

FUGITIVE EMISSIONS CONTROL PLAN



L'ANSE WARDEN ELECTRIC COMPANY, LLC.
157 South Main Street
L'Anse, Michigan 49946

Revised September 2020

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SECTION 1

INTRODUCTION

The L'Anse Warden Electric Company, LLC. (LWEC) Facility (“the Facility”) is located in L'Anse, Baraga County, Michigan. The Facility is an electric generating facility. The standard industrial classification (SIC) code for the Facility is 4931. The Facility consists of the Generating Station and a Fuel Aggregation Facility (FAF). Refer to **Figure 1**. The Facility is operating under the State of Michigan Renewable Operating Permit (ROP) Number MI-ROP-B4260-2011.

This Fugitive Emissions Control Plan (FECP) has been prepared to document LWEC's fugitive emission control program. The FECP covers activities where fugitive emissions could potentially occur without the use of proper dust prevention methods including the fuel storage, processing, and handling areas, ash handling area, dry sorbent injection (DSI) system, and Facility roadways. The plan addresses the requirements outlined in Rules 371 and 372 (R 336.1371 and R 336.1372) of the Michigan Air Pollution Control Rules and Section 324.5524, Part 55 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

A copy of the FECP is maintained at the Facility. The fugitive emissions control records will be maintained at the Facility for a period of at least five years and will be made available to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Air Quality Division (AQD) upon request.

Employees and contractors involved in the activities covered by the FECP are trained on the monitoring and control procedures outlined herein.

SECTION 2

POTENTIAL SOURCES OF FUGITIVE DUST

2.1 FUEL STORAGE, PROCESSING, AND HANDLING

Approved fuels include wood chips, ground railroad ties, referred to as cross-tie derived fuel (CDF), wood fines and bark, engineered fuel pellets (pellets), and tire derived fuel (TDF). Fuel is processed off-site except for much of the CDF which is processed from creosote-treated railroad ties (CTRT) at the FAF. Included in the definition of CTRT are creosote-treated bridge timbers and cross braces. CTRT is stored at the FAF (**Figure 2**) prior to processing, as are wood chips, CDF, and wood fines and bark. Pellets may also be stored at the FAF. All fuels are delivered by truck to the Generating Station's fuel receiving area (**Figure 3**).

Solid fuel is generally unloaded into an enclosed receiving hopper near the Fuel Storage Building at the Generating Station. TDF is delivered directly to the Fuel Storage Building area and stored and metered separately. Pellets may also be delivered and stored similar to TDF or may be delivered to the enclosed receiving hopper via truck delivery either separately or mixed with other approved fuels. The fuels are transferred from the fuel receiving area at the Generating Station to a conveyor that elevates and transports the fuel to the existing boiler area within the Facility.

Depending on usage rates, pellets may also be delivered to the FAF for mixing at known ratios with other approved fuels as they are brought to the Generating Station.

Fuels have the potential to produce fugitive dust when stored, processed, or handled incorrectly. **Section 3.1** details the engineering controls and procedures for minimizing fugitive dust emissions associated with fuel storage, processing, and handling.

2.2 ASH HANDLING

Ash is collected from the multicyclone and electrostatic precipitators (ESP), as well as the bottom ash from the boiler. The ash handling and storage equipment includes a wet drag chain, an ash unloading drag chain, and an ash storage building. The ash storage building is emptied regularly by front-end loader into trucks and the ash is transferred off-site for disposal. The ash has the potential to generate fugitive dust if handled or stored incorrectly.

Section 3.2 details the procedures for controlling fugitive dust emissions associated with ash handling.

2.3 HAUL ROADS

Facility roadways are used for transporting fuel and ash. The Facility roadways are also used by the Facility employees, contractor employees, other companies (FAF entrance road), and other periodic delivery vehicles. The location of the Facility roadways with respect to the ash loading area and fuel receiving areas at the Generating Station are depicted on **Figure 3**. **Figure 2** depicts the location of roadways at the FAF.

Facility roadways at the Generating Station are paved, reducing the potential for dust generation from Facility traffic. However, spillage of material onto the Facility roadways would be a potential source of fugitive dust. The entrance roadway at the FAF is gravel.

