DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

B400150232

FACILITY: LBWL, Erickson Station		**SRN / ID:** B4001
LOCATION: 3725 South Canal Road, LANSING		**DISTRICT:** Lansing
CITY: LANSING		**COUNTY:** EATON
CONTACT: Nathan Hude , Environmental Services		**ACTIVITY DATE:** 08/29/2019
STAFF: Michelle Luplow	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Scheduled, unannounced inspection to determine compliance with MI-ROP-B4001-2015		
RESOLVED COMPLAINTS:		

Inspected by: Michelle Luplow (author) & Julie Brunner (AQD LDO)

Personnel Present: Nathan Hude (Nathan.Hude@LBWL.com), Environmental Regulatory Compliance

Other LBWL Personnel: Lori Myott (Lori.Myott@LBWL.com), Environmental Service Manager
Cindy Lehmkuhle, (LL@LBWL.com) Plant Manager

Purpose: Conduct an unannounced, scheduled compliance inspection of the LBWL Erickson Station Power Plant, and an unannounced, scheduled compliance inspection of the LBWL Fly Ash Handling Facility located on Millett Highway. Compliance was determined with the Lansing Board of Water and Light's Renewable Operating Permit MI-ROP-B4001-2015. This inspection was a partial compliance evaluation (PCE), conducted as part of a full compliance evaluation (FCE).

Facility Background/Regulatory Overview:
The LBWL Erickson Station (Erickson) is a major source of the criteria air pollutants NOx, SO_2 and CO, and a major source of the HAPs hydrogen chloride (HCl) and hydrogen fluoride (HF). The Erickson Station is scheduled to close their coal-burning plant by December 31, 2025. Nathan Hude said the natural gas-fired turbines are planned to go online within 2 years, and at that time, they will decide whether to use the coal plant at low load or use it as a peaker station.

The Erickson boiler, EU001, is considered an electrical generating unit (EGU) which is subject to 40 CFR 63 Subpart UUUUU NESHAP for Coal- and Oil-fired Electric Utility Steam Generating Units. Compliance was originally required by April 16, 2015; however, on September 28, 2012, Mark Matus requested an extension of the compliance deadline for the Federal Mercury and Air Toxics Standards (40 CFR 63 Subpart UUUUU, MATS) because of the need to stagger installation schedules so that reliable power can be provided during outage periods. The AQD granted an extension compliance date of April 16, 2016 on December 17, 2012. Additionally, EU001 is subject to the Acid Rain Program and the Cross-State Air Pollution Control Rule (CSAPR): Transport Rule NOx Annual Trading Program; Transport Rule NOx Ozone Trading Program; and the Transport Rule SO2 Group 1 Trading Program. The current ROP was renewed in October 2015.

Erickson had installed a carbon absorption system for Hg in order to comply with the MATS. RATA testing for Hg is conducted annually.

The Cleaver Brooks No.2 oil-fired auxiliary boiler, EUAUXBLR, is subject to the Boiler MACT subpart DDDDD (for major sources of HAPs) and was re-permitted as a "limited use" boiler in May 2015 (PTI 71-15). The compliance deadline for this existing unit was January 31, 2016.

The Clark Fire Pump engine is used for emergency purposes only and is subject to NSPS IIII.

Erickson is currently under a Consent and Final Order (CAFO) with the Environmental Protection Agency (EPA). The first CAFO draft was issued in October 2018 although the CAFO itself is addressing issues that occurred 10+ years ago. The CAFO has stringent limits on SO2 (0.749 lb/MMBtu on a 30-day rolling average) compared with the State of Michigan SO2 limits (1.67 lb/MMBtu when burning coal per 24-hr period). They have been operating an SNCR since November 2018 in order to meet the NOx limit in the CAFO. Urea is injected into the upper level of the exhaust stack to control NOx, but N. Hude stated that too much urea could result in "urea slip"

which could clog the electrostatic precipitators (ESPs). The injection rate is determined by the MW loading. There will be ongoing discussions to determine if the CAFO NOx limit should be incorporated into a PTI/ROP, and whether the CAFO itself will need to be included in the ROP. The SNCR is eligible for exemption from obtaining a permit to install under Rule 285(2)(f), but a demonstration of the exemption is necessary. I will request that Erickson submit this demonstration.

There will also be ongoing discussions on whether Erickson has any affected facilities that are subject to the NSPS Subpart Y for Coal Preparation and Processing Plants. Affected facilities include thermal dryers, pneumatic coal-cleaning equipment, transfer and loading systems, and open storage piles (for those facilities commencing construction, reconstruction, or modification after May 27, 2009).

Inspection: The inspection at the power plant and fly ash handling facility was an unannounced compliance inspection. At approximately 9:00 a.m. on August 29, 2019 Julie Brunner and I arrived at the gate to the LBWL Erickson Station (LBWL) to be let into the facility. We met with Nathan Hude, who is in charge of regulatory environmental compliance. Just before leaving the Lansing District Office, we made a call to N. Hude to let him know we were on our way to the LBWL Erickson station. We broke for lunch around 12:30 and reconvened at 1:30 to conduct the remainder of the Erickson station inspection, and to inspect the fly ash handling facility.

When calls are not made in advance to LBWL staff informing them we will be coming, LBWL has put a procedure in place to have the plant's office staff call the environmental services staff (located near downtown Lansing) when an inspector arrives at the facility, prior to allowing the inspector to conduct an inspection. It is also required by LBWL to check in at the Erickson Station prior to conducting an inspection of the ash handling facility.

I provided N. Hude with a June 2019 Permit to Install exemptions handbook.

