

SENSIBLE SOLUTIONS



Corporate Office

465 South Main Street
PO Box 639
Brewer, Maine 04412
207.989.4824

www.ces-maine.com



**AIR EMISSION LICENSE
APPLICATION**

**SOLID WASTE PROCESSING AND RECYCLING FACILITY
HAMPDEN, MAINE**

Applicants: Municipal Review Committee, Inc.
395 State Street
Ellsworth, ME 04605
207.664.1700

Fiberight LLC
1450 South Rolling Road
Baltimore, MD 21227
410.340.9387

**JUNE 2015
JN: 11293.001**

Application Prepared By:

CES, Inc.
465 South Main Street
P.O. Box 639
Brewer, ME 04412
207.989.4824



Form No.	A-L-0006
Effective Date	12/2005
Revision No.	09
Last Revision Date	10/23/14
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CHAPTER 115 AIR EMISSION LICENSE APPLICATION FORM

State of Maine
Department of Environmental Protection
Bureau of Air Quality
17 State House Station
Augusta, Maine 04333-0017
Phone: (207) 287-2437 Fax: (207) 287-7641

Section A: FACILITY INFORMATION

Owner or Operator (*Legal name as registered with the Secretary of State*):

Fiberight, LLC and Municipal Review Committee, Inc.

Facility Site Name: Fiberight Solid Waste Processing Facility

Facility Site Address (*Physical, no post office boxes*): No address assigned, refer to attached Site Location Pla

City/Town: Hampden Zip Code: 04444 County: Penobscot

Facility Description: Solid Waste Processing Facility

Application Description:

Permit for emissions associated with solid waste processing facility.

Current License #: A- _____ - _____ - _____ - _____

Check When Done:

All Sources

<input checked="" type="checkbox"/>	Application Completed
<input checked="" type="checkbox"/>	Copy Sent to Town (date sent: 6/24/2015)
<input checked="" type="checkbox"/>	Public Notice Published paper name & date: Bangor Daily News, 6/13/2015
<input checked="" type="checkbox"/>	Enclosed Public Notice Tear Sheet
<input checked="" type="checkbox"/>	Signed Signatory Form (Section J)

Additional Requirements for New Sources

<input checked="" type="checkbox"/>	Schedule for construction or installation of equipment
<input checked="" type="checkbox"/>	Title, Right, or Interest (e.g. copy of deed or lease)
<input type="checkbox"/>	Check for Fee

Additional Requirements for New Major Sources and Major Modifications

<input type="checkbox"/>	Notify Abutting Landowners
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For Department Use

Application #: A- _____ - _____ - _____ - _____

App Track #: _____

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Facility Contact:

Name: Greg Lounder Title: Executive Director
Company: Municipal Review Comitte
Mailing Address: 395 State Street

City/Town: Ellsworth State: ME Zip Code: 04605
Phone: 207-664-1700 Fax:
e-mail: glounder@mrcmaine.org

Application Contact:

Name: _____ Title: _____
Company: _____
Mailing Address: _____

City/Town: _____ State: _____ Zip Code: _____
Phone: _____ Fax: _____
e-mail: _____

Billing Contact:

Name: _____ Title: _____
Company: _____
Mailing Address: _____

City/Town: _____ State: _____ Zip Code: _____
Phone: _____ Fax: _____
e-mail: _____

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Control Equipment for Fuel Burning Equipment

If applicable, indicate the types of required/operated add-on pollution control equipment, including baghouses, cyclones/multiclones, SCR, SNCR, etc.

Emission Unit	Type of Control	Pollutant Controlled	Control Efficiency
<i>Boiler #1 (Example)</i>	<i>Cyclone (Example)</i>	<i>PM (Example)</i>	<i>90% (Example)</i>
Boiler #1	Baghouse	PM	99%
Boiler #2	Baghouse	PM	99%
Boiler #1	SNCR	NOx	55%
Boiler #2	SNCR	NOx	55%

Monitors for Fuel Burning Equipment:

If applicable, indicate types of required/operated monitors, including Continuous Emission Monitors (CEM), Continuous Opacity Monitors (COM), parameter monitors for operational purposes, etc.

Emission Unit	Type of Monitor	Data Measured
<i>Boiler #1 (Example)</i>	<i>CEM (Example)</i>	<i>NO_x (Example)</i>
<i>Boiler #1 (Example)</i>	<i>Parameter – operational (Example)</i>	<i>Temperature (Example)</i>

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Section C: INCINERATORS

	Incinerator Unit 1	Incinerator Unit 2
Incinerator Type (medical waste, municipal, etc.)	N/A	N/A
Waste Type		
Make (Shenandoah, Crawford, etc.)		
Model Number		
Date of Manufacture		
Date of Installation		
Number of Chambers		
Max. Initial Charge	lb	lb
Max. Design Combustion Rate	lb/hr	lb/hr
Heat Recovery? (Yes or No)		
Retention Time of Exhaust Gases	seconds	seconds
Automatic Feeder? (Yes or No)		
Temperature Range Primary	to °F	to °F
Secondary	to °F	to °F
Auxiliary Burner - Primary Chamber max. rating (MMBtu/hr)		
type of fuel used		
Auxiliary Burner - Secondary Chamber max. rating (MMBtu/hr)		
type of fuel used		
Annual Waste Combusted for ____ (yr)		
Pollution Control Equipment (if any)		
Stack Number		
Monitors (ie - temperature recorder)		

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Section D: PROCESS EQUIPMENT

Emission Unit ID	Type of Equipment	Maximum Raw Material Process Rate (name and rate)	Maximum Finished Material Process Rate (name and rate)	Date of Manufacture	Date of Installation	Stack #	Control Device
<i>Kilns (Example)</i>	<i>Drying Kilns (Example)</i>	<i>N/A (Example)</i>	<i>25 MMBF/year (Example)</i>	<i>1990 (Example)</i>	<i>1990 (Example)</i>	<i>fugitive (Ex.)</i>	<i>none (Example)</i>
<i>PB#1 (Example)</i>	<i>Paint Booth (Example)</i>	<i>10 gal/hr (Example)</i>	<i>N/A (Example)</i>	<i>2001 (Example)</i>	<i>2001 (Example)</i>	<i>#4 (Ex.)</i>	<i>Paper Filters (Example)</i>
OS-1	Odor Scrubber	50,000 acfm	N/A	TBD	2016	#4	N/A
OS-2	Odor Scrubber	50,000 acfm	N/A	TBD	2016	#5	N/A

Solvent Cleaners
 (Also known as Parts Washers and/or Solvent Degreasers)

Emission Unit ID	Capacity (gallons)	Solvent Used	Solvent % VOC
<i>Degreaser #1 (Example)</i>	<i>15 (Example)</i>	<i>Kerosene (Example)</i>	<i>100% (Example)</i>

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PROCESS EQUIPMENT (section D cont'd)

Chemical Usage

Note: Complete this section for any chemicals integral to your process, for example, a cementing process for outsoles, dyes, surface coating, printing, cleaning, etc. Attach additional pages or MSDS sheets as needed.

Process	Chemical substance used in process	Actual Usage (gal or lb for yr ____)	Hazardous chemical(s) in substance	Percent VOC ¹ (%)	Percent HAP ² (%)	Total VOC emitted (lb/year)	Total HAP emitted (lb/year)

¹ Volatile Organic Compounds

² Hazardous Air Pollutants

Describe method of record keeping (ie. monthly calculations from purchase records, flow monitors on solvent tanks, etc.)