Section 3.3 details the procedures for controlling fugitive dust emissions associated with haul roads.

2.4 DSI SYSTEM

A DSI system has been added as emission control technology when combusting pellets to further reduce sulfur dioxide (SO₂) and hydrogen chloride (HCl) emissions. DSI consists of the direct injection of an alkaline reagent material into the flue gas before the particulate matter (PM) control equipment. For storage and distribution an enclosed pneumatic system is used and can be fed by a bulk silo or super sack delivery system. The super sacks of DSI reagent will be stored indoors or covered with a tarp.

Section 3.4 details the engineering controls and procedures for minimizing fugitive dust emissions associated with the DSI system.

SECTION 3

MONITORING AND CONTROL PROCEDURES

Visual observations are conducted by staff at the Generating Station and FAF on a daily basis to evaluate the effectiveness of the fugitive dust control measures. Visual observations at the Generating Station and FAF are documented on daily logs by LWEC supervisory personnel or their designee(s). Example logs for the Generating Station and FAF are included in **Appendix A**. The logs specify the date and time of the visual observations, and name and title of the person making the observations. Fugitive dust control measures implemented are also recorded in the log (e.g. application of water, clean up of spilled fuel, etc.).

The following control procedures are utilized to minimize fugitive dust emissions. Visual monitoring will be used as the indicator of adequate dust control. If visual monitoring indicates these procedures are not sufficient for minimizing fugitive dust emissions, corrective action will be taken such as but not limited to additional sweeping, watering, or other action as may be appropriate to the situation and, if appropriate, a revised FECP will be submitted to EGLE AQD.

3.1 FUEL STORAGE, PROCESSING, AND HANDLING

3.1.1 Generating Station

Approved fuels are delivered to the Generating Station by truck. Roadways at the Generating Station are paved, reducing the potential for dust generation from Facility traffic. Spillage of material onto the Facility roadways could be a potential source of fugitive dust. Roadways will be swept weekly, unless the presence of spilled fuel or ash dictates more frequent cleaning, or weather or precipitation events such as snowfall prevent use of the sweeper. Documentation of climatic conditions, presence of material, and roadway sweeping will be made in the daily logs in **Appendix A**.

The trucks delivering fuel to the Facility are required to comply with the Michigan Vehicle Code, including tarpaulin coverage of loads in open-top trailers.

MONITORING AND CONTROL PROCEDURES

Solid fuels (except TDF) are unloaded from the trucks into a receiving hopper near the fuel storage building. Walking floor trailers are used for unloading fuel directly into the receiving hopper. The fuel is unloaded at a slow rate (approximately one to two tons per minute) so as to not overload the conveyor belt. This slow rate of transfer minimizes the potential for dust generation.

The receiving hopper is located within an enclosure as secondary containment to capture fugitive dust. The seams of the hopper building are sealed with flashing and may be supplemented with expanding foam. Daily visible observations of the hopper enclosure will be made and any exceptions to the containment will be noted in the daily log for correction.

During maintenance operations while the plant is operating it may be necessary to open certain doors, access panels, and access curtains to remove material that has accumulated in the enclosed spaces or perform maintenance work on equipment within the enclosure. The access areas will only be opened as necessary, and dust emissions will be monitored as part of the daily monitoring program while cleaning or performing equipment maintenance.

The fuel is transported from the receiving hopper through an enclosed conveyor into the fuel storage building. In the event material is spilled from the conveyor, it will be contained within the enclosure. If fuel were to escape from the enclosure, the area will be cleaned when spilled material is observed as part of the routine sweeping as described earlier in this section. Cleaning consists of dry material removal such as shoveling, sweeping, and/or vacuuming. The area may be wetted during sweeping but flushing the area with water is not permitted. All corrective actions will be documented on the daily logs in **Appendix A**.

The TDF is delivered adjacent to the fuel storage building where it is stored temporarily before being loaded into a hopper that feeds onto the covered conveyor as needed.

The pellets are unloaded from the trucks into the enclosed receiving hopper near the fuel storage building and/or onto the pavement adjacent to the TDF storage area. Concrete barriers are used to bound the pellet pile to minimize the potential for pellets to scatter beyond the pellet storage area. In addition, mesh has been applied to the Facility perimeter fencing downhill from the storage area to capture pellets that may escape the primary concrete barrier containment. The

MONITORING AND CONTROL PROCEDURES

pellet pile will preferentially be stored in a manner to minimize precipitation contact to the extent possible.