MI-ROP-B4001-2015 Emission Unit Table

Emission Unit	Description	Installation/Mod Date	Flex Group
EU001	Babcock & Wilcox 1668 MMBTU/hr pulverized coal-fire boiler. No. 2 fuel oil used for startup and flame stabilization	7-1-1970	NA
EUAUXBLR	Cleaver Brooks aux boiler, No. 2 fuel oil-fired. Supplies heat to plant. 20,922,000 Btu/hr Model # CB189-500 Serial # L-52256 149.5 gallon/oil fuel oil capacity Manufacture date 5/7/71	5-7-1971	NA
EUFPENGINE	John Deere Power Systems 175 bhp 4-stroke Diesel Compression Ignition Clark Fire Pump Emergency Engine, Model JU6H-UFADM8. Maximum heat input is approximately 1.4 MMBTU/hr with a 6.8 L/cylinder displacement.	11-2013	NA
EUASHDC1 (East and West Storage Silos baghouse)	Ash handling equipment w/ particulate control device for transfer of ash from storage to load out silos	10-1-1978/ 12-28-1991	FGASHHANDLING
EUASHDC2 (Loadout silo – baghouse to control	Ash handling equipment w/ particulate control device for loading trucks from silos	7-1-1970	FGASHHANDLING

dust entering the silos)			
EUASHDC3 (Truck loadout chute baghouse)	Ash handling equipment w/ particulate control device for transfer of ash to storage silos	10-1-1970/ 1-1-1982, 5-1-17	FGASHHANDLING
EUASHDC4 (Mass storage building baghouse) .	Ash handling equipment w/ particulate control device for transfer of ash to mass storage building	7-1-1970	FGASHHANDLING
EUASHDC5 (Fly ash building baghouse located at the main plant)	Ash handling equipment w/ particulate control device for transfer of ash from Erickson to ash storage facilities	7-1-1970	FGASHHANDLING
EUCOLDCLEANER	Thirty gallon parts washer for cleaning/degreasing parts using Stoddard solvent/mineral spirits.	1998	FGCOLDCLEANERS

EU001 – Babcock Wilcox pulverized coal-fired boiler
EU001 boiler combusts Western Coal from the Powder River Basin in Wyoming. The unit has a maximum operating capacity of 165 MW; however, during the inspection, the load was restricted to 115 MW. N. Hude explained that only 3 of the 4 coal mills are functioning; the 4th coal mill is currently under repair. We observed the repairs of the 4th mill during the inspection. He said they plan to have the 4th mill up the first week of September. N. Hude said that coal shipment frequency varies, but typically Erickson, on average, receives coal once every 1.5 weeks. The goal is to keep enough onsite for what they predict they will need. Coal deliveries increase during the summer months.

Emission Limits, Testing/Sampling, Monitoring/Recordkeeping, and Reporting
Particulate emissions testing, required per rule 331(1)(a), was required to be conducted within 12 months of the date of issuance of MI-ROP-B4001-2015 (December 8, 2015). PM testing was conducted August 4, 2016 for verification that PM emission rates do not exceed the 0.17 lb/1000 lbs exhaust gas (corrected to 50% excess air) PM limit. The emission rate was determined to be 0.01 lb PM/1000 lbs exhaust gas (corrected to 50% excess air).

Stack exhaust opacity is limited to 20% (except for one average per hour of 27% or less) and SO2 is limited to 1.67 lb/MMBtu heat input for coal and 1.11 lb/MMBtu/hr for fuel oil.

The 24-hour average SO_2 emission rate and opacity excursions/exceedances are required to be determined in order to determine compliance with the SO_2 emission limits for both fuel oil (1.11 lb/MMBTU heat input) and coal combusted (1.67 lb/MMBTU heat input). N. Hude said that fuel oil and coal are both combusted at startup until the heat within the boiler is sustained and then fuel is converted completely to coal. CEMS records SO_2 from both fuel sources, therefore as long as the quarterly data does show an exceedance of the lower limit of 1.11 lb SO2/MMBtu, LBWL is in compliance with both 24-hr avg emission limits. If there were exceedances of this limit, then LBWL would have to show compliance with both the oil SO_2 limit and coal SO_2 limit by conducting the required calculations in Appendices 7.1 and 7.2 of the ROP. All quarterly reports submitted to-date have been reviewed for compliance with the SO2 limit of 1.67 lb/MMBTU heat input (when burning coal) per 24-hr period and the 20% opacity limit (6-minute average); both have been found in compliance.

Material Limits
Erickson is limited to a coal ash content of no more than 14% by wt. Monitoring/Recordkeeping for EU001 also requires coal analysis records be kept and they include the following data for each delivery of coal: wt% ash, wt% sulfur, and wt% moisture, and BTU/lb. As requested, N. Hude provided me with all coal shipment data from December 2018 – August 2019. Table 1 contains winter and summer coal data; the data in its entirety is attached. All shipments between December 2018 – August 2019 were below the 14% ash content, with a maximum ash content of no more than 6%.

Table 1. Coal analysis

Date	Wt% Ash (dry)	Wt% sulfur (dry)	Wt% moisture	BTU/lb (wet)
12/21/18	4.3	0.23	26	9108
1/27/19	4.4	0.24	26	9080
3/2/19	4.6	0.20	27	9021
5/18/19	4.8	0.23	27	8973
7/9/19	4.3	0.20	27	9059
8/16/19	4.6	0.19	27	8958

Process/Operational Restrictions

Erickson is permitted to use coal; fuel oil; coal treated with additives for minimizing dust from or improving the characteristics of fuel handling and storage (used in accordance with the fugitive dust plan); and boiler cleaning solutions.

The Western coal Erickson uses is classified as sub-bituminous which means it has a low sulfur content. Additionally, during periods of startup, LBWL will use fuel oil #2 in the boiler. The fuel oil used for startups is the same fuel oil that is used to run the emergency generator and is an ultra-low sulfur diesel with a sulfur content of no more than 15 ppm.

According to the April 2017 Fugitive Dust Plan, Erickson uses GE Dustreat DC9139E and Dustreat DC 9138E. According to the plan Dustreat DC9138E is used for dust suppression at the coal loading and transfer points to minimize fugitive dust from the coal dumper and on the coal feed belts, and additive DC9139E is a crusting agent that minimizes fugitive dust emissions from the coal pile and haul roads. N. Hude stated that these are not the coal treatments that are currently being used. Benetech BT-668W is mixed with water and is sprayed on the coal during dumping from the railcars. Benetech BT-205W is sprayed on the coal along the belts/conveyors and the dumper to the coal pile (controls dust from the coal pile). Each additive has its manufacturer's recommended feed rate. Rambsorb 200 is applied when the coal is wet in order to absorb excess water when coal is coming off the coal pile. N. Hude provided the SDS for each chemical; however, these do not contain the composition of all chemicals – composition is only referenced as a "Proprietary Blend." Any time Erickson changes coal dust suppression/wetting agents they must change their fugitive dust plan to contain these suppressants as well as demonstrate Rule 285(2)(b) exemption. I will request that N. Hude provide a Rule 285(2)(b) exemption demonstration that the change in dust suppressant chemicals does not cause an appreciable change in the quality or appreciable increase in the quantity of emissions.

