

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

B287527754

FACILITY: Michigan Sugar Company, Caro Factory		SRN / ID: B2875
LOCATION: 819 Peninsular St., CARO		DISTRICT: Saginaw Bay
CITY: CARO		COUNTY: TUSCOLA
CONTACT: Steven Smock , environmental engineer		ACTIVITY DATE: 10/14/2014
STAFF: Sharon LeBlanc	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: FCE inspection for fiscal year 2015		
RESOLVED COMPLAINTS:		

Tuesday, October 14, 2014, AQD District Staff conducted a scheduled site inspection at The Michigan Sugar Company Facility (MSC) (SRN B2875) 819 Peninsular Street, Caro, Michigan. One Renewable Operating Permit (ROP) (MI-ROP-B2875-20013) is associated with the referenced facility and was issued on October 13, 2013. Permit to Install (PTI) No. 44-14 was issued on June 12, 2014. Inspection activities were conducted to determine if the facility was operating in compliance with the referenced permits.

The facility was operating upon arrival, and AQD staff conducted site inspection activities with Jeff Hebert (Factory Chemist) and Steve Smock (Environmental Engineer). Portions of the facility visited included boiler room, sugar production and fuel storage areas.

FACILITY DESCRIPTION

The MSC facility is an approximately 300 acre sugar processing plant located in a mixed commercial, agricultural and residential area in Caro, Tuscola County, Michigan. Located on Peninsular Street, the MSC facility extends across the Cass River to M24, and extends to South Colling Road to the southwest and Peninsular Street and Columbia Street to the north. Located to the immediate west-northwest of the facility are the fairgrounds.

The referenced facility is reported to have begun operation at that location in 1899 and is reported to be the oldest continuously operating sugar beet factory in the United States. Comments made by MSC staff indicated that the Cass River Dam located south of the facility was at one time property of the sugar company, and that in the not too distant past the Dam and some nearby MSC land had been sold to a private party.

The principal products for the facility is reported to be liquid sucrose and granulated sugar from sugar beets. Other MSC process products include molasses, which is used as a cattle feed supplement; beet pulp which is sold in bulk as cattle feed; pelletized dry beet pulp (bulk) and pressed pulp (bulk), which is used for animal feed; and spent sugar beet lime sold/used as a soil enhancement/supplement.

Operations at the MSC Facility are seasonal, with sugar beet processing conducted during "campaigns". The "beet campaign" for the facility is reported to normally run from mid-late September through February-March. It is during this period that the raw sugar beets and any resulting pressed, dried or pelleted pulp are processed. Granulated sugar is liquefied and sold as liquid sucrose year around. Operations during a beet campaign are reported to be 24/7 until both onsite and off-site stored sugar beets have been processed. Granulated sugar and liquid sucrose production and packaging operations are conducted independent of the beet processing and can/may be conducted throughout the year. Packaging of granulated sugar is reported to be limited to 1000-lb totes at this facility. Processed sugars at this facility are limited to granulated sugars, some of which as previously indicated are liquefied into liquid sucrose. No powdered or brown sugars are produced and no molasses desugarization activities are conducted at this facility.

Processing Activities and Equipment - The sugar beet processing operations are comprised of several steps, including cleaning, washing, slicing, diffusion, juice purification using milk of lime, evaporation, crystallization, dried-pulp pelletization, and liquefaction of granulated sugars into liquid sucrose. Lime (CaO) and SO₂ among other process additives are used to adjust pH in the various process stages to

achieve the desired product.

The majority of the sugar manufacturing equipment is either exempt from permitting under R. 285(dd) or is not considered to be a potential source of air pollution. Emission units identified for this facility include:

- One natural gas or No. 6 fuel oil-fired boiler (EUPACKAGEBOIL3).
- An exempt natural gas-fired boiler (EUSUMBOILER)
- One natural gas or fuel-oil fired rotary pulp dryer (FGPULP, EUPULPDRYER).
- Two vertical, lime kilns (FG2KILNS, EULIMEKILN1 and EULIMEKILN2)
- One sugar cooler with dust collector (EUCOOLERDUST)
- EUGRANDUSTCOLLECTOR
- One Hydrochloric Acid Storage Tank (EUHCLACIDTANK)
- One No. 6 fuel oil tank (EUNO6FUELTANK)
- Three natural gas space heaters (EUNATGASUNITHTRS)
- Vacuum drum filters for lime rinsing (EUVACUUMFILTERS3)
- Vacuum pumps for lime (EUVACUUMPUMPS), and
- Storage silo and associated transfer conveyors (EUWEIBULLSILO)

In addition, PTI 44-14 was issued to allow for the installation of natural gas boiler (EUBOILER4 AKA FG63-5D-EXGAS1BOILER) that was formerly located at the MSC Bay City Facility (referred to as Boiler #5 at that facility) as well as removal of the two coal-fired Wickes boiler previously operated onsite (FG-1BOILERS, AKA EUWICKESBOILEREA and EUWICKESBOILERWE). EUBOILER4 was reported to have started up on September 12, 2014. The referenced boiler has low NOx burners, a continuous Oxygen Trim System and Continuous Emission Monitors (CEMS). At the time of the inspection, it was verified that both coal-fired boilers had been removed from site. Compliance to Federal Requirements under Subpart DDDDD for the emission unit is not required until January 31, 2016.

MSC reports that the following emission units are not operating, and have been disconnected:

- Pellet mills (FGPULP, EUPELLETMILLDUST)
- Pellet cooler (FGPULP, EUPELLETCOOLER).

MSC staff reported that no changes in process equipment had been made since the previous inspection.

