4,900 hp ISO
10	P2202A1	Water Injection Pump Turbine	5,400 hp ISO
	P2202A2 *		
11	P2202B1	Water Injection Pump Turbine	5,400 hp ISO
	P2202B2 *		
12	PCL07A	Water Injection Pump Turbine	5,400 hp ISO
13	PCL07B	Water Injection Pump Turbine	5,400 hp ISO
--	ECL06A*	Ecotherm WHRU associated with PCL07A	N/A
--	ECL06B *	Ecotherm WHRU associated with PCL07B	N/A
14	G3203	GE Frame 6 Combustion Turbine Generator	53,500 hp ISO
15	H201L	Broach Dual-Fuel Heater (liquid fuel)	27.8 MMBtu/hr LHV
	H201G	Broach Dual-Fuel Heater (fuel gas)	
16	G11401	Born Topping Plant Crude Heater	44.4 MMBtu/hr LHV
17	H3204	Kvaerner Fuel Gas Heater	9.7 MMBtu/hr LHV
29	H101B	McGill Flare	1.6 MMscf/day, combined
30	HKF01	Kaldair I-58-VS Flare	
31	HKF02	Kaldair I-87-FS Flare	
32	HCR01A	McGill Flare	
33	HCR01B	McGrill Flare	
35	H250	Solid Waste Incinerator	3.6 MMBtu/hr
37	H1A01	Lakota Drill Site 1A Heater	16.4 MMBtu/hr LHV
38	H1B01	Lakota Drill Site 1B Heater	16.4 MMBtu/hr LHV
39	H2V01	CE Natco Drill Site 1C Heater	14.5 MMBtu/hr LHV
40	H3F01	CE Natco Drill Site 1D Heater	19.6 MMBtu/hr LHV
42	H1E02	GTS Drill Site 1E Heater	30.0 MMBtu/hr LHV
43	H1F01	BS&B Drill Site 1F Heater	14.9 MMBtu/hr LHV
44	H1G01	BS&B Drill Site 1G Heater	14.9 MMBtu/hr LHV
45	H1F1901	Lakota Drill Site 1H Heater	16.4 MMBtu/hr LHV
46	H1J01AB	Petrochem Drill Site 1J Heaters (combined)	36.8 MMBtu/hr LHV
47			36.8 MMBtu/hr LHV
48	H1Q01	BS&B Drill Site 1Q Heater	21.0 MMBtu/hr LHV
49	H1RO1	BS&B Drill Site 1R Heater	17.2 MMBtu/hr LHV
--	G702A	MTU Emergency Generator	2745 kW
--	G702B	MTU Emergency Generator	2745 kW

** Unit has been decommissioned; source was modeled with no emissions or flow.*

3.7.1. Excluded EUs

CPAI excluded the drill site freeze protection pump engines, and the Drill Site 1B cuttings module boiler, from their modeling analysis. These EUs are small, intermittently operated, and have releases close to the ground. Further, impacts from this type of EU are known to be reflected in the ambient background data. Therefore, CPAI did not explicitly model these EUs. The Department agrees with this approach.

3.7.2. Increment Analysis

CPF1 is located within a Class II area of the Northern Alaska Air Quality Control Region. The major source baseline date for SO_2 is January 6, 1975. The minor source baseline date is June 1, 1979. CPAI included all permanent EUs in their increment analysis, assuming that they are increment-consuming. Thus, it was not necessary to distinguish between pre- and post-baseline date emissions.

3.8. EU Release Parameters

The assumed emission rates and characterization of how the emissions enter the atmosphere will significantly influence an applicant's modeled results. Therefore, applicants must provide the stack height, diameter, location, and base elevation, in addition to the pollutant emission rates, exhaust plume exit velocity, and exhaust temperature for each exhaust stack.

3.8.1. Emission Rates

The Department generally found CPAI's modeled emission rates to be consistent with the emissions information provided throughout their application. The exceptions, or items that otherwise warrant additional discussion, are discussed below. A discussion regarding turbine emissions is provided in the *Load Analysis* sub-section under EU Release Parameters.