At times, limited amounts of fuel, not to be greater than approximately 500 tons, may also be temporarily stockpiled outside of the fuel storage building. The stockpile will not be present for more than five days. If the stockpile consists of CDF, fines and bark, or a mixture of fuels containing CDF or fines and bark, the stockpiled material will be covered with a tarp to control dust generation. The stockpiled fuel will only be exposed during the addition or removal of fuel.

The fuel storage building is fully enclosed. Three overhead doors are located on one side of the building to provide access to the stored fuel and fuel handling equipment. These doors are used in the event of a loading hopper equipment failure, to access equipment for maintenance, and to clean up aged fuel that may be beyond the reach of the fuel retrieval equipment. The doors are kept closed to minimize dust exiting the building except as needed to gain entry or to exit the fuel building. The area around the fuel storage building will be observed daily for evidence of fugitive dust leaks and any exceptions will be noted in the daily log and corrected.

An enclosed conveyor transports the fuel from the fuel storage building to the boiler. In the event material is spilled from the conveyor, the material will be contained within the enclosure. If fuel is identified outside the enclosure, the area will be cleaned when spilled material is observed as part of routine sweeping as previously described. Cleaning consists of dry material removal such as shoveling, sweeping, and/or vacuuming. Pavement may be wetted during sweeping but flushing the area with water is not permitted.

3.1.2 FAF

At the FAF, which is operated independently by a contractor, woodchips and fines and bark are delivered by truck. CDF may also be received via truck and railroad car. CTRT usually arrives via railroad car or via truck from a separate off-site sorting and storage area leased by a contractor. The FAF roadways and majority of the surface areas are not paved. Vehicle speeds in the FAF are posted to reduce the potential for dust generation. Wetting of the roadways and other areas will be conducted as needed during non-freezing operating conditions to control fugitive dust emissions.

MONITORING AND CONTROL PROCEDURES

The trucks delivering fuel to the Facility are required to comply with the Michigan Vehicle Code, including tarpaulin coverage of loads in open-top trailers.

Fuel storage at the FAF is not expected to be an appreciable source of fugitive dust due to the moisture content of the material which typically exceeds 20% moisture. Stockpiled material will be visually monitored daily for dust generation. Observations will be recorded in the daily log in **Appendix A**. If dust generation occurs, the stockpile will be re-worked to cover the dusty material with wetter fuel or water will be applied to the stockpile.

The drop height when transferring CDF from railroad cars into transfer vehicles will be minimized to reduce dust generation. Walking floor trailers will be used for material transfer to the extent possible. Transfer vehicles and trucks bringing CDF to the FAF will deposit the material at the entrance to the Processed Railroad Tie Storage Building or may use the truck dumper.

Unloading of CDF on the truck dumper will be visually monitored and water will be available for dust control as the material is unloaded, during non-freezing weather conditions. Dumping of CDF will be avoided on windy days (wind speed greater than 25 mph). If use of water is ineffective, LWEC will cease CDF dumping using the truck dumper. The dumped CDF will be transferred from the concrete pad to the Processed Railroad Tie Storage Building each day, will be covered with a tarp if stored on the concrete pad for longer than one day, or loaded directly into delivery trucks.

Dust generation from CTRT processing at the FAF is controlled by a water spray during non-freezing operating conditions. During winter conditions, some snow is left on the ties during processing, which serves as a source of moisture for dust suppression. Grinding and transfer equipment operators will monitor for visible fugitive dust during operations and will initiate available corrective actions in a timely manner so as to minimize dust generation.

Pellets may also be delivered to the FAF for blending into the fuel stream. The pellets will be unloaded in a manner similar to woodchips and then blended into the fuel for loading and delivery by truck to the Generating Station. The dust suppression and monitoring measures discussed above for the FAF will apply to pellets handled and blended at the FAF.

3.2 ASH HANDLING

The ash unloading drag chain is enclosed, minimizing the potential for fugitive emissions. The ash coming off the drag chain is wet, which ensures sufficient moisture to minimize dust generation prior to loading into trucks for off-site transportation.

