Technical Support Document
Air Quality Construction Permit
Permit No. MIN-SM-27139R0001-2016-01

This document sets forth the legal and factual bases for permit conditions, with references to applicable statutory and regulatory provisions, including provisions under the federal tribal New Source Review program, 40 C.F.R. §§ 49.151 – 49.165.

1. GENERAL INFORMATION

a. Applicant and Stationary Source Information

Owner and Address	Shakopee Mdewakanton Sioux Community of Minnesota 2330 Sioux Trail NW Prior Lake, MN 55372
Facility Name and Address	Mystic Lake Casino Hotel 2400 Mystic Lake Boulevard Prior Lake, MN 55372
County	Scott
Reservation	Shakopee Mdewakanton Sioux Community of Minnesota
SIC Code	7999, 7011, 4911
NAICS Code	713210, 721120, 221119

Table 1: Stationary Source Information

b. Contact Information

Facility Contact: Stanley Ellison
Director of Land and Natural Resources
2330 Sioux Trail NW
Prior Lake, Minnesota 55372
Phone: (952) 496-6158
Fax: (952) 445-8906

Permit Contact: Stanley Ellison
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c. Facility Description

Shakopee Mdewakanton Sioux Community of Minnesota (SMSC) is a federally recognized Indian tribe. SMSC's reservation is located in Prior Lake and Shakopee,

Minnesota and is comprised of approximately 4,200 acres. SMSC operates several businesses within the boundaries of its reservation, including two casinos, a fire department and a public works department. The Mystic Lake Casino Hotel is located on reservation lands held by the United States government in trust for the SMSC. The EPA retains responsibility for implementing the Clean Air Act within Indian country in Minnesota, including within the SMSC reservation.

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SMSC originally constructed the Mystic Lake Casino Hotel, 2400 Mystic Lake Boulevard, Prior Lake, Minnesota, in 1992.

d. Area Classification

The facility is located in Scott County, which is designated attainment with National Ambient Air Quality Standards for all criteria pollutants. There are no Prevention of Significant Deterioration Class I areas within 100 kilometers of the Mystic Lake Casino Hotel or the SMSC reservation.

e. Enforcement Issues

There are currently no federal enforcement actions proceeding against SMSC.

2. PROJECT DESCRIPTION

a. Description of Permit Action

SMSC is requesting authorization to construct a new diesel-fired generator, designated EU 119. The electricity produced by EU 119 will provide standby power and peak load management for the Mystic Lake Casino Hotel. The proposed generator is a caterpillar 3516C HD generator set designed for emergency standby installations. The generator is certified by the manufacturer to meet US EPA Tier 4 emissions requirements.

SMSC proposes to limit fuel usage to 97,650 gallons per year, based on a 12 month rolling sum. The proposed fuel limit is based on 700 hours of operation per year at maximum fuel flow, consisting of emergency, testing, maintenance, and load shed operations.

SMSC will enter into a load shed agreement with Minnesota Valley Electric Cooperative (MVEC) to allow MVEC to switch electrical demand from various parts of the facility over to EU 119 during periods of peak demand.

b. Emissions Units Subject to Permit

Emission Unit	EU 119
Unit Type	Engine/generator
Usage	Standby Power and Peak Load Management
Manufacturer	Caterpillar
Model	3516C
Horsepower	2,944 HP
Power Rating	2,000 kW
Maximum Fuel Flow	139.5 gph
Maximum MMBtu/hr	19.12
Fuel Type	Diesel (0.0015% Sulfur)

Table 2: EU 119 Specifications

c. Emission Factors and Sample Calculations

Emission factors are based on the manufacturer's specifications and from AP-42, Fifth Edition, *Compilation of Air Pollutant Emission Factors,* Volume I: Stationary Point and Area Sources (AP-42), as described below. AP-42 is available online at https://www3.epa.gov/ttnchie1/ap42/. For large stationary diesel engines (diesel engines greater than 600 horsepower), emission factors are those listed in Chapter 3, Section 4: large stationary diesel engine, last modified in October 1996.

PM	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO	VOC	HAP
0.20	0.20	0.20	0.0289668	4.06	0.81	0.21	0

Table 3: Emission Factors in pounds per hour

EU 119's nitrogen oxide (NO_x), volatile organic compounds (VOC), carbon monoxide (CO), and particulate matter (PM) potential emissions are calculated using the emissions factors provided by the manufacturer at the maximum fuel flow rate of 139.5 gallons per hour. Sulfur dioxide (SO_2) potential emissions were calculated using the AP-42 emission factors listed in Table 3.4-1. Hazardous Air Pollutants (HAPs) potential emissions were calculated using the emissions factors listed in AP-42 Tables 3.4-3 and 3.4-4

Potential to emit is calculated using the following equations:

For NOx, VOC, CO, and $PM/PM_{10}/PM_{2.5}$ emissions:

$$E = H \times EF \times (1/2000)$$

Where:

- E = emissions, in tons/year.
- EF = emission factor, in lbs/hr
- H = Hours of operation per year
- 1/2000 is the conversion factor from pounds to tons (*i.e.* 1 ton = 2,000 pounds).