3.8.1.1. Sulfur Compound Emissions

SO_2 emissions are directly related to the sulfur content of the fuel. The sulfur content of liquid fuel is in the form of elemental sulfur, while the sulfur content of fuel gas is in the form of hydrogen sulfide (H_2S). CPAI's CPF1 EUs consist, mostly, of fuel gas-fired equipment. The exception is EU 15, a dual-fired emergency heater; CPAI assumed 0.25% sulfur content by weight for this EU. They assumed their fuel gas-fired EUs at the CPF1 facility – EUs 1 through 17, 29 through 33, and 35 -- use fuel with a maximum H_2S content of 300 parts per million by volume (ppmv); while the EUs at the aggregated drill sites – EUs 37 through 49 – were assumed to use fuel with a maximum H_2S content of 500 ppmv.

The Department had previously imposed conditions to protect the 1-hour, 3-hour, 24-hour and Annual SO_2 AAAQS and the 3-hour, 24-hour, and Annual SO_2 Increments, by restricting the maximum H_2S content. In their most recent modeling analysis, CPAI assumed a higher H_2S content; thus, the Department is amending those conditions accordingly in AQ0267MSS10.

3.8.1.2. Short-term Emission Rates

The modeled emission rate should generally reflect the maximum emissions allowed during a given averaging period. For the 1-hour SO_2 standards, an applicant may use the annualized emission rate for intermittently operated EUs.

CPAI used the maximum emissions, by pollutant and averaging period, to develop their modeled EU emission rates. Therefore, the Department is not including any short-term operational restrictions for the CPF1 EUs.

3.8.2. Point Source Parameters

In addition to the previously discussed emission rates, applicants must provide the stack height, diameter, location, base elevation, exhaust plume exit velocity, and exhaust temperature for each EU characterized as a point source.

The Department generally found the modeled stack parameters to be consistent with the vendor information or expectations for similarly sized EUs. The items that warrant additional discussion are addressed below.

3.8.2.1. Load Analysis

The maximum ambient pollutant concentration does not always occur during the full-load operating conditions that typically produce the maximum emissions. The relatively poor dispersion that occurs with cooler exhaust temperatures and slower part-load exit velocities may produce the maximum ambient impacts. Turbine emissions also tend to greatly vary by fuel type, load, and inlet air temperature. Therefore, EPA recommends that a load analysis be conducted on the primary EUs to determine the worst-case conditions.

CPAI conducted an analysis to determine the worst-case parameters for the seven CPF1 turbines with operating waste heat recovery units (WHRUs). The exhaust from these EUs is apportioned between a WHRU and a bypass stack using a damper installed in the exhaust stream. The WHRU significantly affects the exit temperature and other release parameters. CPAI analyzed continuous monitoring data collected during 2018 and 2019 to determine the worst-case stack parameters for these EUs. Their approach and results are described in more detail in Appendix C of their application for AQ0267MSS10.

3.8.2.2. Horizontal/Capped Stacks

Capped stacks or horizontal releases generally lead to higher impacts in the immediate near-field than what would occur from uncapped, vertical releases. The presence of non-vertical stacks or stacks with rain caps therefore requires special handling in an AERMOD analysis. EPA describes the proper approach for characterizing these types of stacks in their *AERMOD Implementation Guide*.[2] EPA has also developed an option in AERMOD that will automatically revise the stack

[2] *AERMOD Implementation Guide* (EPA-454/B-18-003); April 2018.

and exhaust parameters for any stack identified as horizontal (using the POINTHOR keyword) or capped (using the POINTCAP keyword).

CPAI used this option to characterize their capped and horizontal stacks. They characterized EUs 15, 42, 46 and 47 as having vertical, capped releases. They also characterized EUs 29, 32 and 33 as having horizontal releases. They characterized all other EUs as having uncapped, vertical releases.

Each of the EUs discussed above have already been installed at the stationary source. Therefore, the Department is *not* including a permit condition that requires the stacks modeled as uncapped, vertical releases to be constructed as uncapped, vertical releases.

3.9. Off-site Source Characterization

CPAI included the EUs from nearby stationary sources in their cumulative AAAQS and increment analyses. CPAI's basis for selecting the modeled nearby stationary sources is described in Section 3.13 (**Off-site Impacts**) of this report. The characterization of these nearby EUs is described below.

Each nearby off-site source was modeled as a single volume source. The volume sources were an identical 100 meters wide, by 100 meters long, by 15 meters tall. Emissions rates for these sources was based on actual emissions data from the 2017 National Emission Inventory (NEI).