In the event of spillage onto the paved loading area from the haul truck loading process, the spilled material is collected to minimize fugitive dust emissions and to ensure that ash is not tracked away from the loading area. Spilled ash material will be removed as part of the routine sweeping described in **Section 3.1.1** to minimize the potential for dust generation. The spilled ash material will be placed into the ash hauling trucks or returned to the Ash Storage Building. Cleaning consists of dry material removal (i.e. shovel, broom, and/or vacuum) or wetting the area with water to facilitate sweeping and cleanup to minimize dust generation.

3.3 HAUL ROADS

Truck traffic entering or leaving the facility uses the Generating Station's paved roadways. In the event of spillage of ash or fuel onto the Facility roadways, the spilled material is collected to minimize fugitive dust emissions and to ensure that the material is not tracked off-site.

As previously stated in **Section 3.1.1**, Generating Station roadways will be swept weekly, unless the presence of spilled fuel or ash dictates more frequent cleaning, or weather or precipitation events such as snowfall prevent use of the sweeper.

As previously stated in **Section 3.1.2**, the FAF roadways and a majority of the surface areas are not paved. Vehicle speeds in the FAF are low to reduce the potential for dust generation. Watering or use of a dust suppressant on the roadways and other areas will be conducted as needed during non-freezing conditions to control fugitive dust emissions.

3.4 DSI SYSTEM

The DSI System is an enclosed pneumatic system that can be fed by a bulk silo or super sack delivery system. The super sacks are not opened until they are used for reagent injection,

MONITORING AND CONTROL PROCEDURES

minimizing the potential for fugitive emissions from this source. As an added precaution, a cartridge filter system is integrated into the bulk silo system, to minimize the potential for fugitive dust when receiving reagent deliveries. Regularly scheduled maintenance of piping, hoses, and other material handling equipment during operation and visual observations during material transfer will minimize the potential for dust generation and allow immediate response to a leak or spill.

Spilled material will be collected to minimize fugitive dust emissions and to ensure that reagent is not tracked away from the DSI system area. Spilled reagent material will be removed each day or sooner commensurate with the weather conditions (such as windy weather) so as to minimize the potential for dust generation. The spilled reagent material will be placed back into the DSI system or properly disposed. Cleaning consists of dry material removal (i.e. shovel, broom, and/or vacuum) or wetting the area with water to facilitate cleanup.

FIGURES

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Aerial Imagery Source: ESRI World Imagery Map Service / NAIP2014