Boiler cleaning solutions are also allowed to be combusted for the cleaning of internal surfaces of boiler tubes and related steam and water cycle components if the solution does not contain HAPs. These boiler components are cleaned approximately every 7 years; the last time they were chemically cleaned was in 2010 using ChelClean 675. According to the SDS attached to the 2015 previous inspection report, tetraammonium ethylene diamine tetraacetate and ammonium hydroxide are the major components, but neither of these are considered HAPs by the EPA. N. Hude said that Erickson no longer uses any chemicals to clean out the boiler tubes, steam/water cycle components, etc. Instead, they use soot blowers to remove build-up and said that Erickson plans to only use soot blowing for cleaning in the future. They determine the need for cleaning during boiler outages while they're conducting boiler inspections.

Process/Operational Restrictions & Design/Equipment Parameters

The electrostatic precipitators (ESPs) are required to be installed, maintained and operated in a satisfactory manner if LBWL wishes to operate EU001. N. Hude explained that the primary way Erickson staff know the ESPs are operating properly is the opacity being emitted from the stack. He said that an opacity of 5-6% is normal. Anything outside this range would be an indicator that the ESP's are not operating properly, in addition to other variables, such as seeing an increase in voltage to the plates or an increase in sparks per minute. other than opacity above 20% emitted from the stack, the other indicator for determining whether the ESPs are operating satisfactorily is the voltage across the transformer/rectifier sets. The ESP transformer/rectifier sets are full automated, but can be manually adjusted.

Mark Nelson explained during the 2017 inspection that each of the 5 fields contained in each of the 2 boxes can collect 80% of the fly ash entering the ESP. Arcing between the plates (spark) occurs when ash builds up on the plates. The sparking rate at the last of the 5 fields is lower than the first plate because less ash is collected at this last field.

The ROP requires that the ESP transformer-rectifier sets be capable of operating in spark-limited mode and that the primary RMS voltage and amperage and the average secondary amperage be metered and displayed. M. Nelson explained that the ESP's transformer/rectifier set operates on spark-limited mode, but that they run on the current limit for the first field: they limit how much power is put through. The first field doesn't reach the limit. Both voltage and amperage are metered and displayed, for each of the 5 sections of the ESP. Dave Klemish explained at the previous inspection that a remote computer is used to adjust power levels based on the sparking rate limits. The automatic controller employs solid-state circuitry to preset power levels based on sparking rate limits. The transformer-rectifier set is also equipped with a silicon-controlled rectifier linear reactor.

The maximum power the automatic controller is set to is 75 kV DC at full load. The maximum current is 1000 mAmps. The sparking rate limit is set lower than the maximum power.

The transformer/rectifier set requirements under *Design/Equipment Parameters* can potentially be removed during the next ROP renewal cycle. As Julie Brunner pointed out, the original UAR for these conditions was Rule 330, which has been since rescinded and, Rule 330 UAR's were then replaced with Rule 910; however, ensuring that the ESPs are operating properly can be addressed via instituting a MAP and CAM, ensuring that opacity limits are being met.

Monitoring/Recordkeeping

Erickson is required to install, calibrate, certify, maintain, and operate a CEM system for measuring and recording the gas flow, sulfur dioxide, carbon dioxide, and nitrogen oxides content of the boiler exhaust gases; they are also required to install, calibrate, certify, maintain and operate a COM system which shall have an automated data acquisition and handling system for measuring and recording the opacity of emissions.

RATAs for these monitors are conducted annually, verified by AQD's Technical Programs Unit. RATAs are used to confirm the calibrations that are conducted daily on the monitors.

Table 2 lists the current CEMS/COMS monitors that are installed at the time of this inspection; these are the same units that were installed in 2017. N. Hude said these units were last replaced/swapped out for new units was in 2013.During the 2017 inspection, T. Gregorski explained that they will swap out these monitors temporarily if the installed monitor needs to be fixed. She said the last time there was a swap out was this past winter for approximately 1 week. Once the monitors are repaired they are put back into place.

Table 2. CEMs & COMs Monitors & Real-time Data Snapshots

Parameter	Manufacturer	Serial No	Model/ Year	Real-time Data 8/29/19
CO_2	Teledyne API	63	T360M/ 2011	1067 ppm (uncorrected)
NO_x	Teledyne API	337	T200/ 2012	0.692 ppm
SO_2	Teledyne API	61	T100H/ 2011	0.009 ppm
Opacity	Teledyne	5602319	560 Light Hawk	2.52%
Gas Flow	Teledyne Ultraflow	1501157	150	331.8 ft^3

Erickson is required to maintain an inventory of parts for the COMs routine repairs. N. Hude said this list is kept electronically.

Whenever the COMs system detects opacity that exceeds the 20% requirement in the ROP, a light comes on (visual alarm) in the control room to signal the operators that opacity limits have been exceeded. N. Hude they've instituted a new practice for ensuring Erickson staff are aware of the monitored NOx, SO_2 and opacity values: staff are required to write down the opacity, NOx, and SO2 values once every hour. All quarterly excess emission reports list all exceedances of 20% opacity, the majority of the exceedances are the result of boiler startup/shutdown or malfunction. D. Allen said in a previous inspection that a "purge air heater" was installed in the fall 2013 after the February 2013 COMs failure from the exposure to extremely cold temperatures. This installment should prevent COMs failure in the event of subzero ambient temperatures in the future.

N. Hude said that the CEMS and COMS have QA/QC plans to ensure that the systems are maintained properly. All maintenance is logged in their electronic StackVision logbook (see attached for a screenshot of these records).

