

Technical Support Document
Air Quality Construction Permit - Final
Permit No. MIN-SM-27139R0004-2013-01

This document sets forth the legal and factual basis for permit conditions, with references to applicable statutory and regulatory provisions, including provisions under the Federal Minor New Source Review Program in Indian Country under 40 C.F.R. §§ 49.151 – 49.161.

1.0 GENERAL INFORMATION

(A) Applicant and Stationary Source Information

Owner	Facility (SIC Codes: 7991, 8041, 8409)
Shakopee Mdewakanton Sioux Community of Minnesota 2330 Sioux Trail NW Prior Lake, Minnesota 55372	Dakotah! Sport and Fitness 2100 Trail of Dreams Prior Lake, Minnesota 55372 Scott County

(B) Contact Information

Responsible Official: Charlie Vig, Tribal Chairman
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Prior Lake, Minnesota 55372
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(C) Background and Facility Information

The Shakopee Mdewakanton Sioux Community of Minnesota (SMSC) is a federally recognized Indian tribe. The SMSC currently owns more than 3,300 acres of land in Prior Lake and Shakopee, Minnesota, in both fee lands and U.S. trust title. The SMSC operates several businesses, community organizations, and a tribal government, including a fire department and a public works department. However, the SMSC has not developed programs that allow it to attain or maintain National Ambient Air Quality Standards within its jurisdiction. As a result, the U.S. Environmental Protection Agency (EPA) retains responsibility for implementing the Clean Air Act on fee lands and lands held by the U.S. in trust for the SMSC.

Dakotah! Sport and Fitness (DSF) is an enterprise of the SMSC and is located on reservation lands held by the United States government in trust for the SMSC; therefore, the EPA is responsible for issuing and enforcing any air quality construction permits for the source.

The SMSC originally constructed DSF in 1994 and as part of the construction installed EU 204, an emergency generator serving the originally constructed portions of DSF. In 2007, the SMSC expanded DSF and added two additional emergency generators, EU 213 and EU 214, to serve the newly constructed portions of DSF. This permit is an after-the-fact construction permit.

Facility Emissions:

Table 1: Total Facility Potential-to-Emit Summary (Before Federally Enforceable Limits)

	NO _x tpy	CO tpy	PM tpy	PM ₁₀ tpy	PM _{2.5} tpy	SO ₂ tpy	VOC tpy	Single HAP tpy	All HAPS tpy
EU 204	164.63	43.73	5.14	5.14	5.14	0.08	4.63	0.0399	0.078
EU 213	39.89	5.59	2.77	2.77	2.77	0.04	2.25	0.0215	0.0414
EU 214	39.89	5.59	2.77	2.77	2.77	0.04	2.25	0.0215	0.0414
Total Facility Potential Emissions	244.41	54.91	10.68	10.68	10.68	0.16	9.13	0.0829	0.1608

* tpy = tons per year

(D) Area Classification

DSF is located in Scott County, Minnesota, which is designated as an attainment area with the National Ambient Air Quality Standards for all criteria pollutants. There are no Prevention of Significant Deterioration Class I areas within 100 kilometers of DSF or the SMSC reservation.

2.0 PROCESS DESCRIPTION

(A) Description of Permit Action

SMSC owns and operates three diesel-fired emergency generators designated as EU 204, EU 213, and EU 214. These generators are located at DSF, 2100 Trail of Dreams, Prior Lake, Minnesota. The SMSC has requested an after-the-fact construction permit to provide annual fuel usage and operating hour limits on generators EU 213 and EU 214 in order to provide backup power and peak load management under contract with Minnesota Valley Electric Cooperative.

EU 204 is an Energy Dynamics model 8011250C diesel generator. The engine is rated at 1,678 horsepower, which provides up to 1,250 kilowatts of power. This engine burns 85.72 gallons of ultra low sulfur (0.0015%) diesel fuel per hour when operated at maximum capacity. SMSC intends to continue operating this engine as an emergency-only engine and has requested an hours of operation limitation based on 100 hours of maintenance and testing operations at maximum load per calendar year. This corresponds to 8,572 gallons of fuel consumed per calendar year at the maximum fuel usage rate for EU 204, calculated as (85.72 gallons of fuel / hour of operation) * (100 hours of operation / calendar year). EU 204 is equipped with a runtime hour meter. This permit will limit operation to 100 hours of maintenance and testing and to emergency periods for EU 204.