Odor Sources –

In addition to the general process odors associated with sugar production, additional odor sources have previously been identified for the site. These include the waste water receiving/treatment ponds, flume ponds and the lime pile.

Based on discussions with MSC staff as part of the waste water treatment program MSC adds a

microbial suspension to the ponds to create/maintain the required microbe population, in addition the plant utilizes supplemental treatments to further control odors. These are added on an "as needed basis".

Lime Pile- Lime slurry is piped intermittently to the top of the lime pile, and the liquid allowed to percolate down the pile. Any run-off is captured by the storm water controls and is carried to the waste water treatment ponds.

Compliance History –

As indicated above the MSC facility at the time of inspection was operating under MI-ROP-B2875-2013. A request for a permit modification to incorporate PTI-44-14 was received electronically on October 13, 2014.

A review of the District Files and MACES identified seven odor complaints are of record for the facility for the period of May 12-27, 2014. Odor verification activities confirmed odors on May 20, 2014. A Violation Notice was issued on May 21, 2014. The company response was that the odor source was not the facility, but either exposed river sediments due to problems with a down river damn, or another facility. District staff confirmed during odor evaluation activities that water table had risen adequately, and that other odor sources had been evaluated as potential sources during the odor survey. Odors noted were consistent with odors associated with MSC-Bay City Plant waste water treatment pond system.

A Violation Notice was issued on October 17, 2014, for compliance issues associated with a newly installed natural gas boiler (EUBOILER4) and included:

- Late submittal of initial notification for EUBOILER4, and
- Late submittal of Malfunction Abatement Plan (MAP) for EUBOILER4

The above referenced documents were submitted as part of a submittal package for EUBOILER4 dated October 2, 2014. In addition to the referenced documents, the package also included an initial notification forms required under Subpart DB. Review Comments regarding the submittals were provided to the company on October 17, 2014. An updated MAP for the facility was due no later than 11/15/2014, and had not been received at the time of report preparation.

COMPLIANCE EVALUATION

Operational Status – During the onsite inspection, the facility was in operation, though the pulp dryer and pellet production areas were not operating.

Facility personnel reported that beet slicing for this year's campaign started on September 11, 2014, with the limekiln started up on September 3, 2014, to achieve operating temperature. Once a campaign is initiated, MSC staff report that boilers are operated 24/7 with varying production rates until the end of the campaign to achieve the most efficient output. The present campaign is anticipated to end in March 2015.

Based on file records, campaigns were reported to last approximately 150 days or less, however, MSC Staff has indicated that more recently campaigns of up to 210-days plus or minus 5-days are possible. In addition, the facility beet slice/production was reported to have been up to 4,400 tons per day, and up to 725,000 tons per year. The following figures have been estimated to reflect approximate operational ranges.

Campaign	Tons Processed Campaign	Beets per	Campaign Length (days)	Tons Processed Day	Beets per	Tons of processed hour	Beets per
2009-2010	600,000		159	4000		167	

2010-2011	645,000	174	3700	154
2011-2012	650,000	174	3700	155
2012-2013	795,000	213	3700	155
2013-2014	679,000	184	3700	154

Historically four boilers associated with the site provide both steam and heat for the facility. These included;

- 2 coal-fired, spreader, stoker Wickes Boilers (installed in 1940 and 1947) (FG-1BOILERS, AKA EUWICKESBOILEREA and EUWICKESBOILERWE) that were removed from site summer 2014,
- one natural gas or No.6 Fuel Oil fired package boiler (installed in 1974) (EU-PACKAGEBOILER3) and
- one natural gas fired summer boiler (exempt). The exempt summer boiler uses natural gas and is reported to only operate during the summer at which time the liquid sugar processing occurs.

At the time of the inspection, both the package boiler and the recently installed NG-fired EUBOILER4 were in operation. MSC staff reported that the package boiler was operating on natural gas. The emission unit was reported to have operated on oil for a limited period last spring, but no deliveries have occurred since 2007 onsite.

Two vertical lime kilns, both installed in 1911 presently exist onsite. MSC staff report that they share a stack and are ran in unison. The two lime kilns are located at the northeast end of the plant one being totally enclosed in a building, and the other only partially enclosed with approximately 1/3 of the kiln exposed to the elements. The emission units are permitted for firing of anthracite coal or coke. The units are reported to be started up approximately 4 days prior to the start of a campaign to get up to operational ranges.

The MSC Caro Facility has one natural gas or fuel-oil fired pulp dryer (EUPULPDRYER) (installed pre-1967) equipped with multiclone collector (without fly ash re-injection) and flue gas recirculation. MSC staff reported that with the exception of an engineering study for HAPs conducted in late October-Early November 2012 no fuel oil has been used since before the 2009-2010 campaign. Operation of the emission unit is reported to be based on demand.

Material Usage Rates – A wide variety of materials are associated with MSC facility operation and production processes. A review of the ROP identified the following material limits:

FG-2KILNS have historically reported a combined use of approximately 135-150 tons of limestone and 12-14 tons of coke per day. At the time of the inspection, the facility use was reported to be approximately 11 tons /day of coke. Per the ROP, coke is limited to 0.8% sulfur by weight, and a total use of 5000 tons per 12-month rolling time period. Analyticals provided by the vendor and confirmatory samples collected in conjunction with the site visit documented a sulfur content below the permit requirements. A review of monthly totals indicates that the facility reported total is well below the limit, and in compliance with the 12-month rolling fuel use limits.

Staff report that weight belts are used to report daily material usage for the lime kilns totals, which is used to generate monthly totals. These totals are compared with onsite stockpiles and inventory records to confirm usage.

Operational Parameters –

With the exception of the emission units addressed below, operational limits presented in the existing ROP for the facility are limited to installation, maintenance and operation of appropriate pollution control devices.