Describe methods used to calculate VOC/HAP emitted (ie – test results, if control equipment was taken into account; if conditions exist where solvents remain in the substrate rather than complete volatilization, etc.)

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Section E: STACK DATA

Stack #	Height Above Ground (ft)	Inside Diameter (ft)	Exit Temperature °F	Exhaust Flow Rate (ft ³ /s) [indicate actual or standard]
#1	65	2'6"	275	20,515 (acfm)
#2	65	2'6"	275	20,515 (acfm)
#3	Approx. 28'	4'8"	70	50,000 (acfm)
#4	Approx. 28'	4'8"	70	50,000 (acfm)

Section F: ANNUAL FACILITY FUEL USE

Total Fuel Consumption by Month for: 2016 (year)

Fuel type: PHS & Wood

Fuel type: _____

Fuel type: _____

Avg % sulfur (oil) _____

Avg % sulfur (oil) _____

Avg % sulfur (oil) _____

Avg % moisture (wood) _____

Avg % moisture (wood) _____

Avg % moisture (wood) _____

(circle one: gal, tons, scf)

(circle one: gal, tons, scf)

(circle one: gal, tons, scf)

January 7260
 February 7260
 March 7260
 April 7260
 May 7260
 June 7260
 July 7260
 August 7260
 September 7260
 October 7260
 November 7260
 December 7260

Total 87,120

Proposed Annual Limit 90,000

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Section G: LIQUID ORGANIC MATERIAL STORAGE

Tank #						
Capacity (gallons)						
Materials Stored						
Reid Vapor Pressure (RVP)						
Annual Throughput						
Above or Below Ground?						
Tank Type (floating or fixed, riveted or bolted, etc.)						
Physical Description – year installed						
Physical Description – color						
Dimensions - height (ft)						
Dimensions - Diameter (ft)						
Construction Material						
Control Device						

Section H: MISCELLANEOUS

Note: Use this section to describe any equipment, activities, or other air emission sources that did not fit in any of the above categories. Include descriptions of the associated emissions. Attach additional pages if necessary.

Section I: BPT/BACT AND OTHER ATTACHMENTS

BPT/BACT Analysis:

For a license renewal for existing equipment, the applicant is required to submit a Best Practical Treatment (BPT) analysis to the Department. A BPT analysis establishes what equipment or requirements are appropriate for control or reduction of emissions of regulated pollutants to the lowest possible level considering the existing state of technology, the effectiveness of available alternatives, and the economic feasibility.

For a new license or the addition of new equipment to an existing license, the applicant is required to submit a Best Available Control Technology (BACT) analysis. A BACT analysis is a top-down approach to selecting air emission controls. It is done on a case-by-case basis and develops emission limits based on the maximum degree of reduction for each pollutant emitted taking into account economic, environmental and energy impacts.

- I certify that, to the best of my knowledge, the control equipment, fuel limitations, and process constraints outlined in this application represent BPT / BACT for the equipment and processes listed.

OR

- I have attached a separate BPT / BACT analysis to this application.

Other Attachments:

Please list any other attachments included with this application.

Attachment A - Location Map and General Site Plan
Attachment B - Potential to Emit Summary
Attachment C - BACT Analysis
Attachment D - Notice of Intent to File
Attachment E - Title, Right, Interest
Attachment F - General Construction Schedule

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Section J: APPLICABLE RULES

Please indicate any rules you believe may be applicable to your facility by checking the associated box.


	Citation	Title
✓	06-096 CMR 101	Visible Emissions
✓	06-096 CMR 103	Fuel Burning Equipment Particulate Emission Standard
	06-096 CMR 104	Incinerator Particulate Emission Standard
✓	06-096 CMR 105	General Process Source particulate Emission Standard
	06-096 CMR 106	Low Sulfur Fuel Regulation
	06-096 CMR 111	Petroleum Liquid Storage Vapor Control
	06-096 CMR 112	Bulk Terminal Petroleum Liquid Transfer Requirements
	06-096 CMR 117	Source Surveillance
	06-096 CMR 118	Gasoline Dispensing Facilities Vapor Control
	06-096 CMR 121	Emission Limitations and Emission Testing of Resource Recovery Facilities
	06-096 CMR 123	Paper Coating Regulation
	06-096 CMR 124	Total Reduced Sulfur Control from Kraft Mills
	06-096 CMR 125	Perchloroethylene Dry Cleaner Regulation
	06-096 CMR 126	Capture Efficiency Test Procedures
	06-096 CMR 129	Surface Coating Facilities
	06-096 CMR 130	Solvent Degreasers
	06-096 CMR 131	Cutback Asphalt and Emulsified Asphalt
	06-096 CMR 132	Graphic Arts – Rotogravure and Flexography
	06-096 CMR 133	Petroleum Liquids Transfer Vapor Recovery at Bulk Gasoline Plants
	06-096 CMR 134	Reasonably Available Control Technology for Facilities That Emit Volatile Organic Compounds
✓	06-096 CMR 137	Emission Statements
	06-096 CMR 138	Reasonably Available Control Technology for Facilities That Emit Nitrogen Oxides
	06-096 CMR 140	Part 70 Air Emission License Regulations
	06-096 CMR 145	NOx Control Program
	06-096 CMR 153	Mobile Equipment Repair and Refinishing
	06-096 CMR 159	Control of Volatile Organic Compounds from Adhesives and Sealants
	06-096 CMR 161	Graphic Arts – Offset Lithography and Letterpress Printing
	40 CFR Part 60	New Source Performance Standards (NSPS) (please list Subpart(s):)
	40 CFR Part 63	National Emission Standards for Hazardous Air Pollutants (NESHAP) (please list Subpart(s):)
	Other (list)	
	Other (list)	

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Section K: SIGNATORY REQUIREMENT

Each application submitted to the Department must include the following certification signed by a Responsible Official*:

"I certify under penalty of law that, based on information and belief formed after reasonable inquiry, I believe the information included in the attached document is true, complete, and accurate."


Responsible Official Signature

Gregory A. Louder
Responsible Official (Printed or Typed)

June 9, 2015
Date

Executive Director
Title


Responsible Official Signature

Craig Stuart-Paul
Responsible Official (Printed or Typed)

