TECHNICAL REVIEW AND EVALUATION OF APPLICATION FOR AIR QUALITY PERMIT No. 85727

I. INTRODUCTION

This Class II Synthetic Minor Renewal permit is for the continued operation of boilers, internal combustion engines, and other miscellaneous equipment by Northern Arizona University (NAU). Permit No. 85727 renews and supersedes Permit No. 63221.

A. Company Information

Facility Name:	Northern Arizona University (NAU)
Mailing Address:	P.O. Box 4137 Flagstaff, AZ 86011
Facility Location:	Northern Arizona University 1705 S. San Francisco St. Flagstaff, Coconino County, AZ 86001

B. Attainment Classification

The facility is located in an area that is in attainment or unclassified for all criteria pollutants.

II. PROCESS DESCRIPTION

A. Process Equipment

NAU is an educational institution. Thirty three natural gas-fired boilers are operated seasonally to serve the campus of NAU. Thirty diesel-fired and two natural gas-fired internal combustion emergency engines (each a component of a generator set) are used to provide backup power in the absence of commercial power. Additionally, there are eight natural gas-fired kilns, six wood-fired kilns, eight cooling towers, and one paint booth on campus. The paint booth includes one natural gas-fired heater and two extractors.

B. Control Devices

This facility does not operate any air pollution control devices.

C. Process Flow Diagram

There is no process flow diagram associated with this facility.

III. LEARNING SITE EVALUATION

In accordance with ADEQ's Environmental Permits and Approvals near Learning Sites Policy, the Department is required to conduct an evaluation to determine if any nearby learning sites would be adversely impacted by the facility. Learning sites consist of all existing public schools, charter

schools and private schools the K-12 level, and all planned sites for schools approved by the Arizona School Facilities Board. The learning sites policy was established to ensure that the protection of children at learning sites is considered before a permit approval is issued by ADEQ.

While this permit renewal will result in increases in emissions due to the addition of two generators, the increases are far below the permitting exemption thresholds as defined in A.A.C. R18-2-101.101. Therefore, a learning site evaluation has not been deemed to be necessary for this permit renewal.

IV. COMPLIANCE HISTORY

A. Compliance Status

A review of the compliance records for the facility indicates that there are no pending air quality cases. During the previous permit term, ADEQ conducted reviews of four annual compliance certification reports for NAU. Record of the 2018 annual compliance certification could not be found, but the Permittee was able to send a copy of it to ADEQ upon request. No reporting or compliance deficiencies were noted from these report reviews. ADEQ also conducted two routine inspections in 2016 and one full inspection in 2020, as well as six inspections for the Asbestos Abatement Program. The routine inspection conducted on May 2, 2016 led to Case Number 16228 and the issuance of a Notice of Opportunity to Correct Deficiencies (NOC), which is further discussed below in Section IV.B. NAU reported one permit deviation and one excess emissions during the previous permit term, which is further discussed in Section IV.C. The previous permit did not contain any compliance schedules, and it did not require NAU to conduct any performance testing during the previous permit term

B. Case Number 16228

A Notice of Opportunity to Correct Deficiencies (NOC) was issued to NAU on May 13, 2016, for five violations based on an inspection conducted on May 2, 2016 (Inspection ID: 258709). The violations and corrective actions taken were as follows:

1. During the inspection on May 2, 2016, manufacturer's specifications were reviewed, and it was determined that all emergency generators have requirements for oil and filter changes every 500 hours or annually, whichever comes first, or for the participation in an oil analysis program. The Permittee provided documentation showing that the most recent oil changes on the engines had been conducted in 2012, which was a violation of the permit requirement to operate and maintain the equipment in accordance with manufacturer's specifications. After issuance of the NOC, the Permittee submitted engine oil analysis results for all engines on-site on June 17 and July 1, 2016, which satisfied this compliance condition in the NOC.

2. The previous permit required that the Permittee have on-site or on-call a person certified in EPA Reference Method 9 unless all Method 9 observations and instantaneous visual emissions surveys were conducted as Alternative Method ALT-082. During the inspection on May 2, 2016, it was found that the Method 9 Certification held by the Permittee had expired and there was no on-call certified

observer. As observations and surveys were not conducted using ALT-082, this constituted a violation. After issuance of the NOC, the Permittee renewed their Method 9 certification on June 4, 2016. A copy of the certification was sent to ADEQ on June 6, 2016, which satisfied this compliance condition in the NOC.