EU 213 and EU 214 are Generac model SD600 diesel generators. These engines are rated at 864 horsepower and provide 600 kilowatts of power. These engines use 46.2 gallons of ultra low sulfur (0.0015%) diesel fuel per hour when operated at maximum load. SMSC has requested fuel usage limitations for EU 213 and EU 214 based on 700 hours of operation at maximum load for each engine. This corresponds to 32,340 gallons of fuel consumed per year at the maximum fuel usage rate for EU 213 and EU 214, calculated as (46.20 gallons of fuel / hour of operation) * (700 hours of operation / year).

(B) Table 2: Emission Unit Specifications

Emission Unit	EU 204	EU 213	EU 214
Unit Type	Engine/generator	Engine/generator	Engine/generator
Usage	Emergency only	Emergency and peak shaving	Emergency and peak shaving
Manufacturer	Energy Dynamics	Generac	Generac
Model	8011250C	SD600	SD600
Horsepower	1,678 HP	864 HP	864 HP
Power Rating	1,250 kW	600 kW	600kW
Exhaust Height	9.92 ft	11.67 ft	11.67 ft
Inside Exhaust Diameter	1.0 ft	0.67 ft	0.67 ft
Exhaust Flow	12,000 ACFM	6,419 ACFM	6,419 ACFM
Exhaust Velocity	254.65 ft/sec	136.22 ft/sec	136.22 ft/sec
Exhaust Temp	950.0° F	1300° F	1300° F
Fuel Type	Ultra low sulfur diesel fuel only	Ultra low sulfur diesel fuel only	Ultra low sulfur diesel fuel only
Fuel Flow	85.72 gph	46.20 gph	46.20 gph

(C) Table 3: Engine Emission Factors (pounds per hour)

	NO _x	CO	PM	PM ₁₀	PM _{2.5}	SO ₂	VOC	Single HAP	All HAPs
Unrestricted potential hourly emissions for EU 204	37.59	9.98	1.17	1.17	1.17	0.02	1.06	0.01	0.02
Unrestricted potential hourly emissions for EU 213 and 214	9.11	1.28	0.63	0.63	0.63	0.01	0.51	0.01	0.01

(D) Table 4: Potential to Emit After Federally Enforceable Limits (tons per year)

	NO _x	CO	PM	PM ₁₀	PM _{2.5}	SO ₂	VOC	Single HAP	All HAPs
Potential to emit with emissions limitations: Energy Dynamics engine EU 204 limited to 8572 gallons per year ¹	1.88	0.50	0.06	0.06	0.06	0.00	0.05	0.00	0.00
Potential to emit with emissions limitations: 2 Generac engines each limited to 32,340 gallons per year ²	6.38	0.90	0.44	0.44	0.44	0.01	0.36	0.01	0.01
Potential to emit with emissions limitations: Facility total (tons per year)	8.26	1.40	0.50	0.50	0.50	0.01	0.41	0.01	0.01

1: 8,572 gallons per year is equivalent to operating at the engine's maximum fuel flow of 85.72 gallons per hour for 100 hours per year.
 Potential to emit = potential hourly emission (lb/hr) * 100 hours/year / 2000 pounds/ton.

2: 32,340 gallons per year is equivalent to operating at the engine's maximum fuel flow of 46.2 gallons per hour for 700 hours per year.
 Limited potential to emit = 2 engines * potential hourly emission (lb/hr/engine) * 700 hours/year / 2000 pounds/ton.

(E) Enforcement Issues

On March 13, 2012, EPA and SMSC entered into Administrative Amended Consent Order EPA-5-11-113(a)-MN-02 (ACO) which resolved the alleged failure by SMSC to obtain a permit for construction of generators located at the Mystic Lake Casino Hotel. Among other things, the ACO required SMSC to submit to EPA an application for an after-the-fact construction permit for EU 204, EU 213, and EU 214 located at DSF.