June 9th 2015
Date

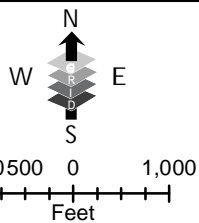
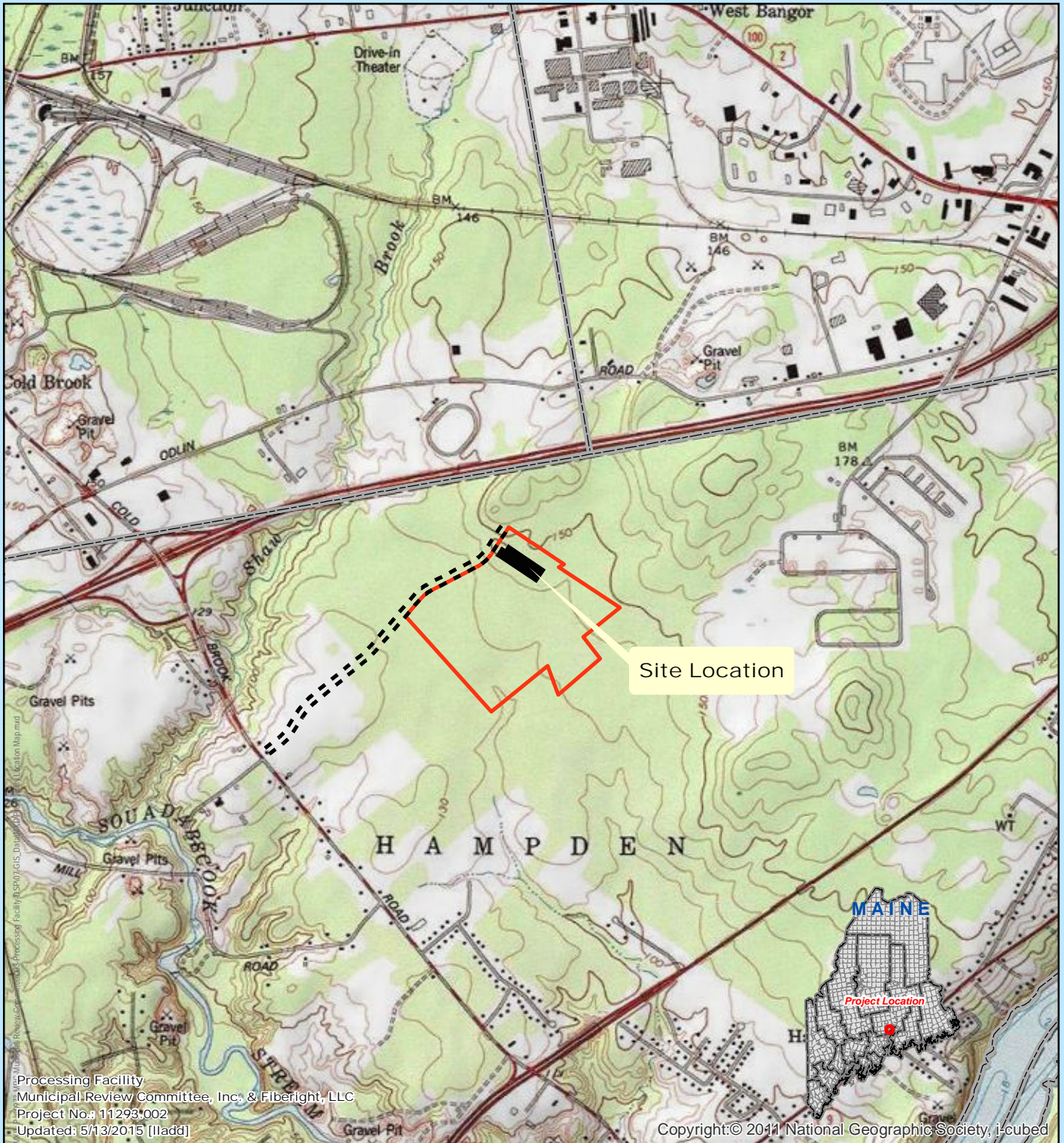
CEO - Fiberright LLC
Title

* A Responsible Official is defined by MEDEP Rule, Chapter 100 as:

- A. For a corporation: a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:
 - (1) The facilities employ more than 250 persons or have gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars); or
 - (2) The delegation of authority to such representatives is approved in advance by the permitting authority;
- B. For a partnership or sole proprietorship: a general partner or the proprietor, respectively;
- C. For a municipality, State, Federal, or other public agency: Either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of EPA).

ATTACHMENT A
LOCATION MAP AND GENERAL SITE PLAN

USGS Topographic Map



Legend

- Proposed Road Location
- Proposed Building Location
- ▭ Proposed Facility Property Boundary
- ▭ Town Boundaries

MAP NOTES:

- 1: ADMINISTRATIVE BOUNDARIES COURTESY OF THE MAINE OFFICE OF GIS (MEGIS).
- 2: TOPOGRAPHIC MAP IS USGS 1:24,000 TOPOGRAPHIC QUADRANGLE. PUBLISHED BY USGS, 2011. ACQUIRED FROM ESRI, 2015.

ATTACHMENT B
POTENTIAL TO EMIT SUMMARY

POTENTIAL TO EMIT SUMMARY
FIBERIGHT, LLC
Proposed Hampden, ME Facility

Criteria Pollutants (Ton/Year)						
	Flare	Boiler#1	Boiler #2	Scrubber #1	Scrubber #2	Total
Carbon Monoxide (CO)	0.19	41.91	41.91	0	0	84.0
Oxides of Nitrogen (Nox)	1.51	19.05	19.05	0	0	39.6
Sulfur Dioxide (SO ₂)	0.31	4.76	4.76	0	0	9.8
Particulate Matter (PM)	0.91	10.29	10.29			21.5
Particulate Matter < 10 µm (PM ₁₀)	0.91	7.62	7.62			16.2
Particulate Matter < 2.5 µm (PM _{2.5})	0.91	6.67	6.67			14.2
Volatile Organic Compounds	0.29	2.48	2.48	2.89	2.89	11.0
ammonia	0.17	1.19	1.19	0	0	2.6
HAPS	0.10	3.08	3.08	0.15	0.15	6.6

Hazardous Air Pollutants (Ton/Year)						
	Flare	Boiler#1	Boiler #2	Scrubber #1	Scrubber #2	Total
acetaldehyde	0	0.16	0.00	0.00	0.00	0.16
acrolein	0	0.76	0.00	0.00	0.00	0.77
arsenic	0	0.00	0.00	0.00	0.00	0.00
benzene	0	0.80	0.00	0.01	0.01	0.82
beryllium	0	0.00	0.00	0.00	0.00	0.00
cadmium	0	0.00	0.00	0.00	0.00	0.00
chromium	0	0.00	0.00	0.00	0.00	0.00
cobalt	0	0.00	0.00	0.00	0.00	0.00
dichlorobenzene	0	0.00	0.00	0.00	0.00	0.01
formaldehyde	0	0.84	0.00	0.00	0.00	0.84
hydrochloric acid	0	0.00	0.00	0.02	0.02	0.03
lead	0	0.01	0.00	0.00	0.00	0.01
manganese	0	0.30	0.00	0.00	0.00	0.31
methanol	0	0.00	0.00	0.00	0.00	0.00
mercury	0	0.00	0.00	0.00	0.00	0.00
n-hexane	0	0.00	0.00	0.02	0.02	0.05
napthalene	0	0.02	0.00	0.00	0.00	0.02
nickel	0	0.01	0.00	0.00	0.00	0.01
phenanthrene	0	0.00	0.00	0.00	0.00	0.00
toluene	0	0.18	0.00	0.10	0.10	0.38

Fiberight, LLC
Flare Potential to Emit

Biogas production rate (SCFH)	65585
Gas Recovery rate	90%
Operational days per year	330
Days venting gas (process upset)	35
Gas flared Annual Total (SCF)	107,034,720

Flare Potential to Emit (ton/year)	
Carbon Monoxide (CO)	0.19
Oxides of Nitrogen (Nox)	1.51
Sulfur Dioxide (SO ₂)	0.31
Particulate Matter (PM)	0.91
Particulate Matter < 10 µm (PM ₁₀)	0.91
Particulate Matter < 2.5 µm (PM _{2.5})	0.91
Volatile Organic Coumpounds	0.29
ammonia	0.17
HAPS	0.10