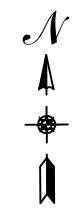
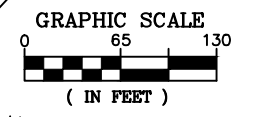
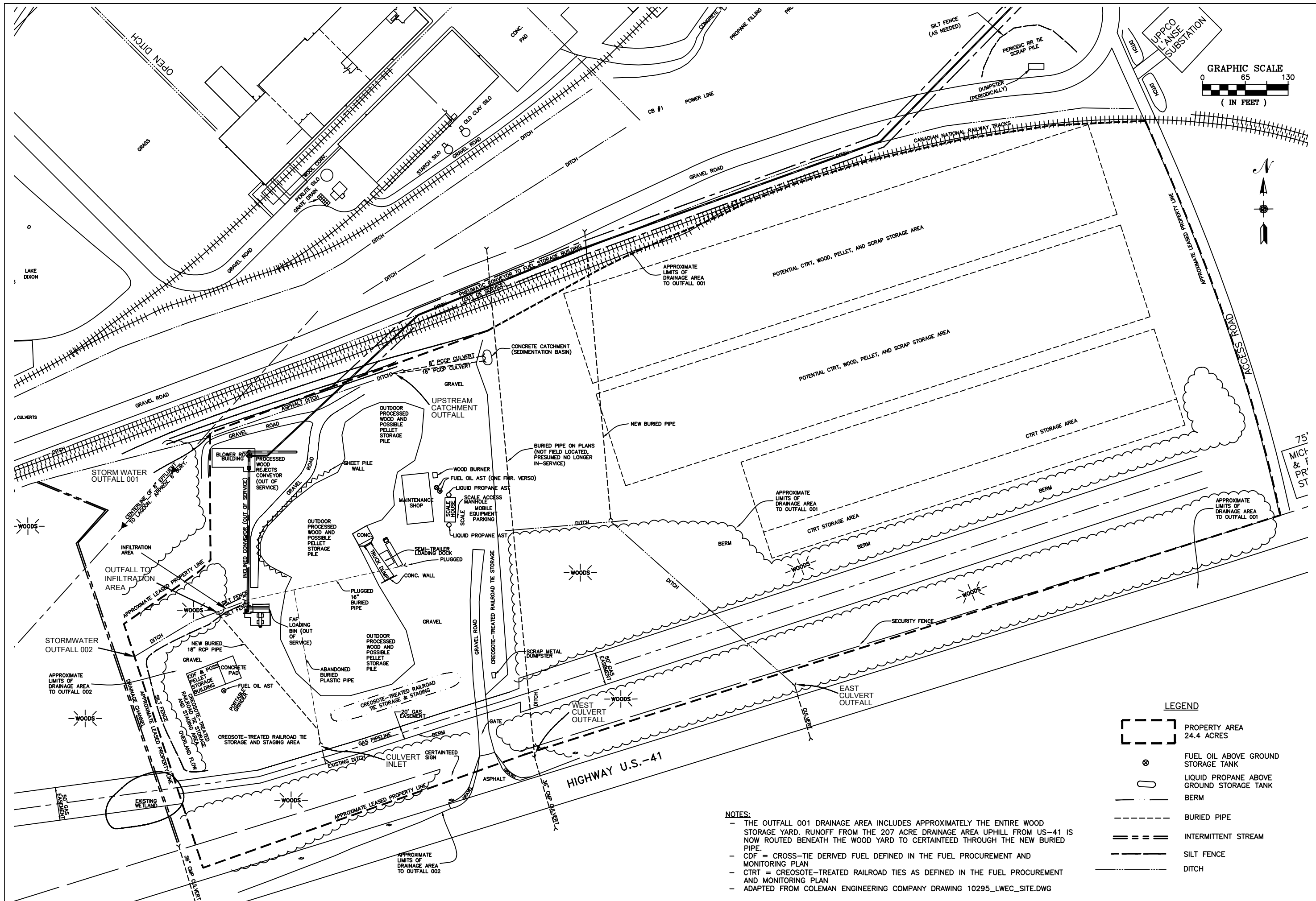


FIGURE 1

FACILITY LOCATIONS MAP

L'Anse Warden Electric Company, LLC.
L'Anse, Baraga County, Michigan

DATE 5/9/2016	DRAWN BY KRB	DESIGNED BY JBC	PROJECT NO. L2600001
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L'ANSE WARDEN ELECTRIC COMPANY LLC.
 FUEL AGGREGATION FACILITY SITE MAP
 L'ANSE, MI

DATE	12/18/18
AS SHOWN	

SCALE	AS SHOWN	DATE	12/18/18
FILE NAME	L'ANSE_FAE_11-2018.DWG	DRAWN BY	JBC
DWG NUMBER	L2600002	CHECKED	LWEC
		APPROVED	

LEGEND

- PROPERTY AREA
24.4 ACRES
- FUEL OIL ABOVE GROUND STORAGE TANK
- LIQUID PROPANE ABOVE GROUND STORAGE TANK
- BERM
- BURIED PIPE
- INTERMITTENT STREAM
- SILT FENCE
- DITCH

NOTES:

- THE OUTFALL 001 DRAINAGE AREA INCLUDES APPROXIMATELY THE ENTIRE WOOD STORAGE YARD. RUNOFF FROM THE 207 ACRE DRAINAGE AREA UPHILL FROM US-41 IS NOW ROUTED BENEATH THE WOOD YARD TO CERTAINTIEED THROUGH THE NEW BURIED PIPE.
- CDF = CROSS-TIE DERIVED FUEL DEFINED IN THE FUEL PROCUREMENT AND MONITORING PLAN
- CRT = CREOSOTE-TREATED RAILROAD TIES AS DEFINED IN THE FUEL PROCUREMENT AND MONITORING PLAN
- ADAPTED FROM COLEMAN ENGINEERING COMPANY DRAWING 10295_LLWEC_SITE.DWG