For their SO_2 increment analyses, CPAI assumed that each of the project and offsite stationary sources are increment consuming. Emissions from nonpoint and mobile sources, on the other hand, were assumed to be increment expanding. Emissions from non-point and mobile sources in the North Slope region sources are typically related to oil production, which was approximately four times higher at the baseline date; further, fuel sulfur content has been reduced substantially since that time. Thus, CPAI expected that SO_2 emissions from nonpoint and mobile sources would be lower at the present than they were at the baseline date. Rather than model the increment expansion from these sources, CPAI simply omitted these sources from their modeling; a conservative aspect of their approach.

3.10. Downwash

Downwash refers to the situation where local structures influence the plume from an exhaust stack. Downwash can occur when a stack height is less than a height derived by a procedure called "Good Engineering Practice" (GEP), which is defined in 18 AAC 50.990(42). It is a consideration when there are receptors relatively near the applicant's structures and exhaust stacks.

EPA developed the "Building Profile Input Program – PRIME" (BPIPPRM) program to determine which stacks could be influenced by nearby structures and to generate the cross-sectional profiles needed by AERMOD to determine the resulting downwash. CPAI used the current version of BPIPPRM, version 04274, to determine the building profiles needed by AERMOD.

CPAI included all of the modeled point sources in their downwash analysis, except for those at the aggregated drill sites. The Department used a proprietary 3-D visualization program to review CPAI's characterization of the exhaust stacks and structures. The characterization matches the figures provided in CPAI's permit application. CPAI appropriately accounted for downwash in their modeling analysis. BPIPPRM indicated that the modeled exhaust stacks are within the GEP stack height requirements.

3.11. Ambient Air Boundary

The AAAQS and increments only apply in *ambient air* locations, which has been defined by EPA as, "*that portion of the atmosphere, external to buildings, to which the general public has access*." [3] Applicants may, therefore, exclude areas that they own or lease from their ambient demonstration if public access is effectively precluded. They conversely need to model that portion of their property/lease that has no such restriction, or where there is an easement or public right-of-way. Natural features, such as dense vegetation or topographical features, can provide adequate barriers to public access, although the adequacy of the given features must be evaluated on a case-specific basis.

In most cases, CPAI used the edge of the roughly 5-foot-high gravel pad as the ambient air boundary. This is a standard and acceptable approach for modeling North Slope stationary sources. The exception to this approach is for the road and public access area located on the north side of the CPF1 facility, which is depicted in Figures 2-2 through 2-4 of CPAI's permit application. This area was modeled as ambient air. CPAI's ambient air boundary is acceptable.

3.12. Receptor Grid

A dispersion model will calculate the concentration of the modeled pollutant at locations defined by the user. These locations are called receptors. Designated patterns of receptors are called receptor grids.

CPAI used different sets of rectangular grids to characterize the CPF1, DS1E and DS1J areas. The receptor resolutions are:

- 25 m along the ambient boundary;
- 25 m within the public access area on the DS1F pad;
- 25 m from the ambient boundary to a distance of 100 m;
- 100 m from 100 m to 1.4 km; and
- 500 m from 1.4 km to 2.5 km.

[3] The term "ambient air" is defined in 40 CFR 50.1. The Alaska Legislature has also adopted the definition by reference in AS 46.14.90(2).

For the DS1E and DS1J grids:

- 25 m along the ambient boundary;
- 25 m from the ambient boundary to a distance of 100 m ; and
- 100 m from 100 to 900 m.

CPAI's grid has sufficient resolution and coverage to determine the maximum impacts.

3.13. Off-Site Impacts

The air quality impact from natural and regional sources, along with long-range transport from far away sources, must be accounted for in a cumulative AAAQS demonstration. The increment consuming impact from nearby anthropogenic sources must likewise be accounted for in a cumulative increment demonstration. The approach for incorporating these impacts must be evaluated on a case-specific basis for each type of assessment and for each pollutant.

Section 8.3 of the Guideline discusses how the off-site impacts could be incorporated for purposes of demonstrating compliance with an air quality standard. In summary, the off-site impacts must either be represented through ambient monitoring data or through modeling. However, Section 8.3.3(b)(iii) notes, "*The number of nearby sources to be explicitly modeled in the air quality analysis is expected to be few except in unusual situations*." Section 8.3.3(b) further states, "*…sources that cause a significant concentration gradient in the vicinity of the [applicant's source] are not likely to be adequately characterized by the monitored data due to the high degree of variability of the source's impacts.*"

CPAI explicitly modeled several off-site stationary sources within the vicinity of CPF1 for their increment and cumulative AAAQS demonstration. The modeled stationary sources, and distance from CPF1, are listed below in Table 2.

Table 2: Modeled Off-Site Sources

Stationary Source Owner and Name	Distance from CPF1 (km)
CPAI Central Production Facility #2 (CPF2)	11
CPAI Central Production Facility #3 (CPF3)	11
Hilcorp Alaska, LLC Milne Point Production Facility	16
CPAI Kuparuk Seawater Treatment Plant	23
Eni US Operating Co. Nikaitchuq Development	23
Eni US Operating Co. Oooguruk Development Project	31

For their cumulative AAAQS analysis, CPAI represented impacts from more distant sources using ambient background data. The data chosen by CPAI were collected at the DS1F monitoring site, approximately 4 km southwest of CPF1, during 2012 and 2013.

The Department finds CPAI's approach to representing off-site impacts to be adequate.

3.14. Modeled Design Concentrations

EPA allows applicants to use modeled concentrations that are consistent with the form of the standard or increment as the modeled design concentration. For the probabilistic AAAQS, applicants may use the multi-year average of the highest values (at a given receptor) when comparing a modeled concentration to the SIL.

The Department allowed CPAI to compare the high second-high (h2h) modeled concentrations to the short-term deterministic AAAQS and increments. CPAI compared the 99th percentile of the 1-hour daily maximum impacts averaged over three years to the 1-hour SO_2 AAAQS. For the Annual SO_2 AAAQS and increment, CPAI used the maximum annual concentration. Their approach is consistent with the form of these ambient standards and increments.

Table 3. Allowed Design Concentrations

Pollutant	Avg. Period	Allowed Value
SO_2	1-hr	The multi-year average of the high fourth-high daily maximum 1-hour concentration
	3-hr	The maximum high second-high 3-hour concentration from any year
	24-hr	The maximum high second-high 24-hour concentration from any year
	Annual	The maximum annual concentration from any year

4. RESULTS AND DISCUSSION

The maximum modeled SO_2 impacts from CPAI's cumulative AAAQS analysis are presented in Table 4. The background concentration, total impact, and respective ambient standard are also presented for comparison. The total modeled impacts are less than the respective AAAQS. Therefore, CPAI has demonstrated compliance with the AAAQS.

Table 4. Maximum impacts compared to the ambient standards

Pollutant	Avg. Period	Modeled Design Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	AAAQS ($\mu g/m^3$)
SO_2	1-hour	173	6.0	179	196
	3-hour	229	5.5	235	1,300
	24-hour	83.9	2.9	96.8	365
	Annual	11.9	0.30	12.2	80

The maximum modeled SO_2 impacts from CPAI's increment demonstration is presented in Table 5. The respective Class II increment is also presented for comparison. All of the impacts are less than the applicable Class II increment. Therefore, CPAI has demonstrated compliance with the maximum allowable increases.

Table 5. Maximum impacts compared to the increments

Pollutant	Avg. Period	Modeled Design Concentration ($\mu g/m^3$)	Class II Increment ($\mu g/m^3$)
SO_2	3-hr	229	512
	24-hr	83.9	91
	Annual	11.9	20

5. CONCLUSION

The Department concludes the following based on its review of CPAI's modeling analysis:

1. The emissions from the proposed EUs will not cause or contribute to a violation of the 1-hour, 3-hour, 24-hour, and annual SO_2 AAAQS listed in 18 AAC 50.010.
2. The emissions from the proposed EUs will not cause or contribute to a violation of the 3-hour, 24-hour, and annual SO_2 increments listed in 18 AAC 50.020.
3. CPAI's modeling analysis complies with the ambient demonstration requirements of 18 AAC 50.540(c)(2) and 18 AAC 50.540(k)(3).
4. CPAI conducted their modeling analysis in a manner consistent with the Guideline, as required under 18 AAC 50.215(b)(1).

The Department is making the following revisions to Permit AQ0267CP01 for the reasons described in this modeling report:

- **Exhibit B**: The H_2S restriction for EUs 1 through 17, 29 through 33, and 35, will now be 300 ppmv. The H_2S restriction for EUs 37 through 49 will now be 500 ppmv. The new limits are needed to protect the 3-hour, 24-hour and annual Class II SO_2 increments, and the 1-hour, 3-hour, 24-hour and annual AAAQS.

The remaining ambient air conditions in previous active permits remain as written.