Emissions Factors			
Pollutant	Emission Factor	Units	Source
Carbon Monoxide (CO)	3.47E-06	lb/cu ft Burned	SCC 50300601, landfill flare, WebFire
Oxides of Nitrogen (Nox)	2.83E-05	lb/cu ft Burned	SCC 50300601, landfill flare, WebFire
Sulfur Dioxide (SO ₂)	5.75E-06	lb/cu ft Burned	SCC 50300601, landfill flare, WebFire
Particulate Matter (PM)	1.70E-05	lb/cu ft Burned	SCC 50300601, landfill flare, WebFire
Particulate Matter < 10 µm (PM ₁₀)	1.70E-05	lb/cu ft Burned	SCC 50300601, landfill flare, WebFire
Particulate Matter < 2.5 µm (PM _{2.5})	1.70E-05	lb/cu ft Burned	SCC 50300601, landfill flare, WebFire
Volatile Organic Coumpounds	5.5	lb/MM cu ft Burned	SCC 10100602, boiler
ammonia	3.2	lb/MM cu ft Burned	SCC 10100602, boiler
HAPS	1.938	lb/MM cu ft Burned	SCC 10100602, boiler

Fiberight, LLC
Boiler #1 Potential to Emit

Heat Input (mmBtu/hr) 48.11
Annual Hours of operation 7920

Pollutant	Ton/Year
Carbon Monoxide (CO)	41.91
Oxides of Nitrogen (Nox)	19.05
Sulfur Dioxide (SO ₂)	4.76
Particulate Matter (PM)	10.29
Particulate Matter < 10 µm (PM ₁₀)	7.62
Particulate Matter < 2.5 µm (PM _{2.5})	6.67
Volatile Organic Coumpounds	2.48
ammonia	1.19
HAPS	3.1

Emissions Factors			
Pollutant	Emission Factor (lb/mmBtu)	Emission Factor (lb/hr)	Source
Carbon Monoxide (CO)	0.22	10.58	Emision factors provided by manufaturer (AP-42 1.6)
Oxides of Nitrogen (Nox)	0.1	4.81	Emision factors provided by manufaturer (AP-42 1.6)
Sulfur Dioxide (SO ₂)	0.025	1.20	Emision factors provided by manufaturer (AP-42 1.6)
Particulate Matter (PM)	0.054	2.60	Emision factors provided by manufaturer (AP-42 1.6)
Particulate Matter < 10 µm (PM ₁₀)	0.04	1.92	Emision factors provided by manufaturer (AP-42 1.6)
Particulate Matter < 2.5 µm (PM _{2.5})	0.035	1.68	Emision factors provided by manufaturer (AP-42 1.6)
Volatile Organic Coumpounds	0.013	0.63	Emision factors provided by manufaturer (AP-42 1.6)

Controls

Baghouse for PM
SNCR for Nox, Reduced EF from 0.22 lb/mmBtu to 0.10 lb/mmBtu

HAPS EMISSIONS		
HAP	lb/mmBtu	Ton/yr
acetaldehyde	8.300E-04	0.16
acrolein	4.00E-03	0.76
arsenic	7.90E-06	0.00
benzene	4.20E-03	0.80
beryllium	1.10E-06	0.00
cadmium	4.10E-06	0.00
chromium	2.10E-05	0.00
cobalt	6.50E-06	0.00
dichlorobenzene		0.00
formaldehyde	4.40E-03	0.84
hydrochloric acid		0.00
lead	4.80E-05	0.01
manganese	1.60E-03	0.30
methanol		0.00
mercury	3.50E-06	0.00
n-hexane		0.00
napthalene	9.70E-05	0.02
nickel	3.30E-05	0.01
phenanthrene	7.00E-06	0.00
toluene	9.20E-04	0.18

Source of EF AP-42 2.4

Fiberight, LLC
Boiler #2 Potential to Emit

Heat Input (mmBtu/hr) 48.11
 Annual Hours of operation 7920

Pollutant	Ton/Year
Carbon Monoxide (CO)	41.91
Oxides of Nitrogen (Nox)	19.05
Sulfur Dioxide (SO ₂)	4.76
Particulate Matter (PM)	10.29
Particulate Matter < 10 µm (PM ₁₀)	7.62
Particulate Matter < 2.5 µm (PM _{2.5})	6.67
Volatile Organic Coumpounds	2.48
ammonia	1.19
HAPS	3.1

Emissions Factors			
Pollutant	Emission Factor (lb/mmBtu)	Emission Factor (lb/hr)	Source
Carbon Monoxide (CO)	0.22	10.58	Emision factors provided by manufaturer (AP-42 1.6)
Oxides of Nitrogen (Nox)	0.1	4.81	Emision factors provided by manufaturer (AP-42 1.6)
Sulfur Dioxide (SO ₂)	0.025	1.20	Emision factors provided by manufaturer (AP-42 1.6)
Particulate Matter (PM)	0.054	2.60	Emision factors provided by manufaturer (AP-42 1.6)
Particulate Matter < 10 µm (PM ₁₀)	0.04	1.92	Emision factors provided by manufaturer (AP-42 1.6)
Particulate Matter < 2.5 µm (PM _{2.5})	0.035	1.68	Emision factors provided by manufaturer (AP-42 1.6)
Volatile Organic Coumpounds	0.013	0.63	Emision factors provided by manufaturer (AP-42 1.6)

Controls

Baghouse for PM
 SNCR for Nox, Reduced EF from 0.22 lb/mmBtu to 0.10 lb/mmBtu

HAPS EMISSIONS		
HAP	lb/mmBtu	Ton/yr
acetaldehyde	8.300E-04	0.16
acrolein	4.00E-03	0.76
arsenic	7.90E-06	0.00
benzene	4.20E-03	0.80
beryllium	1.10E-06	0.00
cadmium	4.10E-06	0.00
chromium	2.10E-05	0.00
cobalt	6.50E-06	0.00
dichlorobenzene		0.00
formaldehyde	4.40E-03	0.84
hydrochloric acid		0.00
lead	4.80E-05	0.01
manganese	1.60E-03	0.30
methanol		0.00
mercury	3.50E-06	0.00
n-hexane		0.00
napthalene	9.70E-05	0.02
nickel	3.30E-05	0.01
phenanthrene	7.00E-06	0.00
toluene	9.20E-04	0.18

Source of EF AP-42 2.4

Fiberight, LLC
Scrubber #1 Potential to Emit

Operating Rate (Tons MSW/year)	214000
Operating Hours	8760
Capture Efficiency	90%
Control Efficiency	95%
VOC Emission (lb/hour)	14.64
VOC Emission (Ton/Year)	2.89

Pollutant	ppmv	Ton/year
acetaldehyde	0.08	0.00
acrolein	0.00	0.00
arsenic	0.00	0.00
benzene	2.40	0.01
beryllium	0.00	0.00
cadmium	0.00	0.00
chromium	0.00	0.00
cobalt	0.00	0.00
dichlorobenzene	1.15	0.00
formaldehyde	0.01	0.00
hydrochloric acid	5.00	0.02
lead	0.00	0.00
manganese	0.00	0.00
methanol	0.00	0.00
mercury	0.00	0.00
n-hexane	6.57	0.02
naphthalene	0.00	0.00
nickel	0.00	0.00
phenanthrene	0.00	0.00
toluene	29.50	0.10