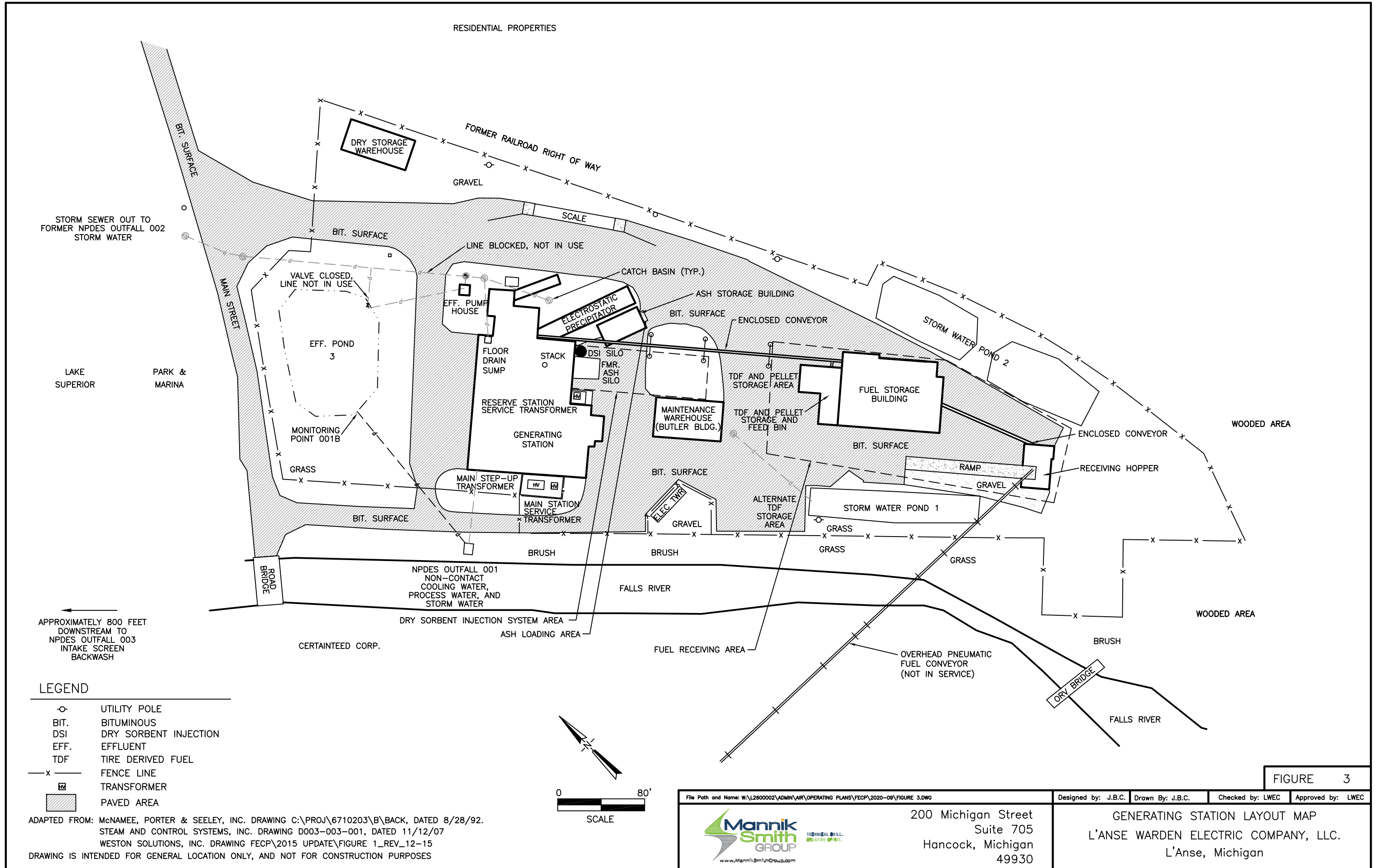
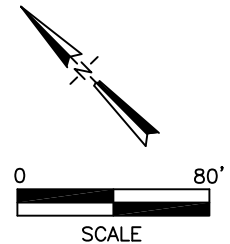