3. The previous permit required that for all engines subject to New Source Performance Standards (NSPS) the Permittee maintain a copy of engine certifications or other documentation demonstrating that the engine complies with the applicable standards in the permit, and that the documentation be made available to ADEQ upon request. During the inspection on May 2, 2016, the Permittee was able to provide EPA engine certifications for EG-1 and EG-8. After the inspection, but prior to issuance of the NOC, the Permittee provided certifications for all other engines subject to NSPS except for EG-12, EG-14, and EG-21. After issuance of the NOC, the Permittee sent the remaining EPA engine certifications on June 1, 2016, which satisfied this compliance condition in the NOC.

4. The previous permit required that the Permittee maintain a vendor-approved copy of the part of the Federal Energy Regulatory Commission (FERC) approved Tariff agreement that contains the sulfur content and the lower heating value of the natural gas, and that these records be made available to ADEQ upon request. During the inspection on May 2, 2016, the Permittee was unable to provide a FERC Tariff to ADEQ. After issuance of the NOC, the Permittee sent a copy of the FERC Tariff on June 3, 2016, which satisfied this compliance condition in the NOC.

5. The previous permit required that a certified EPA Reference Method 9 observer conduct a quarterly survey of visible emission for all required equipment, followed by a certified EPA Method 9 observation if the opacity of the observed emissions appeared to exceed the standards. The Permittee was also required to keep records of the initial survey and any EPA Reference 9 observations that were performed. During the inspection on May 2, 2016, the Permittee was unable to provide records for quarterly visible emissions surveys in the previous or current quarter conducted by a certified EPA Method 9 observer. The Permittee submitted a Visible Emission Survey for the current quarter on June 10, 2016, which satisfied this compliance condition in the NOC.

The facility's deadlines to achieve compliance were June 16 and July 1, 2016. The facility met these deadlines, and an NOC closure letter was sent to the Permittee on July 5, 2016.

C. Permit Deviation and Excess Emissions

1. Permit Deviation

On September 8, 2020, NAU submitted a permit deviation report for the late submittal of their permit renewal application, which was due September 1, 2020. This permit deviation was resolved when NAU submitted their permit renewal application on September 18, 2020.

2. Excess Emissions

On November 6, 2020, NAU submitted an excess emissions report for exceeding opacity limits for their wood-fired kilns. The Permittee reported observing black smoke being emitted from their Big Train and Small Train wood-fired kilns on the morning of November 6, 2020. Using EPA Method 9 Visible Emissions testing, the Permittee recorded two 6-minute intervals where the average opacity equaled 26%, exceeding their permitted limit of 20% opacity for their wood-fired kilns. The Permittee reported that the exceedances occurred upon introduction of juniper wood into the combustion chamber, and noted that the combustion chamber took longer to reach normal operating temperature with the addition of the juniper than it usually does when they burn ponderosa pine. The Permittee hypothesized that the juniper may contain excess moisture, which could have slowed the rate of temperature increase in the chamber. The Permittee proposed switching back to burning ponderosa pine while allowing the juniper to dry out before using it again as fuel. The Permittee had no recent history of opacity exceedances, therefore, the report was closed without being escalated for further action.

V. EMISSIONS

NAU's potential-to-emit (PTE) was calculated using emissions factors from the United States Environmental Protection Agency's AP-42: Fifth Edition Compilation of Emissions Factors, Volume 1: Stationary Point and Area Sources, and emissions standards from 40 CFR 89.112 and 89.113.

A. Emissions Calculations

1. Natural Gas-Fired Equipment

For all natural-gas fired equipment (boilers, heater, two gas-fired emergency internal combustion engines (ICEs), and eight gas-fired kilns), emissions factors for particulate matter (PM), sulfur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOCs), lead (Pb), and hazardous air pollutants (HAPs) were borrowed from AP-42 Tables 1.4-1, 1.4-2, and 1.4-3 for external natural gas combustion. Emission factors for uncontrolled small boilers (<100 MMBtu/hr) were used for NO_x and CO, and the emission factors for PM_{10} and $PM_{2.5}$ were set equal to the emission factor for PM. These emissions factors are in terms of mass of emissions per volume of gas burned, and were multiplied by the gas volume limit in the permit of 1,475 MMSCF per year to get the total estimated annual emissions for the gas-fired equipment.

2. Diesel-Fired Emergency ICEs

a. Diesel-Fired Emergency ICEs Not Subject to New Source Performance Standards (NSPS)

For diesel-fired emergency ICEs not subject to NSPS and rated 600 hp and less, emissions factors for PM_{10}, SO_x, NO_x, CO, TOC, and HAPs were taken from AP-42 Tables 3.3-1 and 3.3-2. For diesel-fired emergency ICEs not subject to NSPS and rated greater than 600 hp, emissions factors for PM, SO_x, NO_x (uncontrolled), CO, TOC, and HAPs were taken from AP-

42 Tables 3.4-1, 3.4-3, and 3.4-4. For engines rated greater than 600 hp, the emissions factor for sulfur oxides (SO_x) was given as an equation with sulfur content as a variable. The permit limits the sulfur content of the diesel fuel burned in these engines to 0.9%, therefore 0.9% was used in the equation to get the SO_x emissions factor. VOCs and SO_2 emissions factors were assumed to be equal to the TOC and SO_X emissions factors, respectively, and PM, PM_{10}, and $PM_{2.5}$ emissions factors were assumed to be equal to each other. Pb emissions were assumed to be negligible for these engines. Emissions were estimated by multiplying the emissions factors by the engine power rating and the hours of operation, which were assumed to be 200 hours per year to be consistent with the limit in the permit.

b. Diesel-Fired Emergency ICEs Subject to NSPS under 40 CFR 60 Subpart IIII

Emissions from the diesel-fired emergency ICEs subject to NSPS in 40 CFR 60 Subpart IIII were calculated by multiplying the engine power rating by the hours of operation and by the applicable emissions standards for PM, NMHC+NO_x (where NMHC stands for non-methane hydrocarbons), and CO found in 40 CFR 89.112 Table 1. For the purposes of this analysis, VOCs are assumed to be equal to NMHC. The emissions factors for NO_x and VOCs were assumed to be 95% and 5%[1], respectively, of the combined NMHC+NO_x emission standards. PM_{10} and $PM_{2.5}$ were assumed to be equal to PM, and the emissions factors for HAPs were borrowed from AP-42 Tables 3.3-2 and 3.4-3. SO_2 and Pb emissions were assumed to be negligible for these engines. Emissions were estimated by multiplying the emissions factors by the engine power rating and the hours of operation, which were assumed to be 200 hours per year to be consistent with the limit in the permit. All emissions increases shown in Table 2 below are attributable to the addition of two new generators, EG-31 and EG-32, with the exception of 0.33 tpy of increased VOCs emissions and 0.11 tpy of increased HAPs emissions associated with updates to the paint booth extractor calculations.

3. Wood-Fired Kilns

For the wood-fired kilns, emissions factors for PM_{10}, CO, SO_x, NOx, TOC, and HAPs were pulled from AP-42 Tables 1.10-1, 1.10-2, and 1.10-3 for Residential Wood Combustion for the Conventional Wood Stove Type. Pb emissions were assumed to be negligible. Emissions factors for $PM_{2.5}$, SO_2, and VOCs were set equal to those for PM_{10}, SO_x, and TOC, respectively. The emissions factors have units of mass of emissions per mass of wood burned, and were multiplied by the

1 This assumption was taken from a Bay Area Air Quality Management District's "Policy: CARB Emission Factors for CI Diesel Engines – Percent HC in Relation to NMHC + NOx" effective June 28, 2004. https://www.baaqmd.gov/~/media/files/engineering/policy_and_procedures/engines/emissionfactorsfordieselengines.pdf?la=en

wood fuel limit of 128 pounds per year to get the total estimated annual emissions for the wood-fired kilns.

4. Cooling Towers

The pollutant of concern for cooling tower emissions is particulate matter. The emissions factor for PM_{10} was found in AP-42 Table 13.4-1 for wet cooling towers. The emissions factor for $PM_{2.5}$ was assumed to be equal to the emissions factor for PM_{10}. The emissions factors have units of mass of emissions per volume of water, and were multiplied by the maximum capacity of each cooling tower to get the total estimated annual emissions for the cooling towers.

5. Paint Booth Extractors

The pollutants of concern for the paint booth extractors are VOCs and HAPs. The Permittee provided a list of the products used in the paint booth and the approximate amounts that are used in a year with the products broken down into three categories. Research was done to find estimates of the VOC content of each product. The Permittee provided Safety Data Sheets (SDSs) for each of the products, which each listed the product's density, as well as a breakdown of the compounds found in each product and their weight percentages. Research was done for each listed compound to determine whether it is a listed HAPs, then the total HAPs by weight of each product was calculated. Then, the total HAPs content was then multiplied by the product's density to determine the concentration of total HAPs in each product. The conservative assumption was made that the product with the highest VOC or HAPs content in any given category represented the total volume of product used in that category. To estimate the annual emissions from the paint booth extractors, the VOC and HAPs content representing each category was multiplied by the amount of product used in that category. This is a new method of calculating paint booth extractor emissions for this permit, and it resulted in emissions increases of 0.33 tpy of VOCs and 0.11 tpy of HAPs in the PTE.

B. Summary of PTE

Without limits, the facility has a PTE above the major thresholds for NOx and CO. With the voluntary accepted limits in effect, the facility has a PTE below major thresholds for all pollutants and above the significant threshold for NO_x. The change in emissions associated with this permit action are below the permitting exemption thresholds, therefore minor NSR is not triggered. The facility's PTE is provided in Table 2 below:

Table 1: Potential to Emit (tpy)

Pollutant	Emissions from Permit No. 63221	Change in Emissions	Emissions	Permitting Exemption Threshold	Significant Thresholds	Minor NSR Triggered?
NO_X	91.78	0.39	92.16	20	40	No
PM_{10}	8.47	0.03	8.50	7.5	15	No
$PM_{2.5}$	8.47	0.03	8.50	5	10	No
CO	83.65	0.15	83.79	50	100	No
SO_2	2.35	0.02	2.38	20	40	No
VOCs	10.54	0.36	10.89	20	40	No
Pb	0.0004	--	0.0004	0.3	0.6	No
HAPs	1.33 (Hexane)/ 1.61 (Combined)	0.11	1.33 (Hexane)/ 1.71 (Combined)	N/A	10 (Single)/ 25 (Combined)	No

VI. VOLUNTARILY ACCEPTED EMISSION LIMITATIONS AND STANDARDS

Voluntary accepted emission limitations were first incorporated in NAU's permit in Significant Permit Revision No. 42956 issued in 2008 to keep NAU's potential emissions below major source thresholds and allow them to continue to be permitted under a Class II permit. The limitations have undergone some changes in the meantime, and the current permit now contains the following:

A. Limit on Usage of Natural Gas

The facility has accepted a voluntary emission limit of 1,475 MMCSF of total natural gas usage per year in any rolling 12-month period. This limit applies to the total gas usage for all natural gas-fired equipment at the facility. This equipment includes all of the boilers, the paint booth heater, the two natural gas-fired internal combustion engines, and the eight natural gas-fired kilns. In combination with the other limits, this limit keeps NAU's emissions below major source thresholds and allows them to be permitted as a Class II synthetic minor source. This limit was first incorporated into Significant Permit Revision No. 59603 issued in 2014, and it replaced the previous limits, which instead had placed restrictions on the hours of operation for these pieces of equipment.

B. Limits on Hours of Operation for Diesel-Fired Emergency Internal Combustion Engines

The facility has accepted a voluntary emission limit of 200 hours of operation per year for each diesel-fired engine in any rolling 12-month period. In combination with the other limits, this limit keeps NAU's emissions below major source thresholds and allows them to be permitted as a Class II synthetic minor source. This limit was first applied to the engines permitted in Significant Permit Revision No. 42956 issued in 2008, and has been applied to all subsequently permitted engines. When the facility-wide gas usage limit went

into effect in Significant Permit Revision No. 59603 in 2014, the hours of operation limits were no longer being applied to the gas-fired engines for the purposes of emissions calculations. Language has been added to this permit to clarify that the hours of operation limits apply only to the diesel-fired engines.

C. Limit on Usage of Wood

The facility has accepted a voluntary emission limit of 128 tons per year of total wood burned in any rolling 12-month period. In combination with the other limits, this limit keeps NAU's emissions below major source thresholds and allows them to be permitted as a Class II synthetic minor source. The limit was incorporated into Permit Renewal No. 52525 issued in 2011. This limit replaced the limit in the previous version of the permit, Significant Permit Revision No. 42956, which restricted each of the wood-fired kilns to 200 hours of operation per year as a rolling 12-month total.

VII. APPLICABLE REGULATIONS

Table 3 identifies applicable regulations and verification as to why that standard applies. The table also contains a discussion of any regulations the emission unit is exempt from.

Table 2: Applicable Regulations

Unit & year	Control Device	Rule	Discussion
Boilers and Paint Booth Heater – Pre-1989 or Rated Less than 10 MMBtu/h	None	A.A.C. R-18-2-724 NESHAP Subpart JJJJJJ	Standards of Performance for Fossil-fuel Fired Industrial and Commercial Equipment. NESHAP Subpart JJJJJJ is not applicable since the boilers at NAU are natural gas-fired. [40 CFR 63.11195(e)]
Boilers – 1989 and Later and Rated Greater than or Equal to 10 MMBtu/h	None	NSPS 40 CFR 60 Subpart Dc NESHAP 40 CFR 63 Subpart JJJJJJ	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. NESHAP Subpart JJJJJJ is not applicable since the boilers at NAU are natural gas-fired. [40 CFR 63.11195(e)]

Unit & year	Control Device	Rule	Discussion
Engines – Pre-June 12, 2006* (*Engines in this permit constructed prior to June 12, 2006 are defined as "existing" under 40 CFR 63 Subpart ZZZZ. Those manufactured prior to April 1, 2006 are subject to A.A.C. R18-2-719. In this permit, all "existing" engines happen to also be subject to A.A.C. R18-2-719.)	None	A.A.C. R-18-2-719 NESHAP 40 CFR 63 Subpart ZZZZ	Standards of Performance for Existing Stationary Rotating Machinery NESHAP Subpart ZZZZ is not applicable to these ICEs since NAU is an area source for HAPs and these are existing emergency engines located at an institutional area that do not operate and are not contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in §63.6640(f)(2)(ii) and (iii) and that do not operate for the purpose specified in §63.6640(f)(4)(ii). [40 CFR 63.6585(f)(3)]
Engines – June 12, 2006 and Later** (**Engines in this permit constructed June 12, 2006 or later are defined as "new" under 40 CFR 63 Subpart ZZZZ. Those manufactured April 1, 2006 or later are subject to 40 CFR 60 Subpart IIII. In this permit, all "new engines" happen to also be subject to 40 CFR 60 Subpart IIII.)	None	NSPS 40 CFR 60 Subpart IIII NESHAP 40 CFR 63 Subpart ZZZZ	New Source Performance Standards for Stationary CI ICE. As these engines are new stationary reciprocating ICE located at an area source for HAPs, they meet the requirements of NESHAP Subpart ZZZZ by meeting the requirements of 40 CFR 60 Subpart IIII. [40 CFR 63.6590(c)(1)]
Kilns	None	A.A.C. R-18-2-730 A.A.C. R-18-2-702	Standards of Performance for Unclassified Sources Existing Stationary Source Performance Standards (for Point Sources)

Unit & year	Control Device	Rule	Discussion
Cooling Towers	None	A.A.C. R-18-2-730 A.A.C. R-18-2-702	Standards of Performance for Unclassified Sources Existing Stationary Source Performance Standards (for Point Sources)
Paint Booth Extractors	None	A.A.C. R-18-2-730 A.A.C. R-18-2-702	Standards of Performance for Unclassified Sources Existing Stationary Source Performance Standards (for Point Sources)
Fugitive dust sources	Water Trucks, Dust Suppressants	A.A.C. R18-2 Article 6	Emissions from Existing and New Nonpoint Sources - These standards are applicable to all fugitive dust sources at the facility.
Abrasive Blasting	Wet blasting; Dust collecting equipment; Other approved methods	A.A.C. R-18-2-702 A.A.C. R-18-2-726	Existing Stationary Source Performance Standards (for Point Sources) Standards of Performance for Sandblasting – These standards are applicable to any abrasive blasting operation.
Spray Painting	Enclosures	A.A.C. R18-2-702 A.A.C. R-18-2-727	Existing Stationary Source Performance Standards (for point sources). Standards of Performance for Spray Painting – These standards are applicable to any spray painting operation
Demolition/renovation Operations	N/A	A.A.C. R18-2-1101.A.8	NESHAPs – This standard is applicable to any asbestos-related demolition or renovation operations.
Mobile Sources	Dust Suppressants	Article 8	Emissions from Mobile Sources (New and Existing) – This Article is applicable to mobile sources which either moves while emitting air pollutant or are frequently moved their utilization.

VIII. PREVIOUS PERMIT REVISIONS AND CONDITIONS

A. Previous Permit Revisions

There were no permit revisions made to Permit No. 63211 during the previous permit term.

B. Changes to Current Renewal

Table 5 addresses the changes made to the sections and conditions from Permit No. 63221:

Table 3: Previous Permit Conditions

Section No.	Determination			Comments
	Added	Revised	Deleted	
Att. "A"		X		General Provisions: Revised to represent the most recent template language
Att. "B" Section I.A		X		Facility Wide Requirements – Opacity: Revised to represent the most recent template language. Notably, opacity monitoring requirements in Section 1.A. have been expanded, and detailed requirements on how to conduct visible emission monitoring have been moved out of other sections of Attachment "B" and into Section I.A.
Att. "B" Section I.B		X		Facility Wide Requirements – Operational Limits: The term "as applicable" has been added to the requirement to operate and maintain the equipment identified in Equipment List, Attachment "C" in accordance with manufacturer's specifications. This has been done to allow for those conditions under 40 CFR 60 Subpart IIII that outline what is required of the Permittee in the event that these engines are operated outside of the manufacturer's specifications.
Att. "B" Section I.C		X		Facility Wide Requirements – Fuel Usage/Hours of Operation Limitations: The hours of operation limitation for the engines now specifies "diesel-fired" to more accurately reflect how this limit is applied in the emissions calculations. The natural gas usage limitation now specifies that the engines it applies to are those that are natural-gas fired.
Att. "B" Section I.D		X		Facility Wide Requirements – Recordkeeping Requirements: Requirements were streamlined with by combining #2 and #5, #3 and #6, and #4 and #7. For added clarity, the words "diesel-fired" were added to the engine hours of operation requirement, and the requirements now specify that the Permittee must calculate the rolling 12-month totals. The requirement to report the rolling 12-month totals was removed and rolled into the reporting requirements in Att "B" I.E.
Att. "B" Section I.E		X		Facility Wide Requirements – Reporting Requirements: Requirement previously in Att "B" I.D to report rolling 12-month totals was incorporated into this section.
Att "B" Sections II.A and B		X		Boilers and Heater – Applicability and Fuel Limitations: Applicability updated to reflect changes in Equipment List table format. No changes made to Fuel Limitations.

Section No.	Determination			Comments
	Added	Revised	Deleted	
Att "B" Section II.C		X		Boilers and Heater – Boilers and Heater Subject to Standards of Performance for Fossil-fuel Fired Industrial and Commercial Equipment Under A.A.C. R18-2-724: Section title updated to include a reference to the relevant regulations. PM and Opacity sections have been combined. Opacity monitoring language updated to accommodate moving most of the related requirements to Att "B" I.A.
Att "B" Section II.D		X		Boilers and Heater – Boilers Subject to NSPS Requirements for Small Industrial-Commercial-Institutional Steam Generating Units under 40 CFR 60 Subpart Dc: Section title updated to include a reference to the relevant regulations. Reporting requirement in 40 CFR 60.48c(j) was removed as the Permittee is not required to do any reporting under Subpart Dc. A couple small changes in language were made for clarity and to more closely match language in the CFR.
Att "B" Section III.A		X		Internal Combustion Engines (ICEs) – Applicability – Updated to reflect changes in Equipment List table format.
Att "B" Section III.B		X		Internal Combustion Engines (ICEs) – Emergency Engines Subject to Standards of Performance for Existing Stationary Rotating Machinery Under A.A.C. R18-2-719: Section title updated to include a reference to the relevant regulations. Opacity monitoring language updated to accommodate moving most of the related requirements to Att "B" I.A. Minor changes were made to language for clarity and to more closely match language in the A.A.C.
Att "B" Section III.C	X	X		Internal Combustion Engines (ICEs) – Emergency Engines Subject to NSPS Requirements for Stationary CI ICE Under 40 CFR 60 Subpart IIII: Section title updated to include a reference to the relevant regulations. Fuel Requirements and Emissions Limitations/Standards sections moved to be located immediately after Applicability section. Opacity requirements from 40 CFR 89.113 added to Emissions Limitations/Standards section, and the section was edited for clarity and brevity. Requirement from 40 CFR 60.4206 added. Incorrect CFR references throughout the section have been corrected. The option to operate engines according to "procedures developed by the Permittee that are approved by the engine manufacturer over the entire life of the engine" has been removed as a basis in the CFR or A.A.C. was not found. Language altered for clarity and to more closely match language in the CFR, particularly 40 CFR 60.4211(f)(2) and (3). Added Compliance Requirements

Section No.	Determination			Comments
	Added	Revised	Deleted	
				section, which includes requirements from 40 CFR 60.4211(c) and (g). In Clarified recordkeeping requirements from 40 CFR 60.4212(b). Added recordkeeping and reporting requirements from 40 CFR 60.4214(c) and (d).
Att "B" Section III.D	X			Internal Combustion Engines (ICEs) – New Emergency Engines Subject to the NESHAP Requirements for Stationary Reciprocating ICE Under 40 CFR 63 Subpart ZZZZ: Section added to incorporate into the permit NESHAP requirements for new engines from 40 CFR 63 Subpart ZZZZ.
Att "B" Section IV		X		Kilns, Cooling Towers, and Paint Booth Extractors: Section title updated to reflect that this section applies specifically to the paint booth extractors. Paint booth heater requirements are in Att "B" II.A, B, and C.
Att "B' Section IV.A		X		Kilns, Cooling Towers, and Paint Booth Extractors – Applicability: Language updated to reflect that this section applies specifically to the paint booth extractors. Paint booth heater requirements are in Att "B" II.A, B, and C.
Att "B" Section IV.B and C		X		Kilns, Cooling Towers, and Paint Booth Extractors – Fuel Limitations and Particulate Matter (PM): Small edits were made for the sake of clarity.
Att "B" Sections IV.D		X		Kilns, Cooling Towers, and Paint Booth Extractors – Opacity: Paint booth extractors added to the opacity standards and monitoring requirements. Opacity monitoring language updated to accommodate moving most of the related requirements to Att "B" I.A.
Att "B" Sections IV.E thru G		X		Kilns, Cooling Towers, and Paint Booth Extractors – Gaseous Emissions, Sulfur Dioxide, and Nitrogen Oxides (NO_x): Small edits were made for the sake of clarity.
Att "B" Section V		X		Fugitive Dust Requirements: Revised to represent the most recent template language. Section no longer applies to point sources. Opacity monitoring language updated to accommodate moving most of the related requirements to Att "B" I.A.
Att "B" Section VI		X		Other Periodic Activities: Revised to represent the most recent template language.
Att "B" Section VII		X		Requirements for Mobile Sources: The language "to prevent particulate matter from becoming airborne" was added to condition VII.B.1.b(2) to match what's written in the A.A.C. rule.
Att. "C"		X		Equipment List:

Section No.	Determination			Comments
	Added	Revised	Deleted	
				Revised to reflect the most recent equipment operating at the facility and to include equipment information provided. Generators EG-31 and EG-32 added. Also, it was discovered that EG-12 was manufactured in January 2006 rather than April 2006, which means EG-12 is not subject to 40 CFR 60 Subpart IIII as stated in the previous permit, but is subject to A.A.C. R18-2-719. This and additional corrections were made to the information for EG-12. Emissions calculations for EG-12 were updated accordingly. Paint booth extractor 77-4 was omitted from the previous permit's Equipment List by mistake. It has been added back into the Equipment List.

IX. MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS

Table 6 contains an inclusive but not an exhaustive list of the monitoring, recordkeeping and reporting requirements prescribed by the air quality permit. The table below is intended to provide insight to the public for how the Permittee is required to demonstrate compliance with the emission limits in the permit.

Table 4: Permit No. 85727

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Gas-fired equipment (boilers, heater, gas-fired engines), diesel-fired engines, wood-fired kilns	N/A	See Section VI of the TSD for Voluntary Accepted Emissions Limits	None	Maintain a monthly record and calculate rolling 12-month cumulative totals of gas usage from the gas meters readings, hours of operation for diesel-fired ICE, and amount of wood fired in the wood-fired kilns.	Report rolling 12-month cumulative totals of gas usage from the gas meters readings, hours of operation for diesel-fired ICE, and amount of wood fired in the wood-fired kilns.
Boilers and Heater (subject to A.A.C. R18-2-724)	PM	15% Opacity	Conduct periodic opacity monitoring on a quarterly basis	Record the observer name, date, results of the instantaneous survey or 6-minute observation, and, if applicable, any corrective action taken to lower the opacity of any excess emissions. Maintain records of fuel supplier certifications including information regarding the name of fuel supplier and heating value of the fuel.	Report all 6-minute periods which the opacity exceeded 15%.

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Boilers (subject to NSPS 40 CFR 60 Subpart Dc)	N/A	N/A	None	Record and maintain records of the amount of fuel combusted during each operating day. These records are required to be maintained for a period of two years.	None
Emergency Engines (subject to A.A.C. R18-2-719)	PM	40% Opacity – for any period greater than 10 seconds	Conduct periodic opacity monitoring on a quarterly basis.	Record the observer name, date, results of the instantaneous survey or 6-minute observation, and, if applicable, any corrective action taken to lower the opacity of any excess emissions. Maintain records of fuel supplier certifications including information regarding the name of fuel supplier and heating value of the fuel.	Report all 6-minute periods which the opacity exceeded 40%.
	SO_2	1.0 lb/MMBtu	None	Record the daily sulfur content of the fuel used in the engines.	Report to the Director any daily period during which the sulfur content exceeds 0.8%.
Emergency Engines (subject to NSPS 40 CFR 60 Subpart IIII)	PM, NMHC-NO_x, and CO	Relevant emissions standards from 40 CFR 89.112 Table 1 have	If the Permittee does not install, configure, operate, and maintain the engine and control device according to the	Maintain a copy of engine certifications or other documentation demonstrating that the	Submit an annual report according to the requirements in 40 CFR 60.4214(d)(1) through 60.4214(d)(3) for emergency engines > 100 hp

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
		been included in the permit. Excluding single cylinder and constant speed engines: 20% opacity during acceleration mode, 15% opacity during lugging mode, and 50% opacity during peaks in acceleration or lugging modes	manufacturer's emission-related written instructions, or changes the emission-related setting in a way that is not permitted by the manufacturer, the Permittee shall demonstrate compliance as required in 40 CFR 4211(g), which has been included in the permit.	engine complies with the applicable standards. Keep records of fuel supplier specifications including information regarding the name of fuel supplier, sulfur content, and cetane index or aromatic content in the fuel. Maintain monthly records of the operation of each ICE in emergency and non-emergency service that are recorded through the non-resettable hour meter. If engine is equipped with a diesel particulate filter, keep records of any corrective action taken after the backpressure monitor has notified the Permittee that the high backpressure limit of the engine is approached.	that operate for the purposes specified in 40 CFR 60.4211(f)(3)(i).