VOC Emission Factor			
Organic Compounds Rumpke Landfill	157.38	lb/hr	Ohio EPA Permit #P0112360
MSW Received at Rumpke 2011	2300000	ton/yr	Ohio EPA Permit #P0112360; PTE
Annual MSW Fiberight ME	214000	ton/yr	Maximum planned annual receipts
Organics to Scrubber	14.6432	lb/hr	Ratio (185000/2300000)*157.38 = 12.66
Reference VOC Concentration	835	ppm	

Fiberight, LLC
Scrubber #2 Potential to Emit

Operating Rate (Tons MSW/year)	214000
Operating Hours	8760
Capture Efficiency	90%
Control Efficiency	95%
VOC Emission (lb/hour)	14.64
VOC Emission (Ton/Year)	2.89

Pollutant	ppmv	Ton/year
acetaldehyde	0.08	0.00
acrolein	0.00	0.00
arsenic	0.00	0.00
benzene	2.40	0.01
beryllium	0.00	0.00
cadmium	0.00	0.00
chromium	0.00	0.00
cobalt	0.00	0.00
dichlorobenzene	1.15	0.00
formaldehyde	0.01	0.00
hydrochloric acid	5.00	0.02
lead	0.00	0.00
manganese	0.00	0.00
methanol	0.00	0.00
mercury	0.00	0.00
n-hexane	6.57	0.02
naphthalene	0.00	0.00
nickel	0.00	0.00
phenanthrene	0.00	0.00
toluene	29.50	0.10

VOC Emission Factor			
Organic Compounds Rumpke Landfill	157.38	lb/hr	Ohio EPA Permit #P0112360
MSW Received at Rumpke 2011	2300000	ton/yr	Ohio EPA Permit #P0112360; PTE
Annual MSW Fiberight ME	214000	ton/yr	Maximum planned annual receipts
Organics to Scrubber	14.6432	lb/hr	Ratio (185000/2300000)*157.38 = 12.66
Reference VOC Concentration	835	ppm	

ATTACHMENT C

BACT ANALYSIS

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FIGURES

Figure 1 – Boiler Configuration

Figure 2 – Scrubber Configuration

APPENDIX

Appendix 1 – NHSM Non-Waste Application

SECTION 1.0 | INTRODUCTION

Chapter 115 of the Maine Department of Environmental Protection (MDEP) regulations requires a new or modified facility to include, with the Air Emission License Application, a demonstration that the emission source in question will receive Best Available Control Technology (BACT) to control emissions from applicable sources. BACT is defined by MDEP as a process where an emission limitation based on the maximum degree of reduction for each pollutant emitted from, or which results from, the new or modified emissions unit which MDEP reviews on a case by case basis taking into account energy, environmental and economic impacts, and other costs, determines is achievable for such emissions unit through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combination techniques for control of each pollutant. In no event shall application of BACT result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR Part 60 and 61 or any applicable emission standard established by MDEP. If MDEP determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof may be prescribed instead to satisfy the requirement for the application of BACT. Such a standard shall, to the degree possible, set forth the emission reduction achievable by implementation of such design, equipment, work practice, or operation and shall provide for compliance by means which achieve equivalent results.

The Criteria Pollutants that will be emitted from the boilers and control devices at the proposed facility are particulate matter (PM_{total}/PM_{10}), sulfur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOCs), and hazardous air pollutants (HAPs). These pollutants have been evaluated in this analysis.

SECTION 2.0 | PURPOSE

The purpose of this document is to provide an analysis of control technologies by using a “top-down” approach to identify the best technology solution, allowing for environmental, energy, and economic considerations. This analysis has been performed for the two boilers associated with the facility’s municipal solid waste processing operations anticipated to run approximately 7,920 hours per year.

Fiberight, LLC (Fiberight) and the Municipal Review Committee (MRC) have followed the “top-down” methodology for determining BACT for the operation of the close-coupled gasifier boilers. As described in EPA’s draft New Source Review Workshop Manual (October 1990), the five steps of a top-down BACT analysis are:

1. Identify all available control technologies applicable to the proposed source.
2. Eliminate technically infeasible options.
3. Rank remaining control technologies by control effectiveness.

4. Evaluate the most effective controls and document results, including a case-by-case consideration of energy, environmental, and economic impacts.
5. Select BACT.

Steps 1 through 5 have been completed for particulate matter (PM), volatile organic compounds (VOC), sulfur dioxide (SO₂), carbon monoxide (CO), and nitrogen oxides (NO_x) emissions associated with the boiler operations at the Facility.

SECTION 3.0 | APPLICABILITY

Chapter 115 of MDEP regulations requires a new or modified facility to include with the Air Emission License Application, a demonstration that the emission source in question will receive Best Available Control Technology (BACT) to control emissions. Officials at MDEP's Bureau of Air Quality have been consulted regarding this project and have indicated that a BACT analysis is required.

SECTION 4.0 | FACILITY DESCRIPTION

The proposed Fiberight facility will consist of a 144,000 square foot building constructed on a 90+/- acre undeveloped parcel located on the east side of Coldbrook Road in Hampden, Maine (see Site Location Map attached to the Application). Proposed operations for the facility will include receipt and processing of municipal solid waste (MSW). Received MSW will initially be sorted to remove oversized items (i.e., masonry, furniture, domestic appliances, carpets, etc.) that have little to no recycling value and would occupy volume further along the process. MSW will then be conveyed to the Primary Sort Trommel where the wood fraction of MSW will be screened, shredded, mixed with Post Hydrolysis Solids, and transferred to the boilers for energy production. The portion of the MSW not screened by the Primary Sort Trommel will continue forward to Secondary Screening where the "fines" (food waste, glass, some paper, and plastic) will be separated from the "overs" (plastic containers, cardboard, and larger papers). The overs will be fed forward to the pulper feed tipping floor, while the unders are conveyed to the Fines Processing System. From that stage forward, the various portions of the waste stream will be sorted for recyclables including: aluminum, ferrous and other metals, plastic containers, film plastics, and glass and processed to create bio-methane and biomass fuel. Sugars will be used for conversion into biofuels, and bio-methane will be piped into the natural gas pipeline located adjacent and to the east of the facility. Sugars, or some portion thereof, may be sold in the future as feedstock for manufacturing process facilities. The solids remaining following the hydrolysis process are transferred to the boilers for fuel. Fiberight anticipates approximately 80 percent of all incoming waste to the facility will be converted into renewable fuels and recyclables which will be sold on the commodities market and the remaining 20 percent will be oversized items, process residues, glass, and grit to be disposed off-site at a secure landfill. The general site and process configuration is presented in **Attachment A** of the license application.

Fiberight has submitted a Non-waste Determination Application for Non-Hazardous Secondary Material (NHSM) to the United States Environmental Protection Agency (EPA) in reference to

the Post-Hydrolysis Solids (PHS) fuel. The application was submitted in accordance with 40 CFR Section 241.3(c) to demonstrate the PHS fuel meets the legitimacy criteria and is not a solid waste. Based on the self-determination that the fuel is a non-waste NHSM, Fiberight does not anticipate operating under the CISWI regulations. The NHSM non-waste application and subsequent EPA correspondence is included in this BACT analysis as **Appendix 1**.