FG2KILNS- Operational restrictions associated with this flexible group include operation of the lime

kilns, except during startup, shutdown, or malfunction, only when the carbonation system is operating and receiving combustion gases from the lime kilns. MSC staff reported that the flexible group is operating in compliance with the ROP in that the only time the carbonation system is not operating and receiving the lime kiln combustion gases is during start up and shut down.

FGPULP- Operation of the beet pulp dryer is limited by the ROP to no more than 4,000 hours per year. Continuous operation of the beet pulp dryer for 4000 hours would equate to 166.67 campaign days.

Period	Operation Period	Source
2010	2538 hrs	MAERS
2011	3000 hrs	MAERS
2012	2265 hrs	MSC
2013	2431 hrs	MAERS
2014	998 hrs (to date)	MSC

The ROP also restricts the operation of the primary and auxiliary flue gas recirculation fans for EUPULPDRYER simultaneously. MSC staff reported that the auxiliary fan has previously been replaced by a cyclone in the ductwork, which reduces the pulp and the wear and tear on the primary recirculation fan blades. As one of the two fans has been removed, the ROP facility is not able to be out of compliance for this condition.

EUBOILER4 is limited to a heat input capacity of 146.5 MMBTU/Hr. Per MSC Staff this value reflects 100% operational load for the unit, which the unit has not reached. The referenced emission unit is also required to install, maintain and operate in a satisfactory manner low NOx burners and a device to monitor and record the calendar daily natural gas usage rate on a continuous basis. At the time of the inspection, the facility reported collecting the total gas usage from a meter on a daily basis and inputting the data. EUBOILER4 is also required by permit to install calibrate, maintain and operate in a satisfactory manner a device to monitor and record the NOx emissions and O2 content of the exhaust gas on a continuous basis.

Emission Points –

FG-2KILNS – One stack is shared by the two lime kilns, and the kilns are reported to operate in unison, and continuously during the initial sugar/beet campaign. Emission limits associated with this flexible group include PM (based on test method) and SO2 (based on material limits of 0.8% sulfur by weight for fuel).

FGPULP – This flexible group is composed of EUPULPDRYER, EUPELLETMILLDUST and EUPELLETCOOLER. One stack (SVDRYERSTACK) is of record for the FG, and the emission limits are limited to particulate and SO2. At the time of the inspection only EUPULPDRYER was in operation. MSC Staff report that EUPELLETMILLDUST and EUPELLETCOOLER have been disconnected. Pulp is sold by the facility as either wet/pressed pulp in bulk, or as dried pulp. Demand for the wet/pressed pulp as animal feed by local farmers has been high.

UPACKAGEBOILER3 - Is a fuel oil or natural gas fired boiler - used for steam production in the facility. One stack (SVPACKAGEBOILER3) is associated with the emission unit. Emissions are based on sulfur content of the fuel oil, and are limited to 1.67 pounds per Million BTUs of heat input.

At the time of the inspection the emission unit was reported, with the exception of the HAPs Engineering Study conducted in late October-early November 2012, and a limited period of operation in spring 2014, has not been run on fuel oil since December 29, 2009. No visible emissions were noted against the skies at the time of the inspection, but were limited to the steam plume associated with the boiler. No tail off was noted.

FG1BOILERS – This flexible group consists of two coal-fired, spreader, stoker boilers with a shared stack (SVWICKESSTACK). Emission limits associated with the unit include SO2 and particulate. At the time of the site inspection both units have been removed from site, and replaced by EUBOILER4.

EUBOILER4 – Emissions from the referenced unit are routed thru the former Wickes Boiler stack and has been renamed SVBOILER4.

Monitoring and Testing –

FG-2KILNS, EUPACKAGEBOILER3 and FG1BOILERS all require minimum confirmatory sampling and analysis of applicable fuels by the permittee to verify compliance. Sample collection is required to be conducted at least once per sugar campaign.

With respect to **EUPACKAGEBOILER3**, as previously noted, the unit has been operating on Natural Gas with the exception for two different periods, the most recent being a period in Spring 2014. At that time it was operating using fuel oil stored onsite, and received in 2007. The fuel oil was determined to be in compliance as part of a previous inspection.

As part of this compliance evaluation, AQD District Staff was provided with laboratory analysis of coke and coal samples collected and shipped for laboratory analysis for 2013-2014 campaign. Evaluation of the data provided indicated that with the exception of the “Caro Boiler Coal 2013-2014” the facility fuels were in compliance with permit conditions. The referenced boiler coal when evaluated per Appendix 7 of the ROP, indicated sulfur concentrations above the maximum allowed. MSC Environmental staff was notified of the noncompliance issue during report preparation.

Grab samples collected of limekiln coke by AQD Staff for the purposes of verification during the October 14, 2014, site inspection reported sulfur contents in compliance with permit limits.

Continuous Emission Monitoring (CEMS) for NOx (ppm), O2 (%) and CO (ppm) have been installed and are operational for **EUBOILER4**. It should be noted that CEMS for CO is not required per permit. A RATA test plan was submitted on November 3, 2014, with testing scheduled for 12/11/2014. Evaluation of monitoring and recordkeeping for the EU will be conducted in conjunction with the referenced RATA.

In addition, the facility is required to conduct verification testing at their own expense for particulate emissions (**FG-1BOILERS** and **FG-PULP**). The most recent stack testing is summarized below:

Emission Unit	Parameters	Date Tested	In Compliance	Deadline for Next Testing
FG-1BOILERS	PM	12/13/2007	yes	NA
FG-PULP	PM	12/13/2012	yes	4/18/2018
EUBOILER4	CO	Tent. Scheduled for 12/11/2014	unknown	3/12/2015

Record Keeping and Reporting –

A review of records was conducted as part of the October 14, 2014, site inspection. Under the existing ROP, the facility is required to promptly report any deviations, as well as to report semiannually any monitoring and deviations. Annual emissions reporting as well as certifications of compliance are also completed and submitted by the facility.

Records maintained in the form of handwritten logs are kept for a period of 5 years in 3-ring binders for review. A General review of the binders was made to confirm that 5 years of records were being maintained. More detailed review of record were conducted for the boilers (March 8-17, 2013 and February 8-19, 2014), the lime kilns (September-December 2014) and the Pulp Dryer (November 1-11 and November 23-29, 2013).

A review of permit conditions includes the following record keeping and reporting requirements.

Visible Emission Survey- In addition to the record keeping and reporting requirements listed above the facility is required to conduct visible emission surveys for **EUPACKAGEBOILER, FG-1BOILERS, FG-2KILNS** and **FG-PULP** during daylight hours, and record the date, time, results and initials of the person

making the observations. A review of logs maintained by the facility indicated that survey was being conducted when the units were in operation, and from a general review of the records it appeared that the records were complete and that no deviations had occurred.

FG-1BOILERS -- Additional recordkeeping requirements associated with this emission unit included continuous monitoring of the pressure drop across the multi-cyclone, as well as continuous monitoring and recording of the pressure drop and liquid flow across the wet scrubber associated with the emission units. Readings were noted to be within the proper ranges per the MAP, and recorded at a frequency in compliance with permit requirements.

FG-2KILNS -- in addition to the VE Surveys previously identified, recordkeeping requirements for this emission unit are limited to monthly totals of coke and/or anthracite coal being used as well as monitoring of the sulfur content by weight according to the ROP Fuel Sampling Plan. A review of records indicated that there are two separate groups that record the fuel usage on logs. Sulfur monitoring records are kept on file and consist of laboratory analytical records for materials as provided by vendors, or as confirmatory sampling by the facility. All of which are in general compliance with permit conditions.

FG-PULP -- In addition to VE Surveys, the facility is required by permit to continuously monitor the air flow through the flue gas recirculation and the pressure drop across the multiclone with proper instrumentation. Written records of hours of operation for the emission unit are also required under the permit. The referenced records were found to be maintained in compliance with the permit conditions.

EUBOILER4 -- Additional record keeping requirements associated with this emission unit include the following Monthly and 12 month rolling totals:

- NG usage
- Annual Capacity Factor (NG)
- NOx Emissions
- CO Emissions,
- and CO₂e Emissions

In addition, the facility is required to maintain records of all information necessary for all notifications and reports, including but not limited to:

- Compliance tests and any testing required by permit
- Monitoring Data,
- Verification of heat input capacity required to show compliance
- Daily records identifying type and amounts of fuel combusted in emission unit, and
- All calculations required to show compliance with the permit limits

As this EU was only started up on September 12, 2014, the facility was just over 30 days of operation at the time of the inspection. Discussions with MSC Staff indicated that appropriate records were being compiled, and the spreadsheets developed for the required data, and that copies of both the reports and required records would be kept both onsite as well as in the Bay City Facility Office. Copies of the monthly and 12-month rolling total spreadsheets were requested of the facility for review and were received electronically.

Other Requirements -- In addition to the requirements previously specified, FG-1BOILERS and FG-PULP require that a Malfunction Abatement Plan (MAP) for the emission units to address malfunctions of pollution control equipment associated with the emission units. Copies of the documents are found within the Appendices of the ROP, and proper operating ranges for continuous monitoring devices are found on the log sheets to further clarify to operators when events may be developing that require attention.

EUBOILER4 is required to submit a Malfunction Abatement Plan (MAP) for District approval within 90 days of permit issuance. As previously indicated the document was submitted late, and review comments were submitted to the facility. At the time of this report, the amended MAP has not been received and is considered a late submittal.

SUMMARY

Tuesday, October 14, 2014, AQD District Staff conducted a scheduled site inspection at The Michigan Sugar Company Facility (MSC) (SRN B2875) 819 Peninsular Street, Caro, Michigan. One Renewable Operating Permit (ROP) (MI-ROP-B2875-20013) is associated with the referenced facility and was issued on October 13, 2013. Permit to Install (PTI) No. 44-14 was issued on June 12, 2014. Inspection activities were conducted to determine if the facility was operating in compliance with the referenced permits.

The facility was operating upon arrival, and AQD staff conducted site inspection activities with Jeff Hebert (Factory Chemist) and Steve Smock (Environmental Engineer). Portions of the facility visited included boiler room, sugar production and fuel storage areas.

Notable changes to the facility since the last compliance inspection include the installation of natural gas boiler (EUBOILER4 AKA FG63-5D-EXGAS1BOILER) that was formerly located at the MSC Bay City Facility (referred to as Boiler #5 at that facility) as well as removal of the two coal-fired Wickes boiler previously operated onsite (FG-1BOILERS, AKA EUWICKESBOILEREA and EUWICKESBOILERWE). EUBOILER4 was reported to have started up on September 12, 2014.

A Violation Notice was issued on October 17, 2014, for compliance issues associated with a newly installed natural gas boiler (EUBOILER4) and included:

- Late submittal of initial notification for EUBOILER4, and
- Late submittal of Malfunction Abatement Plan (MAP) for EUBOILER4

The above referenced documents were submitted as part of a submittal package for EUBOILER4 dated October 2, 2014. In addition to the referenced documents, the package also included an initial notification forms required under Subpart DB. Review Comments regarding the submittals were provided to the company on October 17, 2014. An updated MAP for the facility was due no later than 11/15/2014, and had not been received at the time of report preparation.

Evaluation of laboratory analytical data for fuel samples collected by MSC staff to meet verification requirements, and provided as part of the October 2014 compliance inspection indicated that the "Caro Boiler Coal 2013-2014" verification fuel samples were found to be not in compliance with permit conditions. The referenced boiler coal when evaluated per Appendix 7 of the ROP, indicated sulfur concentrations above the maximum allowed. Confirmatory coal samples could not be collected as part of the October 14, 2014, site inspection, as the material had been removed from site.

NAME Sharon J. Blane

DATE 1/6/2015

SUPERVISOR C. Blane

LeBlanc, Sharon (DEQ)

From: Smock, Steven <Steven.Smock@Michigansugar.com>
Sent: Tuesday, November 25, 2014 1:24 PM
To: LeBlanc, Sharon (DEQ); Hebert, Jeff
Subject: RE: MSC Caro

Sharon

Slice started on 9/11/2014

The lime kiln was started sometime around 9/3/2014. They did a real slow start-up and then ran some water before the campaign.

Steve

From: LeBlanc, Sharon (DEQ) [<mailto:LeBlancS@michigan.gov>]
Sent: Tuesday, November 25, 2014 10:46 AM
To: Hebert, Jeff
Cc: Smock, Steven
Subject: MSC Caro

Jeff

What was the start up date for caro and the lime kiln this campaign? I plan on being out for the CO test and RATA on the 11th. Will I be able to take a look at the records/spreadsheets your setting up for boiler #4 while I am out there? That will allow me to complete compliance evaluation for that part of the record keeping. I still will need to see copies of the lime kiln records to confirm the VEs (Second week of October 2013, and February 2014), you can either scan them to me, or I will look at them when I am back for the testing.

Thanks

Sharon G. LeBlanc
AQD, Saginaw Bay District Office
989-894-6212

LeBlanc, Sharon (DEQ)

From: LeBlanc, Sharon (DEQ)
Sent: Wednesday, November 26, 2014 10:17 AM
To: Smock, Steven (Steven.Smock@Michigansugar.com)
Cc: Hare, Chris (DEQ)
Subject: Caro Boiler Coal 2013-2014
Attachments: content.pdf

Steve,

I was evaluating the confirmatory fuel analysis you are required to collect to verify compliance, and it appears that you have exceeded your SO₂ limit per the compliance determination in Appendix 7 of the ROP. I have attached the calcs I have, as well as a copy of the appropriate page for appendix 7 for Caro.

Sharon G. LeBlanc
AQD, Saginaw Bay District Office
989-894-6212



Mineral Labs, Inc.

Box 549
 Salyersville, Kentucky 41465
 Phone (606) 349-6145
 Certificate of Analysis

Company
MICHIGAN SUGAR COMPANY
 2600 S. EUCLID AVE.
 BAY CITY, MI 48706-0000

Lab No. 14030970 8360
 Date Recd. 6/13/2014
 Date Analyzed 6/13/2014

SAMPLE IDENTIFICATION AS SUPPLIED BY SAMPLER SAMPLED BY CUSTOMER SAMPLED TYPE:

MAIL IN
 PO# 11642
 CARO BOILER COAL 2013-14
 6-11-14
 COMPOSITE

$$\frac{1.4416 \text{ SO}_2}{11111 \text{ BTU}} \times (\text{Actual Heat Value}) \times 100\% \times \frac{116 \text{ SO}_2}{216 \text{ SO}_2} =$$

max wt SO₂

	% Moisture	% Ash	% Volatile	% Fixed Carbon	% BTU	% Sulfur	
	D3302	D3174	D3175	(Calculated)	D5865	D4239	
As Recd	2.68	6.92	XXX	XXX	13,443	1.03	0.967
Dry Basis		7.11	XXX	XXX	13,814	1.06	0.994
M.A.F.B.T.U (Calculated)					14,871		
				-FUSION TEMPERATURE OF- D1867-04	Reducing	Oxidizing	max per Appendix 7
Free Swelling Index No. D720-91	XXX	XXX	Initial	XXX °F	XXX °F	XXX °F	
Grindability Index No. D409	XXX	XXX	Softening	XXX °F	XXX °F	XXX °F	
D 4749-87 SCREEN/WET SIEVE ANALYSIS			Hemispherical	XXX °F	XXX °F	XXX °F	
SIZE 0 % WT. RETAINED			Fluid	XXX °F	XXX °F	XXX °F	
X X X X X X X X							

WEIGHT DETERMINATION

Average Light Draft X X X
 Average Loaded Draft X X X
 Weight of Coal Loaded X X X Tons

X X X X X X X X

9063394

Maximum allowed Sulfur content in percent by weight =

$$1.67 \text{ lbs SO}_2/1,000,000 \text{ btu} \times (\text{actual heat value in BTU per pound}) \times 100\% \times 1 \text{ lbs S}/2 \text{ lbs SO}_2 = \text{wt.\% sulfur}$$

FG-1BOILERS

The permittee shall use the following calculations in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in (FG-1BOILERS).

Compliant coal has a heat content of 12,000 BTU/pound at 0.9 wt. % sulfur content. If the heat value of the coal in the boilers is other than 12,000 BTU/pound, the maximum allowed sulfur content shall be determined by the following equation:

Maximum allowed Sulfur content in percent by weight =

$$1.44 \text{ lbs SO}_2/1,000,000 \text{ btu} \times (\text{actual heat value in BTU per pound}) \times 100\% \times 1 \text{ lbs S}/2 \text{ lbs SO}_2 = \text{wt.\% sulfur}$$

FG-2KILNS - Determining Compliant Coke

The permittee shall use the following calculations in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in (FG-2KILNS).

Compliant coal/coke has a heat content of 9,400 BTU/pound at 0.8 wt. % sulfur content. The maximum allowed sulfur content shall be determined by the following equation:

Maximum allowed Sulfur content in percent by weight =

$$1.7 \text{ lbs SO}_2/1,000,000 \text{ btu} \times (\text{actual heat value in BTU per pound}) \times 100\% \times 1 \text{ lbs S}/2 \text{ lbs SO}_2 = \text{wt.\% sulfur}$$

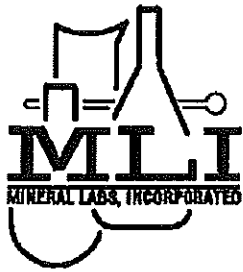
Appendix 8. Reporting

A. Annual, Semiannual, and Deviation Certification Reporting

The permittee shall use the MDEQ, AQD, Report Certification form (EQP 5736) and MDEQ, AQD, Deviation Report form (EQP 5737) for the annual, semiannual and deviation certification reporting referenced in the Reporting Section of the Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Alternative formats must meet the provisions of Rule 213(4)(c) and Rule 213(3)(c)(i), respectively, and be approved by the AQD District Supervisor.

B. Other Reporting

Specific reporting requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, Part B of this appendix is not applicable.



Mineral Labs, Inc.

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 Salyersville, Kentucky 41465
 Phone (606) 349-6145
 Certificate of Analysis

Company
MICHIGAN SUGAR COMPANY
 2600 S. EUCLID AVE.
 BAY CITY, MI 48706-0000

Lab No. 14030975 8360
 Date Recd. 6/13/2014
 Date Analyzed 6/13/2014

SAMPLE IDENTIFICATION AS SUPPLIED BY SAMPLER SAMPLED BY CUSTOMER SAMPLED TYPE:

MAIL IN
 PO# 11642
 CARO COKE 2013-14
 6-11-14
 COMPOSITE

$$\frac{1.7 \text{ lb SO}_2}{1,000,000 \text{ BTU}} \times \left(\text{Actual Heat Value} \right) \times 100\% \times \frac{116 \text{ S}_2}{2.16 \text{ S}_2} = \text{wt \% S}$$

Max
 ⇒ wt % S

	% Moisture	% Ash	% Volatile	% Fixed Carbon	% BTU	% Sulfur
	D3302	D3174	D3175	(Calculated)	D5865	D4239
As Recd	1.46	7.34	XXX	XXX	12,870	0.63
Dry Basis		7.45	XXX	XXX	13,061	0.64
M.A.F.B.T.U (Calculated)					14,113	

1.09
 1.11

	XXX	-FUSION TEMPERATURE OF- D1867-04		Reducing		Oxidizing	
		Initial	Softening	XXX °F	XXX °F	XXX °F	XXX °F
Free Swelling Index No. D720-91	XXX			XXX °F	XXX °F	XXX °F	XXX °F
Grindability Index No. D409	XXX			XXX °F	XXX °F	XXX °F	XXX °F

D 4749-87
SCREEN/WET SIEVE ANALYSIS

SIZE 0 % WT. RETAINED

X X X X X X X X

X X X X X X X X

X X X X X X X X

WEIGHT DETERMINATION

Average Light Draft X X X

Average Loaded Draft X X X

Weight of Coal Loaded X X X Tons

9063399



Mineral Labs, Inc.

Box 549
 Salyersville, Kentucky 41465
 Phone (606) 349-6145
 Certificate of Analysis

Company
MICHIGAN SUGAR COMPANY
 2600 S. EUCLID AVE.
 BAY CITY, MI 48706-0000

Lab No. 14030972 8360
 Date Recd. 6/13/2014
 Date Analyzed 6/13/2014

SAMPLE IDENTIFICATION AS SUPPLIED BY SAMPLER SAMPLED BY CUSTOMER SAMPLED TYPE:

MAIL IN
 PO# 11642
 CARO ANTH COAL 2013-14
 6-11-14
 COMPOSITE

Lime kiln

$$\frac{117 \text{ lb SO}_2}{1,000,000 \text{ BTU}} \times (\text{Heat Value}) \times 100\% \times \frac{116 \text{ S}_2}{216 \text{ SO}_2} =$$

Max wt% S

	% Moisture D3302	% Ash D3174	% Volatile D3175	% Fixed Carbon (Calculated)	% BTU D5865	% Sulfur D4239
As Recd	3.83	7.89	XXX	XXX	13,169	0.56
Dry Basis		8.20	XXX	XXX	13,693	0.58
M.A.F.B.T.U (Calculated)					14,917	

1.119
1.163

	Free Swelling Index No. D720-91	Grindability Index No. D409	XXX	-FUSION TEMPERATURE OF- D1857-04		Reducing		Oxidizing	
				Initial	Softening	XXX °F	XXX °F	XXX °F	XXX °F

SCREEN/WET SIEVE ANALYSIS
D 4749-87

SIZE 0 % WT. RETAINED

X X X X X X X X

X X X X X X X X

X X X X X X X X

WEIGHT DETERMINATION

Average Light Draft X X X
 Average Loaded Draft X X X
 Weight of Coal Loaded X X X Tons

9063396

Tuesday, October 28, 2014

Fibertec Project Number: 64796
Project Identification: Michigan Sugar-Coke (B2875) /B2875
Submittal Date: 10/20/2014

Ms. Sharon LeBlanc
State of Michigan DEQ Air Quality Division
Cadillac District Office
120 West Chapin Street
Cadillac, MI 49601

Dear Ms. LeBlanc,

Thank you for selecting Fibertec Environmental Services as your analytical laboratory. The samples you submitted have been analyzed in accordance with NELAC standards and the results compiled in the attached report. Any exceptions to NELAC compliance are noted in the report. These results apply only to those samples submitted. Please note TO-15 samples will be disposed of 14 days after the reporting date. All other samples will be disposed of 30 days after the reporting date.

If you have any questions regarding these results or if we may be of further assistance to you, please contact me at (517) 699-0345.

Sincerely,



Daryl P. Strandbergh
Laboratory Director

DPS/cdh
Enclosures

Client Identification: State of Michigan DEQ Air Quality Division	Sample Description: Grab-1-Coke Sample	Chain of Custody: 00001
Client Project Name: Michigan Sugar-Coke (B2875)	Sample No: G-1	Collect Date: 11/14/14
Client Project No: B2875	Sample Matrix: Other (Solid)	Collect Time: 09:15

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Percent Moisture Analysis (ASTM D3302)						Aliquot ID: 64796-001A		Matrix: Other (Solid)		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Percent Moisture	4.72		%	NA	1.0	NA	NA	10/23/14 00:00	NA	ML

Sulfur Analysis (ASTM D4239)						Aliquot ID: 64796-001A		Matrix: Other (Solid)		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Sulfur	0.74		%	NA	1.0	NA	NA	10/23/14 00:00	NA	ML

BTU Analysis (ASTM D5865)						Aliquot ID: 64796-001A		Matrix: Other (Solid)		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. BTU	10940		BTU/lb	NA	1.0	NA	NA	10/23/14 00:00	NA	ML

$$\frac{1,716 \text{ S SO}_2}{1,000,000 \text{ BTU}} \times \left(\frac{10940 \text{ BTU}}{1 \text{ lb}} \right) \times 100\% \times \frac{116 \text{ S}}{216 \text{ S SO}_2} = \text{wt}\% \text{ S} \Rightarrow 0.9299$$

1914 Holloway Drive
11766 E. Grand River
8660 S. Mackinaw Trail

Holt, MI 48842
Brighton, MI 48116
Cadillac, MI 49601

T: (517) 699-0345
T: (810) 220-3300
T: (231) 775-8368

F: (517) 699-0388
F: (810) 220-3311
F: (231) 775-8584

Definitions/ Qualifiers:

- A: Spike recovery or precision unusable due to dilution.
- B: The analyte was detected in the associated method blank.
- E: The analyte was detected at a concentration greater than the calibration range, therefore the result is estimated.
- J: The concentration is an estimated value.
- M: Modified Method
- U: The analyte was not detected at or above the reporting limit.
- X: Matrix Interference has resulted in a raised reporting limit or distorted result
- W: Results reported on a wet-weight basis.
- *: Value reported is outside QA limits

Exception Summary:



Accreditation Number(s):

E-10395 (KS)

T104704518-13-1 (TX)

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Analytical Laboratory
 1914 Holloway Drive 8660 S. Mackinaw Trail
 Holt, MI 48842 Cadillac, MI 49601
 Phone: 517 699 0345 Phone: 231 775 8368
 Fax: 517 699 0388 Fax: 231 775 8584
 email: lab@fibertec.us

Industrial Hygiene Services, Inc.
 1914 Holloway Drive
 Holt, MI 48842
 Phone: 517 699 0345
 Fax: 517 699 0382
 email: asbestos@fibertec.us

Geoprobe
 11766 E. Grand River
 Brighton, MI 48116
 Phone: 810 220 3300
 Fax: 810 220 3311

Chain of Custody #
 00001
 PAGE 1 of 1

Client Name: <u>State of Michigan DEQ - Aroclor</u>					MATRIX (SEE BEST CORNER FOR CODE)	# OF CONTAINERS	PRESERVED (Y/N)	Heat content	Moisture content	Sulfur content (ppm)	(90 kg weight)	PARAMETERS				Turnaround	Matrix Code	
Contact Person: <u>Division</u>																24 hour RUSH (surcharge applies)	S Soil	GW Ground Water
Project Name/ Number: <u>Michigan Sugar-CARO B2875</u>																48 hour RUSH (surcharge applies)	W Water	SW Surface Water
Purchase Order#																72 hour RUSH (surcharge applies)	A Air	WW Waste Water
Lab Sample #	Date	Time	Client Sample #	Client Sample Descriptor										<input checked="" type="checkbox"/> Standard (5-7 bus. days)	<input type="checkbox"/> Oil	<input checked="" type="checkbox"/> Other: Specify		
	11/14/14	9:15	6-1	Grab-1 - coke sample	S	I	N	V	V	V				Other: Specify	P Wipe	<u>Coke</u>		
													Remarks:					
													Limekiln coke sample from Michigan Sugar-CARO					
													Mail Invoice to:					
													Susan Kilner					
													DEQ - AQD					
													Construction Hall - 2 South					
													525 W. Allegan St.					
													Lansing MI, 48904					
Comments: <u>Fuel Analysis for Limekiln COKE - 50</u>																		
Relinquished By: <u>Sharon W. Albane</u>					Date/ Time: <u>10/16/2014 3:00pm</u>			Received By: <u>UGPS</u>										
Relinquished By: <u>UGPS</u>					Date/ Time: <u>10-20-14</u>			Received By: <u>[Signature]</u>										
Relinquished By:					Date/ Time:			Received by Laboratory:										
LAB USE ONLY:																		
Fibertec project number:																		
Laboratory Tracking:																		
Temperature at Receipt:																		
64796																		
COC Revision: April, 2006																		

TERMS & CONDITIONS ON BACK



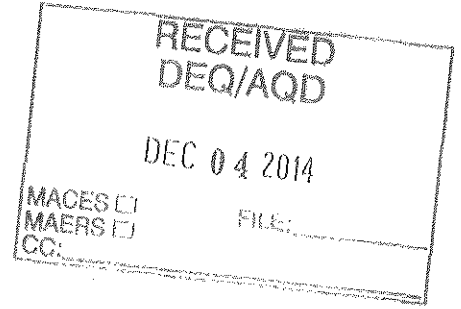
**TONAWANDA COKE
CORPORATION**

**CERTIFICATE OF ANALYSIS
of ROCKWOOL / SUGAR COKE
SHIPPED FROM TONAWANDA, NEW YORK**

Date:	10/10/14
% Volatile Matter:	0.5
% Fixed Carbon:	92.58
% Ash Content:	6.92
% Sulfur:	0.693
Shatter Test on 2" Screen:	95.8
% H ₂ O:	8.2

Tonawanda Coke Corporation
Tonawanda, NY 14151-5007
(716) 876-6222

*no heat
content
soa det
check the
max allowable
for sample.*



Tuesday, October 28, 2014

Fibertec Project Number: 64796
Project Identification: Michigan Sugar-Coke (B2875) /B2875
Submittal Date: 10/20/2014

Ms. Sharon LeBlanc
State of Michigan DEQ Air Quality Division
Cadillac District Office
120 West Chapin Street
Cadillac, MI 49601

Dear Ms. LeBlanc,

Thank you for selecting Fibertec Environmental Services as your analytical laboratory. The samples you submitted have been analyzed in accordance with NELAC standards and the results compiled in the attached report. Any exceptions to NELAC compliance are noted in the report. These results apply only to those samples submitted. Please note TO-15 samples will be disposed of 14 days after the reporting date. All other samples will be disposed of 30 days after the reporting date.

If you have any questions regarding these results or if we may be of further assistance to you, please contact me at (517) 699-0345.

Sincerely,

Daryl P. Strandbergh
Laboratory Director

DPS/cdh
Enclosures

DEQ-AQD

DEC 11 2014

Saginaw Bay

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Analytical Laboratory Report
Laboratory Project Number: 64796
Laboratory Sample Number: 64796-001

Order: 64796
Page: 2 of 3
Date: 10/28/14

Client Identification: State of Michigan DEQ Air Quality Division	Sample Description: Grab-1-Coke Sample	Chain of Custody: 00001
Client Project Name: Michigan Sugar-Coke (B2875)	Sample No: G-1	Collect Date: 11/14/14
Client Project No: B2875	Sample Matrix: Other (Solid)	Collect Time: 09:15

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Percent Moisture Analysis (ASTM D3302)						Aliquot ID: 64796-001A		Matrix: Other (Solid)		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Percent Moisture	4.72		%	NA	1.0	NA	NA	10/23/14 00:00	NA	ML

Sulfur Analysis (ASTM D4239)						Aliquot ID: 64796-001A		Matrix: Other (Solid)		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Sulfur	0.74		%	NA	1.0	NA	NA	10/23/14 00:00	NA	ML

BTU Analysis (ASTM D5865)						Aliquot ID: 64796-001A		Matrix: Other (Solid)		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. BTU	10940		BTU/lb	NA	1.0	NA	NA	10/23/14 00:00	NA	ML

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Definitions/ Qualifiers:

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Exception Summary:



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 email: asbestos@fibertec.us

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 11766 E. Grand River Brighton, MI 48116
 Phone: 810 220 3300 Fax: 810 220 3311

Chain of Custody # 00001
 PAGE 1 of 1

Client Name: <i>State of Michigan DEQ - Antrim</i>					MATRIX (SEE RIGHT CORNER FOR CODE)	# OF CONTAINERS	PRESERVED (Y/N)	PARAMETERS								Turnaround	Matrix Code														
Contact Person: <i>Division</i>								<i>Heat content</i>	<i>Moisture content</i>	<i>Sulfur concentration</i>	<i>(50 by weight)</i>							<input type="checkbox"/> 24 hour RUSH (surcharge applies) <input type="checkbox"/> 48 hour RUSH (surcharge applies) <input type="checkbox"/> 72 hour RUSH (surcharge applies) <input checked="" type="checkbox"/> Standard (5-7 bus. days) <input type="checkbox"/> Other: Specify _____	S Soil	GW Ground Water											
Project Name/ Number: <i>Michigan Sugar-CARO B2875</i>																													W Water	SW Surface Water	
Purchase Order#																															
Lab Sample #	Date	Time	Client Sample #	Client Sample Descriptor												C Oil	<input checked="" type="checkbox"/> Other: Specify <i>COKE</i>														
	<i>11/14/14</i>	<i>9:15</i>	<i>6-1</i>	<i>Grab-1 - COKE sample</i>	<i>5</i>	<i>1</i>	<i>N</i>	<i>✓</i>	<i>✓</i>	<i>✓</i>																					
Remarks:															<i>Limexan coke sample from Michigan Sugar-CARO</i>																
															<i>Mail Invoice to:</i>																
															<i>Susan Kilmer</i>																
															<i>DEQ - AQD</i>																
															<i>Construction Hall - 2 South</i>																
															<i>525 W. Arlegan St.</i>																
															<i>Lansing MI, 48909</i>																
Comments: <i>Fuel Analysis for Limexan COKE - 55C</i>																															
Relinquished By: <i>Maureen Carbone</i>					Date/ Time: <i>10/16/2014 3:12pm</i>			Received By: <i>USPS</i>																							
Relinquished By:					Date/ Time: <i>10-20-14</i>			Received By: <i>[Signature]</i>																							
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TERMS & CONDITIONS ON BACK																															
COC Revision: April, 2006																															