For HAPs:

$$E = TR \times EF \times (1/2000)$$

Where:

- E = emissions, in tons/year.
- EF = emission factor, in lbs/MMbtu
- TR = Annual Throughput in MMbtu
- 1/2000 is the conversion factor from pounds to tons (*i.e.* 1 ton = 2,000 pounds).

See the attached calculation sheets for specific calculations and methodology.

d. Potential to Emit Before Controls and Limits

Potential to emit means the maximum capacity of a source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a 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 enforceable as a practical matter. Secondary emissions, as defined at 40 C.F.R. §52.21(b)(18), do not count in determining the potential to emit of a source.

e. Total Facility Potential-to-Emit

	PM	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO	VOC	Pb	HAP (Total)
Potential Emissions (TPY)	1.6	1.6	1.6	0.1	177.6	14.2	4.1	0	0

Table 4: Facility Potential to Emit (tons/year)

Based on its potential to emit, the facility is not an existing Prevention of Significant Deterioration major stationary source as defined at 40 C.F.R. § 52.21(b)(1) because the facility does not emit, or have the potential to emit, 250 tons per year or more of a regulated New Source Review pollutant.

f. EU 119 Potential to Emit Before Limits

	PM	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO	VOC	Pb	HAP (Total)
Potential Emissions (TPY)	0.88	0.88	0.88	0.13	17.78	3.55	0.92	0	0.12

Table 5: EU 119 Potential to Emit (tons/year)

The potential to emit for EU 119 is based on the previously discussed emission factors and 8,760 hours of operation at 100% load.

g. Table 2.4 Potential to Emit After Controls and Emissions Limits

	PM	PM_{10}	$PM_{2.5}$	SO_x	NO_x	CO	VOC	Pb	HAPS
Potential Emissions (TPY)	0.07	0.07	0.07	0.01	1.42	.28	0.07	0	0.01

Table 6: EU 119 Allowable Emission After Permit Issuance (tons/year)

The potential to emit for EU 119 is based on previously determined emissions factors and a proposed fuel usage restriction of 97,650 gallons per year. The limit reflects 700 hours of operation at the maximum hourly fuel consumption rate of 139.5 gallons per hour.

h. Existing Pollution Control Equipment

EU 119 is a proposed new unit and does not have existing pollution control equipment.

3. PERMIT REQUIREMENTS

a. Federal Tribal Minor NSR Program

Mystic Lake Casino Hotel is an existing synthetic minor source as that term is defined at 40 C.F.R. § 49.152, because of federally enforceable limitations on its potential to emit NO_x found in permit number MIN-SM-27139R0001-2013-03 and permit number SYN-SM-27139R0001-2012-02. Construction of EU 119 is a modification of an existing synthetic minor source, which requires a permit prior to commencing construction. EPA is issuing a minor source permit under the Federal Minor New Source Review Program in Indian Country at 40 C.F.R. §§ 49.151-165.

b. Control Technology Review and Emissions Limitations

40 C.F.R. § 49.154(c) requires the reviewing authority to conduct a case-by-case control technology review to determine the appropriate level of control, if any, necessary to assure that National Ambient Air Quality Standards are achieved, as well as the corresponding emission limitations for the affected emissions units at the

source. As part of this review, the reviewing authority will consider the following four factors in its control technology review: (1) local air quality conditions, (2) typical control technology or other emissions reduction measures used by similar sources in surrounding areas, (3) anticipated economic growth in the area, and (4) cost-effective emission reduction alternatives.

i. Local Air Quality Conditions

Mystic Lake Casino Hotel is located in an area that has been designated as attainment for all criteria pollutants. The annual design value for NO_x is 9 ppb in the Dakota County region. This project is not expected to have a measurable impact on the ambient air quality within the region.

ii. Typical Control Technology or Other Emissions Reduction Measures Used By Similar Sources in Surrounding Areas

EPA consulted the RACT/BACT/LAER Clearinghouse (RBLC) to identify permitting actions involving large internal combustion engines with 500 or greater horsepower. The RBLC can be accessed online at http://cfpub.epa.gov/RBLC/. EPA searched the RBLC for permits issued between January 1, 2011, and February 1, 2016.