Two close-coupled gasifier/boilers and turbines will be used to meet the heat and power needs of the facility. The boilers will be used to produce steam for process and building heat and for power generation by steam turbines. The boilers will be supplied by Hurst Boilers Inc. The boiler fuel will consist of a combination of PHS and wood recovered during processing of the municipal solid waste. Each boiler is rated for a heat input of 48.11 mmBtu/hr. Each boiler will fire approximately 5 tons per hour (tph) PHS and 0.5 tph wood. The boiler system is equipped with an integral gasifier. The system is equipped with a fuel feed that introduces the PHS/wood to the gasifier and is subjected to heated under-fire air. The gas containing the combustible organics is generated in an oxygen deficient environment that allows combustible organics to be released from the fuel without combustion occurring. The released gases are conveyed to the combustion area of the unit which is in close proximity to the boiler tubes. Air is introduced to the gases with sufficient oxygen to cause combustion to occur. The combustion releases heat that is transferred to the boiler tubes. This system is different from a typical gasification unit as the released combustible gases remain in a closed system rather than being transferred to a separate boiler unit for combustion. A schematic of the close-coupled gasifier boiler is attached as **Figure 1**. A summary of expected emissions is included in **Attachment B** of the license application.

The receiving and processing portion of the facility will be maintained under negative pressure by a series of two fans rated at approximately 50,000 ACFM. The fans will draw ambient air from the processing area where the exhaust from each fan will be treated by one of two VOC/odor scrubber trains. The scrubber train will consist of one Duall Model F105-202s Cross Flow scrubber which will precede a Duall Model PT510-132 Packed Tower Scrubber. The scrubbers' primary purpose will be to treat the fan exhaust and prevent odor from entering the atmosphere, but will also collect nuisance dust in the ambient air stream. The scrubbers are the odor and VOC emission control for the receiving area and the processing area prior to the wash stage. A schematic of the scrubbers system is attached as **Figure 2**. A summary of expected emissions is included in **Attachment B** of the license application.

Tail gas generated during the generation and treatment of biogas for sales and distribution will be burned in an open-flare. The facility's proposed flare will operate 330 days per year and have a biogas recovery rate of 90% emitting CO, NO_x, SO₂, PM, VOCs, and HAPs. The remaining 35 days account for maintenance shutdown and non-working days where the flare will vent 100% of the biogas generated to the flare. The flare is the emission control device for biogas during biogas generation process upset conditions. The flare is designed with sufficient capacity to combust 100% of the potential maximum biogas generation of 65,585 SCFH. A summary of expected emissions is included in **Attachment B** of the license application.

SECTION 5.0 | ANNUAL EMISSION ESTIMATES

Emissions from the Fiberright processing facility are primarily the result of the two boilers. The boilers generate CO, NO_x, SO₂, PM, VOCs, and HAPs. The Maximum Potential to Emit (PTE) estimates have been calculated using information provided by Fiberright, assuming the facility will be actively processing waste 330 days per year or 7,920 hours per year. The PTE calculations and the boiler operational parameters spec sheet are attached in **Appendix B** of the license application.

**TABLE 1-1
FIBERRIGHT, LLC
MAXIMUM POTENTIAL TO EMIT**

Criteria Pollutants (Ton/Year)						
	Flare	Boiler #1	Boiler #2	Scrubber #1	Scrubber #2	Total
Carbon Monoxide (CO)	0.2	41.9	41.9			84.0
Oxides of Nitrogen (NO _x)	1.5	19.1	19.1			39.6
Sulfur Dioxide (SO ₂)	0.3	4.8	4.8			9.8
Particulate Matter (PM)	0.9	10.3	10.3			21.5
Particulate Matter < 10 µm (PM ₁₀)	0.9	7.6	7.6			16.2
Particulate Matter < 2.5 µm (PM _{2.5})	0.9	6.7	6.7			14.3
Volatile Organic Compounds	0.3	2.5	2.5	2.9	2.9	11.0
Ammonia	0.20	1.2	1.2			0.20
HAPS	0.1	3.1	3.1	0.15	0.15	6.6

SECTION 6.0 | IDENTIFICATION OF CONTROL ALTERNATIVES

Proposed control measures are primarily directed at limiting NO_x, VOC, and PM emissions as these constituents are the pollutants of concern associated with these types of operational units.

6.1 Nitrogen Oxides (NO_x)

The production of NO_x in a combustion system is primarily the result of nitrogen present in the fuel or it is generated due to high operation temperature (thermal NO_x) during combustion. The manufacturer of the drying system assumed nitrogen content of 0.45% in the fuel for their emissions estimates. Thermal NO_x is typically formed at temperatures greater than 2,370°F and is not expected to be a significant contributor to the overall NO_x emissions from this project.

The following are available NO_x control mechanisms:

Combustion Controls: It may be possible to set operational parameters (excess air, recycled air, burner inlet temp, etc.) to minimize NO_x emissions from the unit. In addition, wood fuel is inherently low in bound nitrogen. There is little to no financial

impact from using combustion controls and no additional environmental impacts. This is a technically feasible method for reduction of NO_x.

Selective Catalytic Reduction (SCR): SCR is an add-on NO_x control device placed in the exhaust stream following the boiler and involves injecting ammonia (NH₃) or urea into the flue gas in the presence of a catalyst. The NH₃/urea reacts with NO_x in the presence of a catalyst to form water and nitrogen. The presence of condensable organics and/or high concentrations of particulates may have a masking effect on the catalyst surface causing a reduction or cessation of catalyst activity. The SCR also functions better on systems with steady operational loads. Load fluctuations can cause variations in exhaust temperature and NO_x concentration which can create problems with the effectiveness of the SCR system. SCR systems will also require reheating of the exhaust stream. The gas exiting the boiler system is anticipated to be approximately 275°F. The gas will need to be reheated to between 400°F and 800°F to effectively control NO_x by SCR. This will require additional combustion which will increase both operational cost and emissions. A typical SCR system will provide control between 70% and 90%. SCR systems are typically found in boilers exceeding 100mmBtu/hr heat input. Due to lack of space for placement of a catalyst and insufficient boiler size to effectively operate SCR, this option is technically infeasible.

Selective Non-Catalytic Reduction (SNCR): SNCR relies on the injection of ammonia or urea into the flue gas but unlike SCR, does not use a catalyst. The injection site and temperature affect the control efficiency of this system. The reagent must be injected at a point in the system that operates at an optimum temperature between 1600°F and 2100°F, and provides sufficient residence time for the injected ammonia to react with the NO_x. The Hurst Boiler system is designed with an injection point following the afterburner in order to allow for SNCR. SNCR application has proven effective in NO_x reduction in biomass boilers of similar size. Cost of the SNCR is an operating expense that will be driven by the variation of NO_x reduction requirements and reagent use. Through operational controls, the system can be optimized to reduce operation cost associated with an SNCR. Hurst provided a controlled emission rate estimate of 0.10 mmBtu/hr. This system is technically feasible.

Proposed NO_x BACT

Fiberight is proposing to utilize SNCR for both boilers and will represent BACT for NO_x emissions. Use of this control system will allow the facility to attain emission levels below the Minor Source Threshold of 100 tons per year.

6.2 Particulate Matter (PM):

Particulate Emissions will be generated by the boilers from combustion of shredded wood fines and post hydrolysis solids (PHS). The raw material feed rate and combustion of residues will be the primary contributor to PM emissions from the facility. The following is a discussion of the available PM control devices:

Cyclone/Multiclone: A cyclone or multiclone is a dry mechanical collector utilizing centrifugal and inertial forces for particulate/dust collection. Cyclones use the velocity differential across the cyclone to separate particles of various sizes. A multiclone uses several smaller diameter cyclones to improve collection efficiency for smaller particles. Cyclone collectors may be used in series with each other, as a pre-filtration system in front of higher efficiency systems, or for product separation and reclamation.

Cyclones are simple and inexpensive to operate and, dependent on design criteria, can provide control efficiencies adequate to meet certain emission goals. Typically, cyclones provide a reduced efficiency as particulate size decreases. Correctly designed cyclones can potentially provide control efficiency up to 95% on PM <10µm but efficiency reduces for particles below PM10. As approximately 47% of anticipated PM for the facility will be smaller than 2.5µm, the use of a cyclone or multicone system would not be technically feasible for treatment for PM emissions from the boiler units due to the expected percentage of particulates less than 10 µm.

Fabric Filters/Baghouses: Fabric filters in various configurations are capable of control efficiencies exceeding 99% for particulate matter varying in aerodynamic diameter. In the application of the boilers proposed for the Fiberight facility, the relatively low moisture content of the emissions (approximately 13%) would not be expected to result in condensable particulates and subsequent overloading of associated fabric filters. Operation of these units, when compared to other controls, is relatively simple and offers a large number of fabrics and configurations that can be customized to better suit the specific process. The use of a bag house control also allows the collected material to be removed from the hopper for disposal or subsequent processing for removal of water.

Electric Static Precipitator (ESP): ESPs are widely used for the control of particulates from a variety of combustion sources including wood combustion. An ESP is a particle control device that employs electric fields to charge the particulates and remove them from the gas stream onto oppositely charged collector plates. There are a number of different designs that achieve very high overall control efficiencies. Control efficiencies typically average over 98% with control efficiencies almost as high for particle sizes of one micrometer or less. ESPs are available as a dry electrostatic precipitator or a wet electrostatic precipitator (WESP). The method of collection is the same in both systems with the primary difference being the use of water to remove the PM from the collection media in the WESP system. The advantage of dry systems is that they may have a lower capital cost and reduced waste disposal problems. Wet systems may be less expensive to operate and are slightly more efficient at capturing very small particles but would add an additional wet waste stream.

As discussed in EPA's *Wet Electro Static Precipitator* and *Dry Electro Static Precipitator* fact sheets, ESPs are physically large units which will not provide the control over large particle size distribution variations. The units require a large volume of flue gas to achieve the residency time required to reach the unit's maximum efficiency. ESPs

function optimally in steady state conditions. The proposed boiler units will be prone to load and flow fluctuations and wide variation in particulate size. These fluctuations would affect the efficiency of either a dry or wet ESP. This control device is technically feasible for the proposed facility but has been removed from consideration of BACT as it is not anticipated to achieve higher control efficiencies than the controls previously discussed. ESPs typically have higher capital and operating costs than baghouses but do not provide significantly improved particulate controls on smaller systems.

Exhaust Gas Recycle: Exhaust Gas Recycling (EGR) is a potential pollutant control mechanism for biomass combustion units. EGR is typically used to recover heat and reduce the emission from the final exhaust point of the system. The recycling of gas will bring the pollutants present in the exhaust gas back into contact with the heat source (flame) resulting in the destruction of some of the condensables, VOCs, and particulates. Gas recycling is limited by the ability to provide make-up air and necessary gas condition for drying. EGR is technically feasible but will not provide sufficient control to be considered BACT without add-on control devices.

Proposed Particulate Matter BACT

Based on the varying size of anticipated particulate matter and ability to collect and recirculate filtered material back into the processing stream, Fiberight is proposing to operate a filter fabric/baghouse control system. The proposed baghouse system will consist of a BETH USA BETHPULS bag filter single-line baghouse. Each boiler will exhaust to an individual baghouse for control of PM. Fiberight will use good housekeeping practices to maintain and replace fabric filters and remove collected material from the hopper as necessary. The proposed baghouse configuration will have a PM emission rate of approximately 5.2 lbs/hr.

6.3 Volatile Organic Compounds (VOC)

VOC generation in regards to industrial boilers typically results from vaporization of fuels or leaks in oil or gas piping. In the case of a biomass fired boiler, VOCs would primarily occur during combustion while operating in process upset conditions or failing to maintain the equipment.

Good Combustion Practices: Good combustion practices include operating the system based on the design and recommendation provided by the manufacturer and by maintaining proper air-to-fuel ratios with periodic maintenance checks. A well operated system utilizing good combustion practices is the most prevalent and cost effective measure for reducing VOC emissions from the proposed boilers.

Proposed VOC BACT

Proposed good combustion practices to be implemented by Fiberight will maintain VOC emissions below the threshold for a minor source. Good combustion practices will be considered BACT for this project.

6.4 Carbon Monoxide

CO emissions are generally a product of incomplete combustion. The most effective methods for reduction of CO emissions are designed to complete the combustion process. Control devices can include add-on controls and good combustion practices.

Good Combustion Practices: Good combustion practices include operating the system based on the design and recommendation provided by the manufacturer. A well operated combustion system will be balanced to limit both CO and NOx. A system that maximizes the combustion of the fuel will emit the least amount of CO possible. Combustion parameters may include temperature, excess air, fuel feed rate, and gas recirculation. Good combustion practices are the most prevalent and cost effective measure for reduction of CO emissions

Proposed CO BACT

Fiberight is proposing to use good combustion practices for control of CO emissions.