There are no other federal enforcement actions proceeding against SMSC.

(F) Pollution Control Equipment

EU 213 and EU 214 are required to meet EPA New Source Performance Standards Subpart IIII Tier 2 emission standards. In order to meet the standards these engines utilize lean-burn combustion and are equipped with a turbocharger, aftercooler, and a catalytic converter.

EU 204 is not equipped with pollution control equipment.

3.0 APPLICABLE REQUIREMENTS

(A) 40 C.F.R. § 52.21: Prevention of Significant Deterioration (PSD)

40 C.F.R. § 52.21 defines a “major stationary source” as, among other things, a source that has the potential to emit more than 250 tons per year of a regulated air pollutant. With the exception of certain types of sources, a source that does not emit more than 250 tons of a regulated air pollutant is a PSD minor source. Since DSF does not have the potential to emit 250 tons or more of any regulated air pollutant, DSF is a PSD minor source and is not subject to the PSD program at 40 C.F.R. § 52.21.

(B) 40 C.F.R. §§ 49.151-161: Federal Minor New Source Review Program in Indian Country

40 C.F.R. § 49.152(d) defines a true minor source as a source that has the potential to emit regulated new source review (NSR) pollutants in amounts that are less than the major source thresholds of 40 C.F.R. § 52.21 but greater than or equal to the minor NSR thresholds in 40 C.F.R. § 49.153. DSF does not emit any regulated NSR pollutant at an emission rate exceeding the major source threshold. However, DSF does emit CO, NO_x, VOC, PM, PM₁₀, and PM_{2.5} at a rate exceeding the minor source threshold. Therefore, DSF is a true minor source and EPA is issuing the after-the-fact minor source permit under the Federal Minor New Source Review Program in Indian Country at 40 C.F.R. §§ 49.151-161.

(C) 40 C.F.R. Part 63, Subpart ZZZZ: National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE MACT)

In accordance with 40 C.F.R. 63.6585, a source is subject to the RICE MACT if it operates a stationary reciprocating internal combustion engine (RICE) at an area source of hazardous air pollutant emissions. The facility is an area source for HAP emissions, as defined in 40 C.F.R. § 63.6675, because it emits less than 10 tpy of any single HAP and less than 25 tpy of total HAPs. For the purpose of this subpart, EU 204 is an existing, emergency, non-black start, compression ignition RICE. EU 213 and EU 214 are new, non-emergency, non-black start, compression ignition RICE as defined in 40 C.F.R. §§ 63.6590 and 63.6675.

Generators EU 213 and EU 214 are compression ignition engines that were manufactured after June 12, 2006. Therefore, EU 213 and EU 214 are new stationary RICE sources and must meet the requirements of the RICE MACT by meeting the requirements of 40 C.F.R. Part 60, Subpart III. These units were manufactured to meet NSPS Subpart III standards. The applicable requirements of 40 C.F.R. 60 Subpart III are specified in the permit.

Generator EU 204 is a compression ignition engine that was manufactured prior to prior to June 12, 2006. Therefore, EU 204 is an existing stationary RICE source and must meet the requirements in 40 C.F.R. 63, Subpart ZZZZ. The following conditions apply to EU 204:

- i. 40 C.F.R. § 63.6595(a)(1) applies because EU 204 is an existing stationary compression ignition RICE at an area source of HAP emissions. The Permittee must comply with the applicable emission limitations, operating limitations, and other requirements no later than May 3, 2013, which has already passed.
- ii. 40 C.F.R. § 63.6603(a) applies because EU 204 is an existing stationary RICE located at an area source of HAPs. The Permittee is required to comply with item 4 of Table 2d to Subpart ZZZZ of Part 63.
- iii. The general compliance requirements of 40 C.F.R. § 63.6605 apply because EU 204 must show compliance with Subpart ZZZZ.
- iv. 40 C.F.R. § 63.6625(e), (f), (h), and (i) apply because EU 204 is an existing, emergency, compression ignition, stationary RICE at an area source of HAPs. 40 C.F.R. § 63.6625(i) applies because EU 204 must comply with item 4 of Table 2d to Subpart ZZZZ.
- v. 40 C.F.R. § 63.6640(a) and (f) apply because EU 204 is an emergency stationary RICE that must show continuous compliance with the requirements of Table 2d to Subpart ZZZZ according to entry 10 of Table 6 to Subpart ZZZZ.
- vi. 40 C.F.R. § 63.6655(e) applies because EU 204 is an existing emergency stationary RICE.
- vii. 40 C.F.R. § 63.6660 applies because maintenance records conducted on EU 204 must be maintained.