Permit #	Facility	Issued	Emisson Unit	Control
MIN-SM-27139R0004-2013-01	Dakotah! Sport and Fitness Prior Lake, Minnesota	05/04/2015	Emergency Diesel Generator	Engines utilize lean-burn combustion and are equipped with a turbocharger, aftercooler, and a catalytic converter
MIN-SM-27139R0005-2013-01	New Little Six Casino Prior Lake, Minnesota	6/23/2014	Diesel-fired engine/generator	Minimized hours of operations Tier II engine
PSD-ML-R50007-05-01	Grand Casino Mille Lacs Onamia, MN	08/27/2009	Diesel Generator	Minimized hours of operations Tier II engine
81-11	Sumpter Power Plant Wayne, MI	11/17/2011	Diesel fuel-fired combustion engine	Good combustion practices

V-PI-2704900084-2012-10	Treasure Island Resort and Casino Red Wing, Minnesota	11/26/2012	Internal combustion diesel-fired engines	Minimized hours of operations Tier II engine

Table 7: Common control techniques for internal combustion engines

The use of add-on control technologies to control NO_x emission from internal combustion does not appear to be a common technique for controlling NO_x emissions. Based upon the information provided, the use of selective catalytic reduction (SCR) as an inherent part of the process and good combustion practices can be considered adequate to control NO_x emissions. Tier 4 emissions standards are required for 2014 or later compression-ignition engines by New Source Performance Standards regulations.

iii. Anticipated Economic Growth in the Area

The permitted action is not expected to significantly affect economic growth in the area.

iv. Cost-Effective Emission Reduction Alternatives

SCR is a method to reduce NO_x emissions. Good combustion practices help to ensure that a generator is operating efficiently. Good combustion practices can include, but are not necessarily limited to, proper operation and routine maintenance of the generator. The use of good combustion practices and SCR will be considered when establishing the appropriate level of NO_x controls.

v. Results of Case-by-Case Control Technology Review

Table 3.1 lists the control technologies and emission reduction techniques that will be considered when setting emission limitations for the generator involved in this permit action. Both control devices and techniques were determined suitable for this permit action.

Pollutant	Control Device or Technique	Control Efficiency
NO_x	SCR	70-90 %
NO_x	Good Combustion Practices	(None specified)

Table 8: Nitrogen oxide emissions controls for internal combustion engines

c. Monitoring and Recordkeeping Requirements

Monitoring and testing to assure compliance with emissions limitations have been established within the permit. EU119 will be equipped with a fuel meter and runtime hours meter for monitoring. EU 119 will also be equipped with inducement warnings and alarms to indicate that the engine emission control systems are properly operating. Additionally, the facility is required to follow the recommendations listed

in the Operating and Maintenance manual to ensure that the engine is maintained to operate at its optimum performance.

An initial performance test is required within 180 days after the first day of operation. Subsequent performance testing for EU 119 is required so that a test is performed on the engine at least once every five years. This testing interval is both common and adequate for this emission unit.

The combination of fuel monitoring, runtime monitoring, inducement warnings, periodic performance tests, and adherence to an Operation and Maintenance plan is sufficient to demonstrate compliance with the applicable emissions limitations.

d. New Source Performance Standards (NSPS)

EU 119 is required to meet 40 C.F.R Part 60 Subpart IIII because it was ordered after July 11, 2005 and manufactured after April 1, 2006. EU 119 is a Tier 4 non-emergency, stationary, compression-ignition (CI) internal combustion engine (ICE) with a displacement of less than 30 liters per cylinder. The following conditions apply to EU 119:

i. 40 C.F.R. § 60.4204(b) applies because EU119 is a model year 2007 or later non-emergency, stationary, CI, ICE with a displacement of less than 30 liters per cylinder. The requirements referred to in 40 C.F.R. § 60.4201(a) apply because EU119 is subject to 40 C.F.R. § 60.4204(b). 40 C.F.R. § 60.4201(a) requires manufacturers to certify that the engine meets the emission standards in 40 C.F.R. 1039.101(b).

ii. 40 C.F.R. § 60.4206 applies because EU119 is a CI ICE that must achieve the emission standards in 40 C.F.R. § 60.4204(b). This condition requires the engine to be operated and maintained properly in order to achieve the required emission standards throughout the life of the engines.

iii. The fuel standards of 40 C.F.R. § 60.4207(a) and (b) apply because EU 119 is a CI ICE with a displacement of less than 30 liters per cylinder. The effective date of these conditions (October 1, 2007 and October 1, 2010) have already passed.

iv. The requirements of 40 C.F.R. § 60.4208 apply because the Permittee is installing EU 119, a stationary source CI ICE after December 2012.

v. The compliance requirements of 40 C.F.R. § 60.4211(a) apply because the Permittee must comply with the emission standards listed in 40 C.F.R. § 60.4204(b), and as required by 40 C.F.R. § 60.4209.

vi. The compliance requirements of 40 C.F.R. § 60.4211(c) apply because the Permittee owns and operates EU 119. This requires the Permittee to purchase an

engine that has been certified to meet the emission requirements in 40 C.F.R. § 60.4204(b).