The COM system is required to operate with a range of 0-100% opacity, complete a minimum of 1 cycle of sampling and analyzing for each successive 10-second period and 1 cycle of data recording for each successive 6-minute period, in addition to conducting zero and span checks at least once daily, and adjusting the zero and span when the 24-hour zero drift or the 24-hour calibration drift limits are exceeded. N. Hude verified that the operating range is from 0-100%, that the system takes the continuous data and averages it into minute data, and then averages the 1-minute data into 6-minute data. N. Hude provided me with an example of the 1-minute opacity data for 8/13/19 (attached). N. Hude said the system (both CEMs and COMs) self-calibrates for zero and span checks every day at 5:30 a.m. In the event that the daily calibration fails, an alarm is triggered calling for staff to investigate the issue. They may do manual calibrations to correct the system if necessary.

The amount and type of fuel combusted (coal or fuel oil) is required to be recorded on a daily basis. N. Hude provided me an example of daily coal tracking within their SAP system (attached) to demonstrate the daily fuel tracking and provided me with the amount of coal and fuel oil combusted in EU001 on a monthly basis (see attached email). Monthly records denoted with a " - " indicate that EU001 was not operational during those months (October – December 2018).

Reporting
LBWL is required to submit Excess Emissions and Monitoring Systems Performance Reports and Summary Reports for the COMs on a quarterly basis. All reports have been submitted timely and reviewed for compliance to-date, in addition to the annual and semi-annual reporting.

Other Requirements
A MAP and Fugitive Dust Control Program for EU001 are required to be implemented. N. Hude is currently working on reviewing and finalizing a new draft for each of these plans. The April 2015 MAP and April 2017 Fugitive Dust Control Plan were used to check for compliance during this inspection. The Fugitive Dust Control Plan was last updated in April 2017 in response to a violation notice issued in August 2016 for fly ash fugitive dust and includes both fugitive dust control for coal delivery, storage and handling and fly ash handling and storage.

Malfunction Abatement Plan – EU001
Within the EU001 MAP, Erickson requires that they conduct preventative maintenance during biennial (every other year) unit outages. The following activities are to be conducted biennially:

- Internal inspection of precipitator (cleanliness, electrode condition, internal clearances, inspection of insulators and cleaning, any visible air leakage problems)
- Inspection of high voltage connections
- Check connections and visual inspection of all control components
- Clean controls with compressed air
- Inspect penthouse heating unit

N. Hude provided me with a spreadsheet of all ESP maintenance conducted from 2018 – 2019 (attached). Based on the descriptions of the maintenance items conducted, and the resulting maintenance to troubleshoot problems, it appears that Erickson is meeting their biennial inspection requirements, as proposed in their MAP, at this time.

At least one aspect of Erickson's EU001 Malfunction Abatement Plan should be reviewed every inspection.

Fugitive Dust Control Plan – EU001
Since the 2015 inspection, Erickson has tried multiple avenues for controlling coal dust and preventing it from leaving the property line, as a result of the complaints received and samples taken on the property adjacent and east of the fly ash handling facility, previously owned by complainant, John Pemberton. The sample results indicated that coal dust was in fact on this property and therefore coal dust was leaving LBWL property.

To mitigate fugitive dust from strong prevailing westerly winds, Debbie Allen, former Erickson Plant Manager, said during a previous inspection, that since May 10, 2015 they have been maintaining the pile at a lower height, while keeping the berm higher than the tip of the coal pile, with the goal that any fugitive dust being blown off the coal pile hits the berm, thus preventing it from moving off the LBWL property. She explained that a conical peak allows more fugitive dust to be picked up by the wind, and therefore the berm would be necessary to reduce that impact. During the inspection I noted that the peak of the pile was higher than the surrounding mass of coal. I will work with N. Hude to determine if there is a better way to minimize dust blown from the peak of the pile.

During the inspection we noted several times where the coal dust was visibly being blown off the coal pile. According to weatherunderground.com historical weather data (attached), during the time we were at the coal pile (3:30 – 4:30 p.m. on 8/29/19), wind gusts ranged from 26 – 32 mph. It is my professional judgment that the sporadic upheavals of fugitive dust from the coal pile were the result of wind gusts above 25 mph. Methods in the fugitive dust plan are properly implemented to control fugitive dust from the coal pile.

In addition to the berm, Erickson has also planted trees between the coal pile and ash handling site to create a wind break. D. Allen said that the wind speeds can get up to 75 mph because the topography (buildings and flat land) surrounding the ash handling and coal pile creates a wind tunnel effect, in which she said there is really nothing to control the dust at those wind speeds, except potentially a wind break. The trees may assist in preventing coal dust, during wind events to reach outside the LBWL property.

The following demonstrates that Erickson is managing coal handling operations in accordance with their Fugitive Dust Control Plan:

- All conveyors are enclosed (3-sided)
- The telescopic drop chute was being used in the morning during the inspection and appeared to be no more than 1-2 feet away from the top of the coal pile.
- Conveyors are inspected for buildup at least twice per month.

MATS
As required under the Utility MACT, 40 CFR Part 63, Subpart UUUUU, a carbon absorption system has been installed to remove mercury from the boiler's exhaust stream. M. Nelson explained during the 2016 inspection that there are 4 injection ports for each ESP where the carbon is injected prior to the gas stream entering the ESP. The gas flow on the stack determines how much carbon is added to the system, but on average, 76 lbs of carbon is used per hour. Tests are run every week on the sorbent traps containing the mercury-laden carbon to determine mercury collection/control.

EUAUXBLR – Cleaver-Brooks Auxiliary Boiler
The auxiliary boiler is currently used when the plant has outages during the winter or periods of cold in the fall to keep plant temperatures in the 60°'s, which is also used to prevent the main boiler tubes from freezing when EU001 is not operating. The unit is ignited with liquefied petroleum gas (LPG), and runs on fuel oil. This unit is a Cleaver-Brooks CB189-500 boiler, Cleaver Brooks serial number: L52256, State of Michigan boiler serial number: M307U14M: manufactured in 5/7/1971.

The boiler is currently permitted as a "limited use" boiler via a 18,327,672,000 BTU heat input restriction. N. Hude said that Erickson is exploring the option to convert the auxiliary boiler into a non-limited use boiler. Julie Brunner and I recommended that Erickson apply for a modification PTI for this boiler as soon as they know that conversion to a non-limited use boiler is imminent.

There are no Emission Limits, Material Limits, Design/Equipment Parameters, Testing/Sampling, or Stack/Vent Restrictions for EUAUXBLR at this time.

Process/Operational Restrictions & Reporting
An initial tune-up is required to be conducted according to the procedures in 40 CFR 63.7540(a)(10)(i) through (vi) no later than January 31, 2016. All other tune-ups are required to be conducted every 5 years. The next tune -up will be required by January 31, 2021.

Erickson submitted their Notification of Compliance Status for 40 CFR 63 Subpart DDDDD for EUAUXBLR in November 2015. In the notification, Mark Matus, former Responsible Official, certified that the initial tune-up was conducted on November 5, 2015 in accordance with the procedures in 40 CFR 63.7540(a)(10)(i) through (vi).

T. Gregorski, at the 2017 inspection, provided me with the initial tune-up checklist used during the November 2015 tune-up. The following is a list of tune-up activities required under 40 CFR 63.7540(a)(10)(i) through (vi):

- Inspecting the burner
- Cleaning out or replacing any components as necessary
- Inspect the flame pattern and adjust burner to optimize the flame pattern (should be consistent w/ manufacturer's specifications, if available)

- Inspect the controller of the air:fuel – ensure correctly calibrated and functioning properly
- Optimize CO emissions via manufacturer's specs
- Measure [CO] in effluent stream in ppmv, and O_2 vol% before and after adjustments – use portable CO analyzer
- Maintain an annual report of the following (and submit to administrator, if requested):
    - [CO] in effluent stream in ppmv, O_2 vol% measured at high fire or typical operating load, before and after tune-up
    - Description of corrective actions taken as result of tune-up

Each item in this list has been included in the checklist with a description of how the LBWL will check each of these requirements (see 2017 inspection report).

I reminded N. Hude that the annual compliance report submitted via CEDRI is due every 5 years and that I believed the first compliance report should be submitted by September 15, 2021 for January 31, 2016 – June 30, 2021. After this period, the report should be electronically submitted every 5 years by the 5th year's September 15 deadline.

Process/Operational Restrictions & Monitoring/Recordkeeping

Erickson is required to show SDS documentation that the fuel is "ultra-low sulfur diesel" to demonstrate that the maximum sulfur content in the liquid fuel shall not exceed 1% by wt. N. Hude provided me with the SDS from Lansing Ice & Fuel (supplier) for the Marathon Fuel No 2 ultra low sulfur diesel (attached). The SDS states on page 3 that it contains a trace amount of sulfur at less than 0.0015%. This fuel oil is the same fuel oil that is used for startup of EU001.

The auxiliary boiler is limited to 18,327,672,000 BTU/calendar year. Erickson is required to keep monthly fuel use records, and to calculate the actual heat input to EUAUXBLR on a monthly basis to determine compliance with the calendar-year BTU limit. N. Hude provided me with the monthly fuel use records for both LPG and fuel oil for the 2018 and 2019 (up through July) calendar years and the actual heat input to EUAUXBLR for each calendar month. According to Erickson records, the LPG is used for boiler ignition purposes and is stored in a 150 lb cylinder. Monthly LPG usage is calculated at the end of the calendar year based on the quantity remaining in the cylinder at year's end, which is usually one cylinder used. This is average over the 12-month calendar period and equates to ~2.95 gallons of LPG per month. Based on the total amount of fuel oil and LPG used the 2018 annual heat input to EUAUXBLR equates to 5,106,000,000 BTU. The total MMBtu heat input for 2019, through July, is 6,482,000,000 BTU. (LPG BTU is determined by multiplying usage in gallons by 0.092 MMBtu/gal, fuel oil BTU is determined by multiplying usage in gallons by 0.138 MMBTU/gal). I noted that for several months in 2018 and 2019 the LPG MMBtu was not added to the MMBtu from fuel oil. I have made N. Hude aware of this. Each month LPG is used equates to an approximate addition 0.3 MMBtu.

EUFPENGINE – John Deere CI Engine/Clark Fire Pump Emergency Engine
N. Hude verified during this inspection that this unit is used in instances where there are fire emergencies; however, it is also used for pumping water to clean off coal equipment, as evidenced by their weekly maintenance operating logs. Maintenance/readiness testing is conducted on a weekly basis. The fuel oil that is used for the auxiliary boiler and for the EU001 boiler is also the fuel oil that is used in this unit, and is an ultra-low sulfur diesel with a cetane index of 40 mins. This meets the *Material Limits* for this unit (maximum of 0.0015 wt% and minimum cetane index of 40). The Model # for this unit is JU6H-UFADM8, Serial # PE6068L239697.

Emission Limits & Testing/Sampling
The NMHC + NOx and PM emission standards of 40 CFR 60, Subpart IIII are required to be met by purchasing a certified engine and installing and configuring the engine according to the manufacturer's emission-related specifications. Additionally, Erickson is required to operate and maintain the engine according to the manufacturer's emission-related written instructions to maintain the engine's certification, otherwise initial performance tests are required to be conducted.

T. Gregorski provided me with the John Deere certification sheet for this specific model during the 2017 inspection, which contains the EPA Family Name (DJDXL06.8120) and EPA Certificate Number (DJDXL06.8120 -002). Via the following EPA website, https://www.epa.gov/compliance-and-fuel-economy-data/annual-certification-data-engines-and-equipment#large, I confirmed that the LBWL EUFPENGINE is a certified engine.

Process/Operational Restrictions

To maintain certification the engine is to be maintained and operated according to manufacturer's emission-related written instructions. I reviewed the "Operation and Maintenance Instructions Manual for JU/JW/JX Models for Fire Pump Applications" during the 2017 inspection, which T. Gregorski provided at that time. I reviewed weekly testing, the air/exhaust system, and maintenance schedule requirements within the 60-page document.

The maintenance schedule on p. 51 states that air filters and the exhaust system should be checked on a weekly basis; every year air filters should be cleaned, fuel and oil filters should be replaced, and the crankcase ventilation system should be checked; and every 2 years the air filters should be replaced. I requested the records that demonstrate this maintenance is being conducted in order for Erickson to show that the fire pump is being maintained in a certified manner, but N. Hude said they are having difficulties receiving these documents via email from the company who conducts the maintenance on the unit. An activity report will be created to discuss this compliance checkpoint when N. Hude is able to send these records to me.

Process/Operational Restrictions & Monitoring/Recordkeeping
This engine is allowed to be run for emergency operations, maintenance and readiness testing, and non-emergency situations. Non-emergency operations cannot exceed 50 hours per calendar year and is included in the 100-hour allotment for maintenance/readiness testing. Therefore, maintenance and readiness testing operations are allowed up to 100 hours per calendar year if they are recommended by certain entities, such as the manufacturer. The condition that allows them to operate for emergency demand response and for periods with voltage and frequency deviations have been vacated from NSPS IIII, as of May 1, 2015. Records of the operation of EUFPENGINE in emergency and non-emergency services, including the hours of operation and the reason the engine was in operation are required to be kept.

A non-resettable hours meter has been installed on the unit, total hours as of the 8/29/19 inspection was 408.9. N. Hude provided me with the "Erickson Fire Pump Engine Maintenance Record" for 5/18/18 – 8/30/19 where all engine operating hours are recorded (via logging the start and stop hours from the meter), as well as reason for operation. Per page 16 of the Operation and Maintenance Instruction Manual, weekly testing periods should not exceed 30 minutes per test, for a total testing hours of 2 hours per month. The majority of the operational hours were conducted for weekly testing on the engine (maintenance/readiness testing) and based on the spot-checks I conducted, the weekly tests are conducted at half-hour intervals, once per week. Maintenance/readiness testing totaled 15.5 hours for the 2018 calendar year, non-emergency hours were totaled at 8.2 hour. A total of 23.7 hours out of the 100 hours allotment was used during the 2018 calendar year.

Records for the 2019 calendar year through August 2019 show a total of 12.5 hours for maintenance/readiness testing, 1.1 hours for non-emergency use (water wash), and 14.2 hours for emergency (coal bunker fire). To-date Erickson is meeting the 100-hour limit for the 2018 and 2019 calendar years.

Reporting
All reports have been submitted timely and reviewed for compliance to-date, in addition to the annual and semi-annual reporting.

FGASHHANDLING (EUASHDC1, 2, 3, 4, 5 –Fly Ash Handling)
The LBWL Erickson Station has ash handling at both the power plant site and the Millett ash handling site, which is located approximately a quarter mile northeast of the Erickson Station. Ash is transferred from the Erickson Station to the Millett facility through a series of pneumatic pipes to the mass storage building and is used as a marketable product or is disposed of. The mass storage building baghouse was the only baghouse in operation during the inspection.

There are no Material Limits, Design/Equipment Parameter requirements, or Stack/Vent Restrictions for FGASHHANDLING at this time.

Table 3. Fly ash dust collectors

Emission Unit	Description	Installation/Mod Date
EUASHDC1	Located between the east and west storage silos at the Millett facility	10-1-1978/ 12-28-1991
EUASHDC2	Load-out silo vent	7-1-1970
EUASHDC3		10-1-1970/

	Truck unloading chute baghouse, and only operates when there is truck loadout	1-1-1982, 5-1-2017
EUASHDC4	Mass storage building dust collector	7-1-1970
EUASHDC5	Erickson Station fly ash system baghouse	7-1-1970

Fly ash was not being transported to any of the silos during the inspection, nor was there any commercial truck loadout of the fly ash. During loadout of fly ash, the loadout chute connects and seals directly to the truck prior to loading; there should be no visible emissions from this seal during loadout, and none were witnessed during the 2017 inspection when we observed a truck loadout process.

Once trucks are loaded with fly ash, the truck driver drives over to a platform (photo in 2016 inspection report) where he climbs to the top of the truck to close the "lids" where fly ash loads into the truck. There is some fugitive dust from this process (as witnessed during a 6/27/16 visit). K. Beson explained that the platform is required by OSHA.

Fly Ash Complaint and Violations History & Current Fugitive Dust Management Plan Compliance Updates
From December 2014 up through April 2016, the AQD had received 3 complaints from John Pemberton (who owned a business directly east of the LBWL coal pile and fly ash handling facility through the fall 2016); John Pemberton has since sold this property. The AQD has had no complaints from the new owners of the property. With all 3 complaints, AQD verified that there was an accumulation of coal dust and fly ash on his vehicles stored outside, deposits within his building via roof vents, as well as coal dust getting washed into his garage during rainy periods, as well as in the soil on his property.

Former Erickson plant manager, Deb Allen said that sometime either in February or March 2015 she noticed that fly ash was being emitted through the cracks in the seals of the Mass Storage building's vehicle entrance overhead doors. She said that she immediately had the system shut down, and kept it shut down until the baghouse was fixed, which she said involved replacing all the bags in the baghouse. She said that under normal operation the building is under vacuum, and when the baghouse malfunctioned it placed positive pressure on the system, forcing the fly ash out through the cracked seals on the door. Since this time, new seals were placed on the doors, as well as a new door.

Another potential source of the fugitive fly ash that D. Allen pointed out during the June 2015 inspection was the loadout chute for the trucks. There were cracks in the seals of the loadout chute which would allow fly ash to escape during transfer operations. This has since been replaced.

During the 2016 inspection, Mark Nelson explained that front-end loaders enter into the main ash storage building using the west-facing bay door. Once inside, the loaders push the fly ash over the grates located inside the building so that conveyors can carry the fly ash out of the storage building and into the storage silos or into the loadout silo. He said that any of the fly ash that becomes hardened and too compact to be pushed through the grates is pushed out of the main storage building and stored in a pile outside until a truck picks it up to be landfilled. During that time, we found that the fly ash was kept in a pile outside, exposed to the elements with the potential for it to become re-entrained into the air, as well as spread throughout the ash handling site (which AQD verified through dust collection samples from various locations around the site in June 2016). The front-end loaders operating within the mass storage building are only conducted when fly ash is being sent to the mass storage building.

Storage of fly ash outside without containment and fly ash being present throughout the plant yard resulted in AQD sending a violation letter for Rule 370 which requires that the collection and disposal of air contaminants be done in a manner to minimize the introduction of the contaminants to the outer air and Rule 901 for failing to meet Rule 370, which caused fly ash to be dispersed to surrounding properties, including John Pemberton's property. The response to the violation notice included updating Erickson's Fugitive Dust Management Plan and Malfunction Abatement Plan for fly ash handling.

In response to the violation notice Erickson has changed their practice of handling and disposing of the non-marketable fly ash. All non-marketable fly ash is now supposed to be wetted with a water/surfactant mix prior to removing it from the mass storage building. From the mass storage building, front end loaders will dump the fly

ash into a landfill roll-off bin located outside the mass storage building. The bin is required to have a lid that is kept closed when not dumping fly ash into the container (to prevent fugitive dust from being re-entrained into the ambient air).

During the 2017 inspection and again during this inspection, I noted that there was no lid on the bin. Trista Gregorski, during the 2017 inspection, explained that when the area recently had a wind storm the lid was blown off the roll-off bin and LBWL staff were not able to find it. She explained that they would have a lid again when Granger brought a new roll-off bin. During this inspection, there was again no cover for the roll-off bin. It appears that a layer of plastic was at one time used to cover the fly ash in the bin, but since then additional fly ash has covered the plastic. The fly ash appeared to be crusted over and present for quite some time onsite, as plant matter has begun to grow in it. It did not appear to be in a state that could get easily entrained into the ambient air; however, at one point in the past it would have been, when freshly placed in the container/without a surfactant or water to crust over the top. The Fugitive Dust Management Plan requires that a cover be placed on this bin and this has not been done. N. Hude explained that there used to be a hard plastic cover that covered the bin, but did blow away. He said that Granger does not provide covers for their roll-off bins, so they replaced the hard plastic cover with a thick plastic cover, but that was lost as well. He said that their current practice is to water the fly ash that has been loaded into the roll-off bin in order to create the hard crust that renders the fly ash visibly non-friable. After further discussions with N. Hude it made sense from a practical standpoint, as well as a compliance stand point, to no longer use a lid for the bin, but rather ensure that any ash being dumped into the dumpster is controlled with water spray to ensure fugitive dust is mitigated, in addition to ensuring that the ash level remains below the top edge of the dumpster, and that once fly ash is deposited in the dumpster that further watering of the pile ensue to ensure a crust is formed to prevent the wind from blowing this waste ash and causing re-entrainment into the ambient air. N. Hude will update the Fugitive Dust Management Plan to reflect these process changes.

Housekeeping throughout the plant yard and in the truck loadout area has improved; there were minimal fly ash deposits throughout the site, an improvement from previous inspections. All locations where fly ash had been seen accumulating during the 2016 inspection have been cleaned up, including the area just outside the main storage building door and under the ventilation piping of the silos. In addition to this cleanup, N. Hude informed me that as of 9/20/19 the unpaved roadways throughout the fly ash handling site has been scraped (top layer of the unpaved yards/roadways removed) and replaced with crushed asphalt in order to minimize fugitive dust from the roadways.

Emission Limits & Testing/Sampling

Particulate emissions are limited to 0.10 lb/1000 lb exhaust gas (dry gas basis), and Erickson is only required to verify compliance with this emission rate per request from the AQD. There has not been a consistent concern (consistently seeing VE's from the baghouses) at the facility to require verification of emission rates; if no visible emissions are seen from the baghouses, it can safely be assumed that LBWL is meeting their PM limits. See the *Monitoring/Recordkeeping* discussion for validation that the baghouse has been operating properly (no visible emissions).

Process/Operational Restrictions

Erickson is required to implement and maintain a MAP for the baghouses and loadout devices. If the AQD determines that the MAP is inadequate, they may request modification to the plan to address those inadequacies. After several violations, the AQD had requested that the MAP be updated to further address malfunctions of the equipment that were cited during the 2016 inspection and which were documented in the violation notice. Julie Brunner and I worked with the LBWL to update the plan in order to address the cited violations. The final revisions were submitted 4/11/17, and I approved the plan on 5/9/17. The updates included requiring training for all personnel responsible for maintaining the baghouses on an annual basis. The April 2017 MAP is the most recent version and the version that was used to check for compliance during this inspection. N. Hude is currently working on updating this MAP.

See discussion of Fugitive Dust Management Plan for addressing all requirements under both the MAP and Fugitive Dust Management Plan.

Monitoring/Recordkeeping

Erickson is required to conduct random visible emissions observations at least once on a daily basis on EUASHDC1-5 when they are operating, and the results of these VE readings are to be recorded. Erickson is also required to record the differential pressure at least once daily, as acceptable CAM monitoring. Operating outside of 1-5" H_2O pressure differential is considered an excursion per MI-ROP-B4001-2015, and an immediate VE observation is required to be conducted and the results recorded, including the device ID, time, date,

pressure drop, duration in minutes and the initials of the observer for those periods of opacity outside of the indicator range.

The baghouse for the mass storage building, EUASHDC4, was the only baghouse operating during the inspection. Due to respiratory hazards from the fly ash in the mass storage building, N. Hude went into the mass storage building for us to obtain the pressure drop, which he reported to be 6 inches H_2O, outside of the 1-5" operating range. N. Hude provided me with the weekly pressure drop data for the week of August 26th. The August 29th (day of inspection) records show N. Hude's 6" H2O observation on the mass storage building that we witnessed during the inspection. The ash handling contractor, according to N. Hude, had recorded 4" H_2O prior to leaving for the day. I will follow up with N. Hude to ensure he is aware that if there are updates to the records, the updates should be added as an addendum or as additional comments.