FIGURE 3

- LEGEND**
- UTILITY POLE
 - BIT. BITUMINOUS
 - DSI DRY SORBENT INJECTION
 - EFF. EFFLUENT
 - TDF TIRE DERIVED FUEL
 - x— FENCE LINE
 - ⊞ TRANSFORMER
 - ▨ PAVED AREA



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 STEAM AND CONTROL SYSTEMS, INC. DRAWING D003-003-001, DATED 11/12/07
 WESTON SOLUTIONS, INC. DRAWING FECP\2015 UPDATE\FIGURE 1_REV_12-15
 DRAWING IS INTENDED FOR GENERAL LOCATION ONLY, AND NOT FOR CONSTRUCTION PURPOSES

File Path and Name: W:\2600002\ADMIN\AIR\OPERATING PLANS\FECP\2020-09\FIGURE 3.DWG	Designed by: J.B.C.	Drawn By: J.B.C.	Checked by: LWEC	Approved by: LWEC
 200 Michigan Street Suite 705 Hancock, Michigan 49930	GENERATING STATION LAYOUT MAP L'ANSE WARDEN ELECTRIC COMPANY, LLC. L'Anse, Michigan			

APPENDIX A

EXAMPLE DAILY OBSERVATION LOGS

**L'ANSE WARDEN ELECTRIC COMPANY, LLC
GENERATING STATION
DAILY FUGITIVE DUST LOG**

Date: _____ Time: _____ Observer: _____

Precipitation: _____ Temperature: _____ °F Wind Speed: _____ mph Weather: _____

Area Inspected	Exception?	Area Inspected	Exception?
General		Fuel Handling Area	
Fugitive fuel or ash has been cleaned up		Fuel Receiving Hopper Building	
Fugitive fuel or ash returned to transport, hopper, pile or bin		Hopper to Fuel Storage Building conveying system	
Fuel and ash properly stored		Fuel Storage Building	
Areas are generally clean and free of fugitive dust		Stockpiled woody fuels outside building stored properly and pile not present more than five days	
No leaks in DSI equipment and piping. Equipment functioning. Filter(s) in-place when filling silo (if used).		Main conveying system from Fuel Storage Building to plant	
		Operating conveyor equipment is enclosed or covered	
Ash Handling Area		TDF storage area	
Ash hoppers		Pellet storage area	
Precipitator ash screw conveyors		Daily Fuel Procurement and Monitoring Plan Check	
Ash unloading drag chain (no leaks and providing approx. 15-30% moisture, use reasonable judgement)		Cross-tie derived fuel (CDF) and pellets spot check for consistency and foreign material	
Ash Storage Building		Tire derived fuel (TDF) spot check every load (avg. size 1-2 inches, no clumping or entanglement, no foreign material). If need to reject load, provide reason to management.	
Roadways			
Roadways clean and swept at least weekly (weather permitting)			

*Report exceptions with an "x" only and explain in comments.

Spills are cleaned up on a daily basis and noted in comments. If corrective measures do not eliminate visible dust, follow permit requirements for a USEPA Method 9 certified observation.

Supervisory Review: Review operator logs to verify that fugitive emissions checks have been completed.

Acceptable condition _____ Other (detail below) _____

Comments:

Follow-up Required:

**L'ANSE WARDEN ELECTRIC COMPANY, LLC
FUEL AGGREGATION FACILITY
DAILY FUGITIVE DUST LOG**

Date: _____ Time: _____ Observer: _____

Precipitation: _____ Temperature: _____ °F Wind Speed: _____ mph Weather: _____

Area Inspected	Exception?	Area Inspected	Exception?
Fuel Aggregation Facility			
Materials in appropriate storage areas			
CTRT/Ground CDF stored as required			
Grinding not generating dust			
Area generally clean			
CTRT/CDF receiving area			
CTRT/CDF staging area			
Ground wood/fuel storage building and apron			
Wood chip pile not generating dust			
Pellets, if present, not generating dust			
Roadways			
Roadways not generating dust			

*Report exceptions with an "x" only and explain in comments.
Spills are cleaned up on a daily basis and noted in comments. If corrective measures do not eliminate visible dust, follow permit requirements for a USEPA Method 9 certified observation.

Comments:

Follow-up Required: