Verso Corporation Quinnesec Mill
CAM Plan
Chip Screening Operations
Baghouse for Particulate Matter Control
April 2017

I. BACKGROUND

A. Emissions Unit

Description:	Chip Screening Operations
Identification:	EU0101
Facility:	Quinnesec Mill

B. Applicable Regulations, Emission Limit, and Monitoring Requirements

Regulation No.:	40 CFR 52.21(j)(3)
Uncontrolled Emissions:	PM ≤ 3 grains/dscf (reflects assumed control efficiency of 99% applied to controlled emission limit of 0.03 grains/dscf) equates to 2,277 tpy uncontrolled.
Controlled Emission Limit:	PM ≤ 0.03 gr/dscf , 5.2 lb/hr
Monitoring Requirements:	Pressure drop across fabric filter collector as monitored by CMS

Control Technology

Bag Filter System – Manufactured by Carter Day/Donaldson

II. MONITORING APPROACH

The key elements of the monitoring approach are presented below:

A. Indicators

Pressure drop across fabric filter collector

B. Measurement Approach

Analytical Devices:	Omega Differential Pressure Transmitter
Monitoring Locations:	Baghouse Body

C. Indicator Range

dP gauge:	0-10 inches water column (WC), based on engineering analysis

D. Performance Criteria

Data Representativeness:	The pressure drop is measured at the outlet of the fabric filter
Verification of Operational Status:	Verification that the pressure differential gauge is working is confirmed during the

	manual recording of the delta pressure measurements.
QA/QC Procedures:	Pressure transmitter will be calibration/inspected annually in accordance with manufacturer's specifications
Monitoring Frequency:	Continuous
Reporting Units:	Pressure drop: inches H_2O
Recording Process:	Differential pressure readings are manually recorded two times per day
Data Requirements:	The measurement is recorded daily for comparison to manufacturer's specification

III. JUSTIFICATION

A. Background

The emission unit is the Chip Production Operations. Particulate emissions are currently controlled by the baghouse. The baghouse style dust collector includes a blower and duct system that collects dust from various locations in the chip screening building. Dust that is drawn into the baghouse is collected on filters. Dust is removed from the filters by compressed air and is reclaimed as fuel for the Waste Fuel Boiler.

B. Rationale for Selection of Performance Indicators

A pressure drop across the fabric filter between 0.1 and 4.0 inches WC is a good indicator of baghouse performance to ensure effective control of particulate matter, as long as proper maintenance is performed.

C. Rationale for Selection of Indicator Levels

The baghouse system is very efficient at removing particulate. Historical daily operational inspections have not indicated elevated visible emissions (VE) from this source. Historical Method 9 inspections indicate VE is within limits.

Verso Corporation Quinnesec Mill
CAM Plan
Chip Production Operations
Baghouse for Particulate Matter Control
April 2017

I. BACKGROUND

A. Emissions Unit

Description:	Chip Production Operations
Identification:	EU0102
Facility:	Quinnesec Mill

B. Applicable Regulations, Emission Limit, and Monitoring Requirements

Regulation No.:	R 336.1331(1)(c)
Uncontrolled Emissions:	PM ≤ 0.06 lb/1000 lb exhaust gases equates to 18.82 tpy controlled, dry basis. With an assumed control efficiency of 99% applied to 18.82 uncontrolled emissions are greater than 100tpy
Controlled Emission Limit:	PM ≤ 0.06 lb/1000 lb exhaust gases, dry gas basis
Monitoring Requirements:	Pressure drop across fabric filter collector as monitored by CMS

Control Technology

Bag Filter System – Manufactured by Johnson-March Corporation

II. MONITORING APPROACH

The key elements of the monitoring approach are presented below:

A. Indicators

Pressure drop across fabric filter collector

B. Measurement Approach

Analytical Devices:	Dwyer Photohelic Differential Pressure Gauges
Monitoring Locations:	Baghouse Body

C. Indicator Range

dP gauge:	0-8 inches water column (WC)

D. Performance Criteria

Data Representativeness:	The pressure drop is measured at the outlet of the fabric filter

Verification of Operational Status:	Verification that the pressure differential gauge is working is confirmed during the manual recording of the delta pressure measurements
QA/QC Procedures:	Pressure transmitter will be calibration/inspected annually in accordance with manufacturer's specifications
Monitoring Frequency:	Continuous
Reporting Units:	Pressure drop: inches H_2O
Recording Process:	Differential pressure readings are manually recorded two times per day
Data Requirements:	The measurement is recorded daily for comparison to manufacturer's specification

III. JUSTIFICATION

A. Background

The emission unit is the Chip Production Operations. Particulate emissions are currently controlled by the baghouse. The baghouse style dust collector includes a blower and duct system that collects dust from various locations from the chipper operations. Dust that is drawn into the baghouse is collected on filters. Dust is removed from the filter by compressed air and is reclaimed and as fuel for the Waste Fuel Boiler.

B. Rationale for Selection of Performance Indicators

A pressure drop across the fabric filter between 0.5 and 4.0 inches WC is a good indicator of baghouse performance to ensure effective control of particulate matter, as long as proper maintenance is performed.

C. Rationale for Selection of Indicator Levels

The baghouse system is very efficient at removing particulate. Historical daily operational inspections have not indicated elevated visible emissions (VE) from this source. Historical Method 9 inspections indicate VE is within limits.

Verso Corporation Quinnesec Mill
CAM Plan
Chemical Recovery Furnace
Electrostatic Precipitator (ESP) for Particulate Matter Control
April 2017

I. BACKGROUND

A. Emissions Unit

Description:	Chemical Recovery Furnace
Identification:	EU0815
Facility:	Quinnesec Mill

B. Applicable Regulations, Emission Limit, and Monitoring Requirements

Regulation No.:	40 CFR 52.21(j)(3)
Uncontrolled Emissions:	PM <= 0.54 gr/dscf (reflects assumed control efficiency of 95% applied to controlled emission limit of 0.027 gr/dscf)
Controlled Emission Limit:	PM -10 <= 0.027 gr/dscf of exhaust gases corrected to 8% O_2 dry basis, PM-10 <= 51.1 lb/hr,
Monitoring Requirements:	Opacity as monitored by a continuous opacity monitor (COM).

Control Technology

High Efficiency Dry Bottom ESP, Manufactured by Research - Cottrell

II. MONITORING APPROACH

The key elements of the monitoring approach are presented below:

A.	**Indicators**	Opacity
B.	**Measurement Approach**	
	Analytical Devices:	Manufacture: SICK, Model:T200
	Monitoring Locations:	Measurement in the flue gas duct with opacity at the exit of the main stack calculated using the opacity combiner equation
C.	**Indicator Range**	0-100 %
D.	**Performance Criteria**	
	Data Representativeness:	The COMS continuously monitors and records opacity in the stack

Verification of Operational Status:	The opacity will continuously be monitored and recorded.
QA/QC Procedures:	The COMS will be operated and maintained in accordance with procedures outlined in the mill's ROP MI-ROP-B7192, EU0815, Monitoring/Recordkeeping VI.1.
Monitoring Frequency:	Continuous
Reporting Units:	% Opacity
Recording Process:	Continuously monitored and recorded
Data Requirements:	A comparison of COM readings taken during PM emission tests shows during particulate emissions testing opacity levels where below a 20% threshold level

III. JUSTIFICATION

A. Background

The emission unit is the Chemical Recovery Furnace. Particulate emissions are currently controlled by the ESP. The Research Cottrell ESP is a two chamber unit that is energized by twelve 750 milliamp rated transformer-rectifier (TR) sets. The TR sets are equipped with silicon controlled rectifier mainline controls. Removal of particulate from collecting surfaces and discharge electrodes is accomplished by Magnetic Impulse Gravity Impact LV-1 rappers.

Opacity is an indicator of ESP performance. An increase in opacity would indicate that there is a decrease in the performance of the ESP.

B. Rationale for Selection of Performance Indicators

20% opacity (1 hour) average is a good indicator of ESP performance, as long as proper maintenance is performed.

C. Rationale for Selection of Indicator Levels

The Chemical Recovery Furnace ESP is very efficient at removing particulate. MACT II Performance Test PM results were 0.0043 gr/dscf, which is 6 times less than the 0.027 limit. Opacity values during this testing were below the 20% level.

Verso Paper Quinnesec Mill
CAM Plan
Smelt Dissolving Tank
Wet Scrubber for Particulate Matter Control
June 2011

I. BACKGROUND

A. Emissions Unit

Description:	Smelt Dissolving Tank
Identification:	EU0816
Facility:	Quinnesec Mill

B. Applicable Regulations, Emission Limit, and Monitoring Requirements

Regulation No.:	40 CFR 52.21(j)(3)
Uncontrolled Emissions:	PM / PM-10<= 0.41 lb/ton BLS and 31.5 pph (reflects assumed control efficiency of 73% applied to controlled emission limit of 0.11
Controlled Emission Limit:	PM / PM-10 <= 0.107 lb/ton BLS (dry weight), 8.5 pph
Monitoring Requirements:	Scrubbing liquid flow rate

Control Technology

Dynamic Scrubber UW-4, Model IV Scrubber manufactured by Ducon

II. MONITORING APPROACH

The key elements of the monitoring approach are presented below:

A. Indicators

Scrubber liquid flow rate

B. Measurement Approach

Analytical Devices:	Rosemount Model: 8705 flow meter complete with flow rate monitor
Monitoring Locations:	Scrubber liquid inlet pipe to the control device

C. Indicator Range

Scrubber Liquid Flow rate:	Minimum – MACT II CMS ranges = 150 gpm (3 hr average)

D. Performance Criteria

Data Representativeness:	The scrubber liquid flow rate is measured at the inlet to the control device
Verification of Operational Status:	Not Applicable.
QA/QC Procedures:	Flow transmitter will be calibration/inspected annually in accordance with manufacturer's specifications
Monitoring Frequency:	Continuous
Reporting Units:	Gallons/minute
Recording Process:	Continuously monitored and recorded.
Data Requirements:	The scrubber flow rate measurement is recorded continuously and compared to the MACT II performance test limits.

III. JUSTIFICATION

A. Background

The emission unit is the Smelt Dissolving Tank. Particulate emissions are currently controlled by the Ducon scrubber using caustic/water solution as the scrubbing medium. Smelt dissolving tank gases are routed to a Ducon Dynamic scrubber where scrubbing liquid is injected in the scrubbing body and fan. Particulate is removed by physical contact with the scrubbing medium and then flow to the scrubber recirculation tank.

B. Rationale for Selection of Performance Indicators

Use of a minimum scrubber liquid flow rate is a good indicator of scrubber performance to ensure proper liquid to particulate matter contact for effective removal of the particulate matter from the air stream. If the scrubber liquid flow rate falls below the indicator level, optimum contact between the scrubber liquid and particulate matter in the air stream may not be achieved.

C. Rationale for Selection of Indicator Levels

The selected indicator range is a minimum scrubber liquid flow rate of 150 gallons/minute to the control device. This criterion based on MACT II Performance Testing. Corrective action will immediately follow any excursion from this performance criterion. Such corrective action will be documented and reported to the Agency.

Verso Corporation Quinnesec Mill
CAM Plan
Coal Crusher/Unloading and Handling Operations
Baghouse for Particulate Matter Control
April 2017

I. BACKGROUND

A. Emissions Unit

Description:	Coal Crusher/Unloading and Handling Operations
Identification:	EU1125
Facility:	Quinnesec Mill

B. Applicable Regulations, Emission Limit, and Monitoring Requirements

Regulation No.:	40 CFR 52.21(j)(3)
Uncontrolled Emissions:	PM ≤ 3 grains/dscf (reflects assumed control efficiency of 99% applied to controlled emission limit of 0.03 grains/dscf) equates to 805.9 tpy uncontrolled.
Controlled Emission Limit:	PM ≤ 0.03 gr/dscf
Monitoring Requirements:	Pressure drop across fabric filter collector as monitored by CMS

Control Technology

Bag Filter System – Manufactured by Johnson-March Corporation

II. MONITORING APPROACH

The key elements of the monitoring approach are presented below:

A. Indicators

Pressure drop across fabric filter collector

B. Measurement Approach

Analytical Devices:	Dwyer Photohelic Differential Pressure Gauges
Monitoring Locations:	Baghouse Body

C. Indicator Range

dP gauge:	0-10 inches water column (WC)

D. Performance Criteria

Data Representativeness:	The pressure drop is measured at the outlet of the fabric filter

Verification of Operational Status:	Verification that the pressure differential gauge is working is confirmed during the manual recording of the delta pressure measurements.
QA/QC Procedures:	Pressure transmitter will be calibration/inspected annually in accordance with manufacturer's specifications
Monitoring Frequency:	Continuous
Reporting Units:	Pressure drop: inches H_2O
Recording Process:	Differential pressure readings are manually recorded two times per day
Data Requirements:	The measurement is recorded daily for comparison to manufacturer's specification

III. JUSTIFICATION

A. Background

The emission unit is the Hogged Fuel/Coal Transfer Operations. Particulate emissions are currently controlled by the baghouse. The baghouse style dust collector includes a blower and duct system that collects dust from various locations from the coal handling system. Dust that is drawn into the baghouse is collected on filters. Dust is removed from the filters by compressed air and is reclaimed as fuel for the Waste Fuel Boiler.

B. Rationale for Selection of Performance Indicators

A pressure drop across the fabric filter between 0.1 and 4.0 inches WC is a good indicator of baghouse performance to ensure effective control of particulate matter, as long as proper maintenance is performed.

C. Rationale for Selection of Indicator Levels

The baghouse system is very efficient at removing particulate. Historical daily operational inspections have not indicated elevated visible emissions (VE) from this source. Historical Method 9 inspections indicate VE is within limits.

Verso Corporation Quinnesec Mill
CAM Plan
Fuel Hogging Operations
Baghouse for Particulate Matter Control
April 2017

I. BACKGROUND

A. Emissions Unit

Description:	Fuel Hogging Operations
Identification:	EU1127
Facility:	Quinnesec Mill

B. Applicable Regulations, Emission Limit, and Monitoring Requirements

Regulation No.:	40 CFR 52.21(j)(3)
Uncontrolled Emissions:	PM ≤ 3 grains/dscf (reflects assumed control efficiency of 99% applied to controlled emission limit of 0.03 grains/dscf) equates to 2,084.9 tpy uncontrolled.
Controlled Emission Limit:	PM ≤ 0.03 gr/dscf
Monitoring Requirements:	Pressure drop across fabric filter collector as monitored by CMS

Control Technology

Bag Filter System – Manufactured by Johnson-March Corporation

II. MONITORING APPROACH

The key elements of the monitoring approach are presented below:

A. Indicators

Pressure drop across fabric filter collector

B. Measurement Approach

Analytical Devices:	Dwyer Photohelic Differential Pressure Gauges
Monitoring Locations:	Baghouse Body

C. Indicator Range

dP gauge:	0-10 inches water column (WC)

D. Performance Criteria

Data Representativeness:	The pressure drop is measured at the outlet of the fabric filter
Verification of Operational Status:	Verification that the pressure differential gauge is working is confirmed during the

	manual recording of the delta pressure measurements
QA/QC Procedures:	Pressure transmitter will be calibration/inspected annually in accordance with manufacturer's specifications
Monitoring Frequency:	Continuous
Reporting Units:	Pressure drop: inches H_2O
Recording Process:	Differential pressure readings are manually recorded two times per day.
Data Requirements:	The measurement is recorded daily for comparison to manufacturer's specification

III. JUSTIFICATION

A. Background

The emission unit is the Hogged Fuel/Coal Transfer Operations. Particulate emissions are currently controlled by the baghouse. The baghouse style dust collector includes a blower and duct system that collects dust from various locations in the hog fuel building. Dust that is drawn into the baghouse is collected on filters. Dust is removed from the filters by compressed air and is reclaimed and sent to the Waste Fuel Boiler to be burned.

B. Rationale for Selection of Performance Indicators

A pressure drop across the fabric filter between 0.1 and 4.0 inches WC is a good indicator of baghouse performance to ensure effective control of particulate matter, as long as proper maintenance is performed.

C. Rationale for Selection of Indicator Levels

The baghouse system is very efficient at removing particulate. Historical daily operational inspections have not indicated elevated visible emissions (VE) from this source. Historical Method 9 inspections indicate VE is within limits.

Verso Corporation Quinnesec Mill
CAM Plan
Hogged Fuel/Coal Transfer Operations
Baghouse for Particulate Matter Control
April 2017

I. BACKGROUND

A. Emissions Unit

Description:	**Hogged Fuel/Coal Transfer Operations**
Identification:	**EU1137**
Facility:	Quinnesec Mill

B. Applicable Regulations, Emission Limit, and Monitoring Requirements

Regulation No.:	40 CFR 52.21(j)(3)
Uncontrolled Emissions:	PM ≤ 3 grains/dscf (reflects assumed control efficiency of 99% applied to controlled emission limit of 0.03 grains/dscf) equates to 1,559.3 tpy uncontrolled.
Controlled Emission Limit:	PM ≤ 0.03 gr/dscf
Monitoring Requirements:	Pressure drop across fabric filter collector as monitored by CMS

Control Technology

Bag Filter System – Manufactured by Johnson-March Corporation

II. MONITORING APPROACH

The key elements of the monitoring approach are presented below:

A. Indicators

Pressure drop across fabric filter collector

B. Measurement Approach

Analytical Devices:	Dwyer Photohelic Differential Pressure Gauges
Monitoring Locations:	Baghouse Body

C. Indicator Range

dP gauge:	0-10 inches water column (WC)

D. Performance Criteria

Data Representativeness:	The pressure drop is measured at the outlet of the fabric filter
Verification of Operational Status:	Verification that the pressure differential gauge is working is confirmed during the

	manual recording of the delta pressure measurements
QA/QC Procedures:	Pressure transmitter will be calibration/inspected annually in accordance with manufacturer's specifications
Monitoring Frequency:	Continuous
Reporting Units:	Pressure drop: inches H_2O
Recording Process:	Differential pressure readings are manually recorded two times per day
Data Requirements:	The measurement is recorded daily for comparison to manufacturer's specification

III. JUSTIFICATION

A. Background

The emission unit is the Hogged Fuel/Coal Transfer Operations. Particulate emissions are currently controlled by the baghouse. The baghouse style dust collector includes a blower and duct system that collects dust from various locations in the waste fuel boiler building. Dust that is drawn into the baghouse is collected on filters. Dust is removed from the filters by compressed air and is reclaimed and sent to the Waste Fuel Boiler to be burned.

B. Rationale for Selection of Performance Indicators

A pressure drop across the fabric filter between 0.05 and 1.0 inches WC is a good indicator of baghouse performance to ensure effective control of particulate matter, as long as proper maintenance is performed.

C. Rationale for Selection of Indicator Levels

The baghouse system is very efficient at removing particulate. Historical daily operational inspections have not indicated elevated visible emissions (VE) from this source. Historical Method 9 inspections indicate VE is within limits.

Verso Corporation Quinnesec Mill
CAM Plan
Purchased Fuel Hogging Operations
Baghouse for Particulate Matter Control
April 2017

I. BACKGROUND

A. Emissions Unit

Description:	Purchased Fuel Hogging Operations
Identification:	EU1128
Facility:	Quinnesec Mill

B. Applicable Regulations, Emission Limit, and Monitoring Requirements

Regulation No.:	40 CFR 52.21(j)(3)
Uncontrolled Emissions:	PM ≤ 0.5 grains/dscf (reflects assumed control efficiency of 99% applied to controlled emission limit of 0.005 grains/dscf) equates to 259.8 tpy uncontrolled.
Controlled Emission Limit:	PM ≤ 0.005 gr/dscf
Monitoring Requirements:	Pressure drop across fabric filter collector as monitored by CMS

Control Technology

Bag Filter System – Manufactured by Metso Paper-Donaldson Torit

II. MONITORING APPROACH

The key elements of the monitoring approach are presented below:

A. Indicators

Pressure drop across fabric filter collector

B. Measurement Approach

Analytical Devices:	Dwyer Photohelic Differential Pressure Gauges
Monitoring Locations:	Baghouse Body

C. Indicator Range

dP gauge:	0-10 inches water column (WC)

D. Performance Criteria

Data Representativeness:	The pressure drop is measured at the outlet of the fabric filter

Verification of Operational Status:	Verification that the pressure differential gauge is working is confirmed during the manual recording of the delta pressure measurements
QA/QC Procedures:	Pressure transmitter will be calibration/inspected annually in accordance with manufacturer's specifications
Monitoring Frequency:	Continuous
Reporting Units:	Pressure drop: inches H_2O
Recording Process:	Differential pressure readings are manually recorded two times per day
Data Requirements:	The measurement is recorded daily for comparison to manufacturer's specification

III. JUSTIFICATION

A. Background

The emission unit is the Purchased Fuel Hogging Operations Particulate emissions are currently controlled by the baghouse. The baghouse style dust collector includes a blower and duct system that collects dust from various locations in the purchased hog fuel building. Dust that is drawn into the baghouse is collected on filters. Dust is removed from the filters by compressed air and is reclaimed and sent to the Waste Fuel Boiler to be burned.

B. Rationale for Selection of Performance Indicators

A pressure drop across the fabric filter between 0.0 and 10.0 inches WC is a good indicator of baghouse performance to ensure effective control of particulate matter, as long as proper maintenance is performed.

C. Rationale for Selection of Indicator Levels

The baghouse system is very efficient at removing particulate. Historical daily operational inspections have not indicated elevated visible emissions (VE) from this source.

Revisions

Date	Section/Page	Revision	Reviser
April 2017	All Sections/I.B	Removed the word "limit" after uncontrolled – emission limits are based on controlled emissions	P. LaFleur
	Chemical Recovery Furnace/I.B	Removed regulatory citation 40 CFR 60.282(a)(1)(i) and corresponding PM emission limit of 0.044 gr/dscf @ 8% O2 – The MACT II rule specified monitoring for this limit. Also clarified that the CAM applicable pollutant limits are for PM-10	
	Chemical Recovery Furnace/II.B	Changed monitoring location from flue gas duct to exit of the main stack – this is consistent with language in the ROP.	
	Smelt Dissolving Tank Furnace/I.B	Removed regulatory citation 40 CFR 60.282(a)(2) and corresponding PM emission limit of 0.2 lb/ton BLS– The MACT II rule specified monitoring for this limit. Also clarified that the CAM applicable pollutant limits are for PM and PM-10	
	Waste Fuel Boiler/All	Removed WFB from CAM Plan – The PM limit of 0.06 lb/MMBTU is less stringent than the Boiler MACT PM limit of 0.037 lb/MMBTU – Boiler MACT has prescribed compliance monitoring.	
	Coal Crusher/Unloading/I.B	Removed emission limit of 1.84 lb/hr – this limit is not specified in the ROP.	
	Fuel Hogging Operations/I.B	Removed emission limit of 4.76 lb/hr – this limit is not specified in the ROP.	
	Hogged Fuel/Coal Transfer Operations/I.B	Removed emission limit of 3.56 lb/hr – this limit is not specified in the ROP.	
	Purchased Fuel Hogging/I.B	Corrected uncontrolled emissions estimates and controlled emissions limit – limit was incorrectly specified as 0.03 gr/dscf.; the correct limit is 0.005 gr/dscf.	
10/24/17	Revisions Table	Added this table	P. LaFleur