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Kilns, Cooling Towers, Paint Booth Extractors	PM	20% Opacity	Conduct periodic opacity monitoring on a quarterly basis.	Record the observer name, date, results of the instantaneous survey or 6-minute observation, and, if applicable, any corrective action taken to lower the opacity of any excess emissions. Maintain a vendor-approved copy of that part of the Federal Energy Regulatory Commission (FERC) approved Tariff agreement that contains the sulfur content and the lower heating value of the natural gas.	Report all 6-minute periods which the opacity exceeded 20%.
	SO_2/NO_x	600 ppm of SO_2 500 ppm of NO_x	None	None	None
Fugitive Dust	PM	40% Opacity	Conduct periodic opacity monitoring on a quarterly basis.	Record the observer name, date, results of the instantaneous survey or 6-minute observation, and, if applicable, any corrective action taken to lower the	Report all 6-minute periods which the opacity exceeded 40%.

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
				opacity of any excess emissions. Record of the dates and types of dust control measures employed.	
Abrasive Blasting	PM	20% Opacity	None	Record the date, duration and pollution control measures of any abrasive blasting project.	None
Spray Painting	VOCs	20% Opacity Control 96% of the overspray	None	Maintain records of the date, duration, quantity of paint used, any applicable SDSs, and pollution control measures of any spray painting project.	None
Demolition/ Renovation	Asbestos	N/A	None	Maintain records of all asbestos related demolition or renovation projects including the "NESHAP Notification for Renovation and Demolition Activities" form and all supporting documents	None
Mobile Sources	PM	40% opacity – for any period greater than 10 seconds	None	Keep record of all emissions-related maintenance activities performed on the Permittee's mobile sources	None

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
				stationed at the facility as per manufacturer's specifications	

X. AMBIENT AIR IMPACT ANALYSIS

The changes associated with this permit renewal did not trigger any updates to the existing ambient air impact analysis.

XI. LIST OF ABBREVIATIONS

A.A.C. ..... Arizona Administrative Code
ADEQ ..... Arizona Department of Environmental Quality
AERMOD ..... AMS/EPA Regulatory Model
AERMET ..... AERMOD Meteorological Preprocessor
AMS ..... American Meteorological Society
AQD ..... Air Quality Division
AQRV ..... Air Quality Related Values
ARM ..... Ambient Ratio Method
A.R.S. ..... Arizona Revised Statutes
BACT ..... Best Available Control Technology
Btu/ft^3 ..... British Thermal Units per Cubic Foot
CAM ..... Compliance Assurance Monitoring
CEMS ..... Continuous Emissions Monitoring System
CFR ..... Code of Federal Regulations
CH_4 ..... Methane
CO ..... Carbon Monoxide
CO_2 ..... Carbon Dioxide
CO_2e ..... CO_2 equivalent basis
EPA ..... Environmental Protection Agency
FERC ..... Federal Energy Regulatory Commission
FLM ..... Federal Land Manager
°F ..... degrees Fahrenheit
ft ..... Feet
g ..... Gram
GHG ..... Greenhouse Gases
HAP ..... Hazardous Air Pollutant
HHV ..... Higher Heating Value
hp ..... Horsepower
hr ..... Hour
IC ..... Internal Combustion
kW ..... Kilowatt
MW ..... Megawatts
NAAQS ..... National Ambient Air Quality Standard
NO_X ..... Nitrogen Oxides
NO_2 ..... Nitrogen Dioxide
N_2O ..... Nitrous Oxide
NSPS ..... New Source Performance Standards
O_3 ..... Ozone
Pb ..... Lead
PM ..... Particulate Matter
PM10 ..... Particulate Matter less than 10 µm nominal aerodynamic diameter
PM2.5 ..... Particulate Matter less than 2.5 µm nominal aerodynamic diameter
PSD ..... Prevention of Significant Deterioration

psia ..... Pounds per square Inch (absolute)
PTE ..... Potential to Emit
sec ..... Seconds
SF_6 ..... Sulfur Hexafluoride
SIA ..... Significant Impact Area
SIL ..... Significant Impact Level
SO_2 ..... Sulfur Dioxide Significant Impact Levels
TPY ..... Tons per Year
VOC ..... Volatile Organic Compound
yr ..... Year