(D) 40 C.F.R. Part 60, Subpart III: Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (NSPS III)

EU 213 and EU 214 are required to meet NSPS III EPA Tier 2 emissions standards because they were ordered after July 11, 2005, and manufactured after April 1, 2006. Both EU 213 and EU214 are model year 2007 internal combustion engines (ICE). Both engines are non-emergency, stationary, compression-ignition (CI) ICE with a displacement of less than 30 liters per cylinder. The following conditions apply to EU 213 and EU 214:

- i. 40 C.F.R. § 60.4204(b) applies because EU 213 and EU 214 are model year 2007 non-emergency, stationary, compression-ignition, internal combustion engines with a displacement of less than 30 liters per cylinder.
- ii. The emission standards referred to in 40 C.F.R. § 60.4201(a) apply to the manufacturer of EU 213 and EU 214 because EU 213 and EU 214 are subject to 40 C.F.R. § 60.4204(b) and have a maximum engine power less than or equal to 2,237 kilowatt (KW). The manufacturer is required to certify that the engines meet the emission standards listed 40 C.F.R. §§ 89.112 and 89.113. The requirements of

40 C.F.R. §§ 1039.101 – 1039.115 do not apply because EU 213 and EU214 are not model year 2014 or later ICE.

- iii. 40 C.F.R. § 60.4206 applies because EU 213 and EU 214 are CI ICE that must achieve the emission standards in 40 C.F.R. § 60.4204(b). This condition requires both engines to achieve the required emission standards throughout the life of the engines.
- iv. The fuel standards of 40 C.F.R. § 60.4207(a) and (b) apply because EU 213 and EU 214 are both 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.
- v. The monitoring requirements of 40 C.F.R. § 60.4209 apply because the Permittee owns and operates EU 213 and EU 214, stationary source CI ICE. The only applicable requirement is to comply with 40 C.F.R. § 60.4211. The requirements of 40 C.F.R. § 60.4209(a) and (b) do not apply because EU 213 and EU 214 meet the standards applicable to non-emergency engines and are not equipped with diesel particulate filters.
- vi. 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.
- vii. The compliance requirements of 40 C.F.R. § 60.4211(c) apply because the Permittee owns and operates EU 213 and EU 214. 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).
- viii. 40 C.F.R. § 60.4218 applies because the Permittee is subject to 40 C.F.R. Part 60, Subpart III. Conditions in Table 8 to 40 C.F.R. Part 60, Subpart III, apply to the Permittee as listed.

(E) Monitoring

EU 204, EU 213, and EU 214 each have hourly NO_x emission limitations. Monitoring and testing to assure compliance with these limits have been established. An initial performance test for all three engines is required within 180 days of issuance of this permit. Subsequent performance testing for EU 213 and EU 214 is required so that a test is performed on each engine at least once every five years. This testing interval has been determined to be adequate for these emissions units since they are designed to operate as peak shaving generators. Additionally, the facility has submitted an Operating and Maintenance plan that will be followed to ensure that each engine is maintained to operate at its optimum performance. The combination of periodic performance tests and adherence to an Operation and Maintenance plan is sufficient to demonstrate compliance with the applicable hourly limit.

(F) Endangered Species Act

According to U.S. Fish and Wildlife distribution lists, there are no endangered or threatened species or critical habitat present in Scott County. Therefore, further analysis and consultation is not required under Section 7(a) of the Endangered Species Act.