4. OTHER REQUIREMENTS

a. Endangered Species Act (ESA)

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) requires all Federal agencies, including EPA, to insure that any action authorized, including the issuance of a federal permit, does not jeopardize the continued existence of an endangered or threatened species or designated or proposed critical habitat. As part of this process, Section 7(a)(2) requires a consultation with the Fish and Wildlife Service if the project may have an effect on a listed species. Information on the consultation process is available at http://www.fws.gov/midwest/endangered/section7/s7process/index.html

According to the February 2016 *County Distribution of Federally-Listed Threatened, Endangered, Proposed and Candidate Species* list (distribution list), the northern long-eared bat may be present in Scott County.

Federal agencies (or designated non-federal representatives) have the option to use the Northern Long-Eared Bat 4(d) Rule Streamlined Consultation form to notify the Service of their project and meet the requirements of the framework. http://www.fws.gov/Midwest/endangered/mammals/nleb/s7.html

This permit authorizes the construction of a new generator. The new generator will use existing space within the existing structure of the facility and will not require breaking new ground to build an expansion to the facility. After issuance of this permit, federally-enforceable operating limits will limit the facility's potential to emit NO_x.

The northern long-eared bat is an endangered species because bat populations have been affected by loss of hibernacula (caves and mines where the bat hibernates during the winter), loss of summer habitat (such as the bark of live or dead trees) due to construction, wind farm operations, and disease. The issuance of this permit will not cause further loss of hibernacula within the action area because construction at the facility will not affect the facility's existing footprint. The issuance of this permit will not cause further loss of summer habitat within the action area because it will not affect forested areas near the facility. The issuance of this permit will have no effect on wind farm operations and disease affecting the bat. For these reasons, the issuance of this permit will have "no effect" on the northern long-eared bat or its critical habitat.

Since the issuance of this permit will have "no effect" on any species or critical habitat, issuing this permit will not adversely affect proposed or listed species or critical habitat. Pursuant to ESA section 7's implementing regulations at 50 C.F.R.

§ 402.13(a), further formal consultation is not necessary and no further action is required. A streamlined consultation form was sent to U.S. Fish and Wildlife Service Twin Cities Minnesota Field Office on April 6, 2016.

b. National Historical Preservation Act (NHPA)

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires federal agencies, EPA included, to take into account the effects of an undertaking on historic properties. The implementing regulations of the NHPA can be found at 36 C.F.R. Part 800.

An undertaking, as defined at 36 C.F.R. §800.16(y), includes projects requiring a federal permit. Therefore, the issuance of this permit constitutes an undertaking.

Mystic Lake Casino Hotel is not listed on the National Register of Historic Places. Construction of the new generator will occur within the existing facility and will not expand the facility's footprint. There are no historic places listed within 3 miles of the facility. Since the facility is not listed or eligible to be listed on the National Register of Historic Places, and there are no properties near the facility that are listed or eligible to be listed, issuance of this permit will not affect historic properties. Assuming that there are historic properties listed or eligible to be listed on the National Register of Historic Properties near Mystic Lake Casino Hotel, this permit will authorize construction of a standby generator with allowable NO_x emissions of 1.42 tons per year. The allowable emissions from the proposed generator will have little additional impact on the air quality in the region.

For these reasons, EPA has determined the issuance of this minor NSR permit will have no potential to cause effects on historic properties. Pursuant to 36 C.F.R. § 800.3(a)(1), EPA has no further obligations under NHPA Section 106 or 36 C.F.R. Part 800.

c. Tribal Consultation

According to EPA's 2011 Policy on Consultation and Coordination with Indian Tribes, EPA is to consult on a government-to-government basis with federally-recognized tribal governments when EPA actions and decisions may affect tribal interests. Since EPA is the permitting authority for Mystic Lake Casino Hotel, EPA's final permit decisions may affect tribal interests, requiring consultation with the tribe.

Since Mystic Lake Casino Hotel is owned by SMSC, and since this permitting action is the result of December 18, 2015 requests by SMSC, further consultation is not necessary.