DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Self Initiated Inspection

N750637961

FACILITY: ZEELAND BOARD OF PUBLIC WORKS		**SRN / ID:** N7506
LOCATION: 8943 RILEY STREET, ZEELAND		**DISTRICT:** Grand Rapids
CITY: ZEELAND		**COUNTY:** OTTAWA
CONTACT: Don Muller , Electric Operations Manager		**ACTIVITY DATE:** 12/16/2016
STAFF: Steve Lachance	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MINOR
SUBJECT: Self-Initiated Inspection for FY '017		
RESOLVED COMPLAINTS:		

This was an unannounced inspection, conducted on 12/16/16. Weather conditions were gray and cold (<25 F). After visually verifying that the facility was not in operation, SL and CR of this office arrived at the main ZBPW offices at about 10:45 AM to announce the inspection. Ms. Tracey DeKraker (Electrical Engineer), accompanied AQD Staff during the inspection. The stated purpose of the inspection was to determine the facility's compliance with the conditions of Permit to Install # 187-05, and the (Area Source) RICE MACT.

This facility is located at 8943 Riley Street, on the north side of Zeeland. It consists of 5 identical Caterpillar engines, each rated at about 2 MW. The engines operate on natural gas (only) and CO emissions are controlled with in-stack catalytic converters. These catalysts were installed as required by PTI # 187-05, but were updated/replaced to reflect required compliance with the Area Source RICE MACT. The engines are NOT classified as "Limited Use" or "Emergency Use" engines for this rule.

The facility is little-utilized and was not operating on the day of the inspection. Several engines had operated the day previous. While the plant was not operating at the time of the inspection, available records, monitoring capabilities, and on-site equipment were assessed during the inspection.

EMISSION LIMITS: the engines are subject to CO emission limits per Special Condition (SC) 1.1. While testing has not been required per permit, required RICE Performance Testing was completed in 2014. Reported and recorded emissions are estimated based on fuel usage and vendor-guaranteed emission factors combined with test-specific results (worst case; see Appendix A of the permit.) At current utilization rates (see below), emissions (<< 1 ton CO) are well below the mass emission limit (34.0 tpy CO) in the permit.

MATERIAL USAGE LIMITS: the engines burn only natural gas per SC 1.2. Operations are limited to 104 mmcf per engine per 12-month period (SC 1.3), and facility records (attached as attachment A) indicate a total of 2.39 mmcf for all engines combined in 2015. SL verified that this material usage corresponds to the throughput reported in MAERS for 2015. Per MAERS, emissions at this level of throughput less than one ton of CO and NOx. See attachment B.

PROCESS/OPERATIONAL LIMITS: the required Malfunction Abatement/Preventative Maintenance Plan (SC 1.4) was submitted in September, 2006.

EQUIPMENT: each engine has a layer of catalyst installed in the outlet stack per SC 1.5. (As noted above, the catalyst was upgrade/replaced in about 2013 to meet required Area Source Rice MACT CO reduction requirements.) Temperature probes are in place to record catalyst inlet and outlet temperatures. When operating, catalyst outlet temperatures are recorded. See attached records (C) as an example; temperatures can be captured by hand (on-site) or remotely from Washington Street. Note, catalyst inlet temperatures are "alarmed" at the inlet low temperature (750 F) required by permit. This functioning alarm system provides a continuous demonstration that required minimum inlet temperatures are maintained.

TESTING: to date, testing per SC 1.6 has not been required. (Testing has been completed and reviewed by AQD for RICE MACT Compliance in 2014. This testing demonstrated 99% CO destruction for each engine.) The facility has continued to operate minimally. Total lifetime hours for each engine average about 575 hours (each) to date.

MONITORING: natural gas usage, and catalytic converter inlet/outlet temperatures are monitored for each engine, per SC 1.7 and 1.8 and as discussed above. Each engine has a separate natural gas

meter; readings are manually recorded each month. These records were readily available. Each engine is also alarmed/signaled for low temperature (< 750 F), but normal operations indicate inlet temperatures of about 900 F, well above the 750 F requirement for catalytic action. Elevated exhaust temperatures indicate catalytic destruction (exothermic reaction.)

RECORDKEEPING/REPORTING/NOTIFICATION: required engine operations and CO emission calculations (SC 1.9 through1.12) are based on agreed-upon emission factors and natural gas usage, in conjunction with demonstrated destruction efficiency by the catalyst (99%.) These records were readily available. The emission factor used (708 lbs CO per mmcf natural gas used) is consistent with the application, vendor data, and is higher than the associated MAERS emission factor (399 lb/mmcf). SL considers this documentation to be compliant with the requirements of this permit. See Attachment D.

Monthly records (SC 1.10) for each engines' run time, electric generation, and fuel usage were current and readily available (see attached for January 2016 and November 2016 to complement the 2015 records discusses above: Attachments E and E'.

Per above, required operating temperature records per SC 1.12 were available. This monitoring and recordkeeping is consistent with their 7/28/08 correspondence, in which the facility committed to the immediate implementation of a manual data recording system, to be supplemented by the installation of an alarm indicating low temperatures. The facility can now monitor these operations remotely from the Washington Street Operating Room.

STACK/VENT RESTRICTIONS: each stack appears to have been constructed in accordance with these requirements (Special Condition No. 1.13).

Reciprocating Internal Combustion Engine (RICE) MACT

The engines qualify as existing area sources, and proper notification of applicability and performance testing (2014) have been completed. More efficient CO catalysts (guaranteed 93% reduction) have been installed for each engine. The most recent Annual and Semi-Annual Compliance Reports (2015 through June 2016) indicate no deviations from the rule. Required temperatures and differential pressures are recorded and documented, and the 2014 performance testing demonstrated required CO destruction efficiencies.

SUMMARY

At the completion of this inspection, SL considers the facility to be in COMPLIANCE with PTI # 187-05 and the Area Source Rice MACT.

Attachments:

A 2015 Generation Record

B EI2015 MAERS Attachment

C Catalyst Temperature Readings

D Air Emissions Worksheet (CO) for Riley Street Station

E and E' IC Engine Operation Data (Production, NG usage and hours per engine per month) for January and November 2016

NAME _____ DATE 12/19/16 SUPERVISOR _____