On 9/4/19, N. Hude provided an update (see attached) on the events that ensued following the observation of 6" H_2O on the baghouse on 8/29/19. It was found that from the time the ash handling contractor left until maintenance was called at 5:00 p.m., the pressure drop continued to pulse upwards of 8" H_2O. The increase for 4" H2O at the end of the shift, to 6" H2O and the end of the day, to 7 and 8" later in the day suggests that the pressure drop was continually increasing throughout the day, from the time the baghouse was turned on. They found that the magnehelic gauge was accurately monitoring pressure drop, and so at 6:00 p.m. they diverted ash transfer from the mass storage building to EUASHDC1. On Friday, 8/30/19, they did a baghouse inspection and attempted to run EUASHDC4 mass storage building baghouse, but it again showed pressure drops above 5" H_2O. Bags were changed out, and after testing and full ash transfer, pressure drops increased to 2" H_2O. The pressure drop was further checked on Saturday, Sunday, Monday, and Tuesday (9/3) and steadily increased throughout these days from 3.3" H_2O on Saturday to 4" H_2O on Tuesday. N. Hude said they are reconsidering what the appropriate operating ranges are for the mass storage building baghouse at this time, since it appears that 4" H_2O is now the normal operating pressure drop that the new bags operate at. This is an acceptable response to the pressure drop monitor excursion in order to ensure compliance with the ROP. I will have further discussions with Erickson staff to ensure that an appropriate pressure drop operating range is established for the mass storage dust collector.

August 29th was the first time that the mass storage building had been used for ash transfer since the spring. Records for the 3 weeks prior to this day show that the dust collector was off every day. N Hude said that the mass storage is largely used as a last resort, and that they generally only use the mass storage building when there are no truck loadouts; this usually results in mass storage being used mostly in the winter months when ash is not being loaded out because road construction projects are not occurring, which explains why the majority of the records between April 2019 and July 2019 document that the mass storage dust collector was "OFF." During loading seasons, the fly ash is sent to the silos at the truck load-out area. Controlled by EUASHDC1 and EUASHDC3.

I requested pressure drop records for January – July 2019 for all ash handling units. I reviewed all documents and attached to this report is a snapshot of these records. The records indicate that all baghouses were operated within the 1-5" H_2O acceptable pressure drop range for EUASHDC1-4, except for the August 29th event, which was addressed.

The records for EUASHDC5 are recorded under a separate set of recordkeeping sheets, which I also reviewed for January – July 2019. All records indicate that EUASHDC5 was operated within the appropriate operating range of 1-10 in. H_2O, and no VE's were detected.

Erickson is also required to conduct semi-annual inspections of all particulate control devices and loadout equipment including loadout seals, loadout chutes, baghouses and other locations throughout FGASHHANDLING that would be a potential source of fugitive dust. Records of bag replacements and maintenance are required to be kept for these pieces of equipment. N. Hude provided me with completed work orders for these pieces of equipment from December 2017 through July 2019 that detail the maintenance that was conducted. It appears that inspections and required maintenance are conducted a maximum of once per quarter, which is sufficient for meeting this requirement. Attached are the records.

Other Fugitive Dust Management Plan and Malfunction Abatement Plan Compliance

The MAP requires that annual training be conducted to ensure all fly ash handling facility personnel are familiar with and can comply with the requirements contained in the Fugitive Dust Management Plan and the MAP. The fly ash handling contractor was not included on the attendance list for the training on the MAP and Fugitive Dust Plan for the 6/5/17. I brought this to Trista Gregorski and Lori Myott's attention during the 2017 inspection – that

the ash handling contractor should also be trained to ensure that he is aware of his responsibilities. N. Hude said the last two trainings were conducted on 6/5/17 and 6/14/18, which plans to conduct another annual training 9/10/19 and 9/12/19. He stated that he will be including Keith Beson and Chuck (the ash handling contractor) within the list of training required attendees.

The MAP also requires a Fugitive Dust Log, where any emissions that reach the facility boundary shall be recorded. N. Hude provided me with the daily Fugitive Dust Logs from January – August 2019 (a few attached for reference). These observations are conducted and recorded on a daily basis. All records were reviewed and indicate that there have been no fugitive dust complaints, nor any events where emissions have reached the facility boundary during this time period.

LBWL is required under the MAP to visually inspect the pneumatic piping (from the Erickson Station to the ash handling facility) for leaks at least once per day and keep record of any visible emissions observed during these visual inspections when the ash handling pneumatic piping is being operated. N. Hude provided me with the "C Operator Logbook entr[ies]" for the month of July 2019, as requested, which indicate when fly ash is being sent through the system and when they have checked for leaks (documented by "VEC" or visible emissions checks). N. Hude said this is conducted 3x per shift, at which time they will also check the baghouse exhaust at Erickson (EUASHDC5), observe the pipeline by driving the bunny trail which runs alongside it, and checking for VE's at the Millett Rd baghouses. I reviewed these records and found that VEC's along the fly ash pipeline were conducted at least once per day during the month of July during pneumatic pipeline operations (see attached for July 1 – July 4).

Reporting
All reports have been submitted timely and reviewed for compliance to-date, in addition to the annual and semi-annual reporting.

FGCOLDCLEANERS
The Erickson Station currently has 1 cold cleaner in their maintenance room that was installed in 1998. Crystal Clean solvent is used in this unit. It is not a heated unit, and is approximately 7.5 square feet of surface area. This unit is exempt from a permit to install per Rule 281(2)(h) because the air/vapor interface is less than 10 ft^2. The reid vapor pressure for the mineral spirits (CAS 64742-47-8) is less than 0.1 psia at 38°C/100°F, which means that a mechanically-assisted cover is not required because the reid vapor pressure (based on another SDS found on the internet for this compound, also attached) is less than 0.3 psia and is not heated. LBWL Erickson is in compliance with Part 7 Rules for New Cold Cleaners.

Compliance Statement:
The LBWL Erickson Station appears to be in compliance with MI-ROP-B4001-2015 at this time.

Erickson staff still needs to address the following items:

- Provide EUFPENGINE maintenance records to demonstrate the engine is being maintained in a certified manner
- Erickson should evaluate whether they are subject to the NSPS Subpart Y
- An exemption demonstration for the 3 new coal additives must be provided
- For the installation of the SNCR, an applicability demonstration and the exemption used needs to be provided.

NAME Matt Lynx DATE 9/27/19 SUPERVISOR Julie L. Brunner