6.5 Sulfur Dioxide

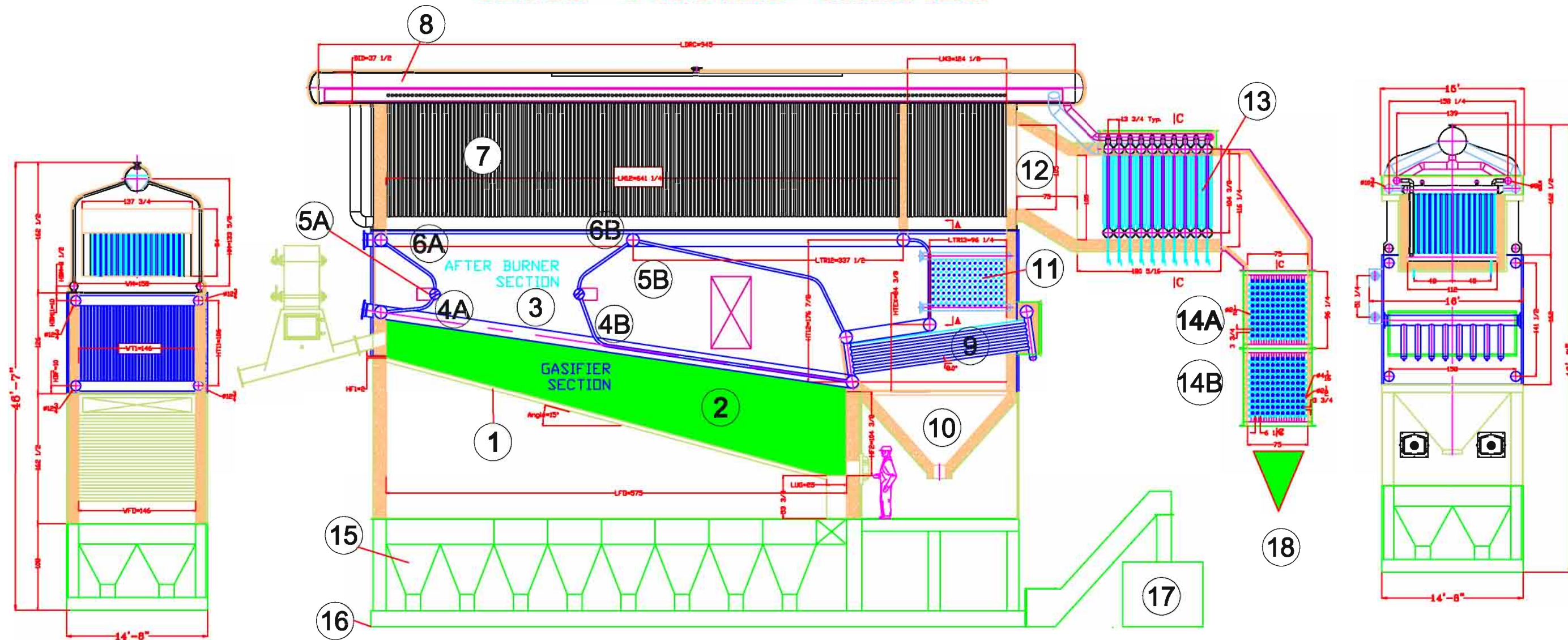
The PHS and wood fuel is inherently low in sulfur content. The low projected emissions for SO₂ do not warrant the installation of additional control devices. The anticipated fuel sulfur content is approximately 0.05% as received. The use of this low sulfur fuel will be considered BACT for SO₂ for this project.

Proposed CO BACT

Fiberight is proposing to use low sulfur content fuel and good combustion practices for control of SO₂ emissions.

FIGURE 1
BOILER CONFIGURATION

CLOSE-COUPLED GASIFIER



Close Coupled Gasifier Drawing Key

- | | | |
|--|---|--|
| <p>1 Reciprocating Grate</p> <p>2 Gasifier Section</p> <p>3 After Burner Section</p> <p>4 AB Refractory Arch</p> <p>5 AB Overfire Air</p> <p>6 AB Water Walls</p> <p>7 Membrane Wall Section</p> <p>8 Main Stream Drum</p> <p>9 Screener Tube Bank (Cooler)</p> | <p>10 U-Hopper</p> <p>11 Super Heater Section (Turbine Re-heater)</p> <p>12 Transition</p> <p>13 AB Convective Section (Cassette Style)</p> <p>14 2-Stage Economizer (2nd Stage for DA)</p> <p>15 Sifting Hoppers</p> <p>16 Wet Ash Conveyor</p> <p>17 Ash Bin</p> <p>18 Flue Gas to Emissions Control</p> | |
|--|---|--|

HURST BOILER & WELDING CO., INC.

COOLIDGE, GEORGIA 31738
 PH: 229-346-3545 FAX: 229-346-3874

**3500 CLOSE COUPLE GASIFIER
 RECIPROCATING GRATE STOKER**

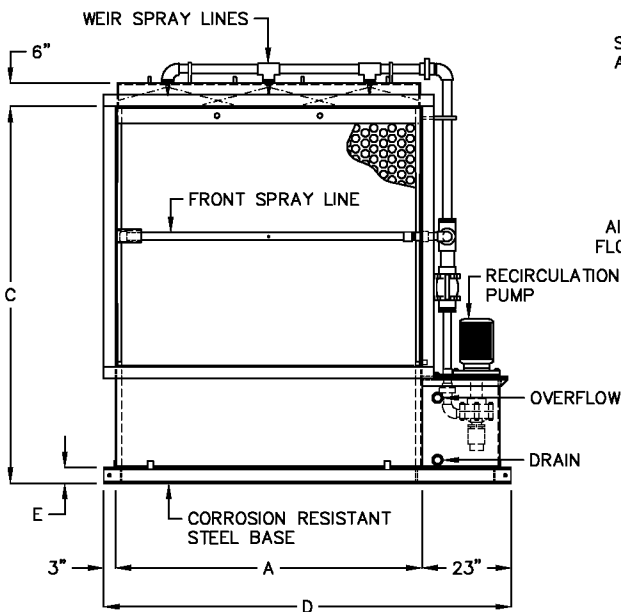
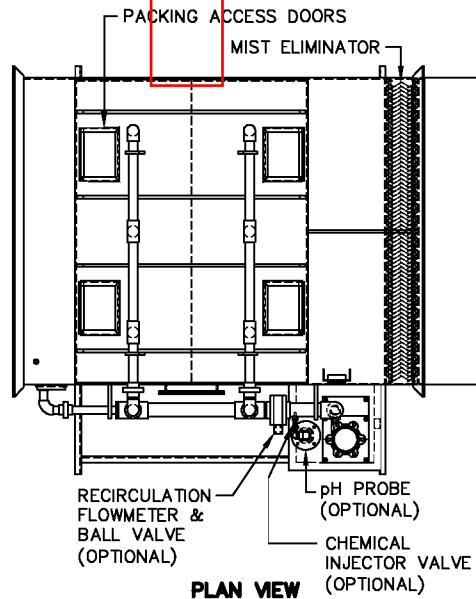
for: **GLOBAL ENERGY**

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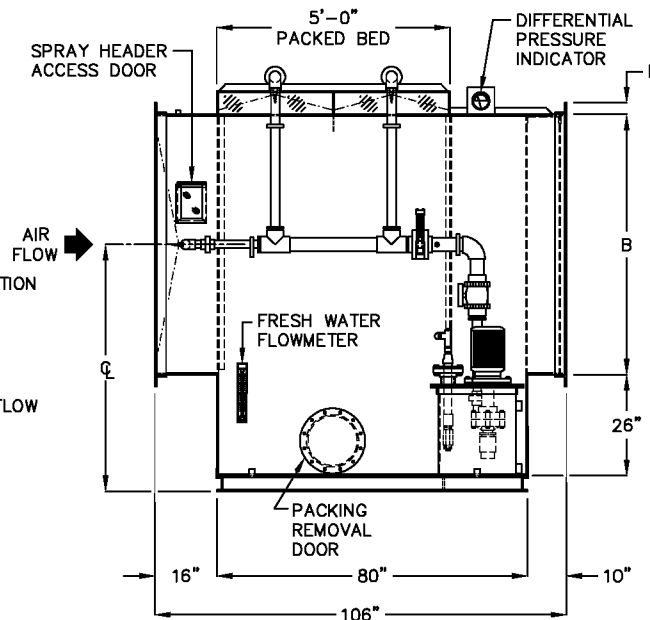
FIGURE 2
SCRUBBER CONFIGURATION

NOTES:

1. DIMENSIONS IN INCHES, WEIGHTS IN POUNDS.
2. DIMENSIONS ARE APPROXIMATE ONLY, DO NOT USE FOR FABRICATION.
3. STANDARD MATERIALS ARE PVC, CPVC, PP, & PVC/FRP.
4. MAXIMUM PRESSURE DROP ACROSS THE SCRUBBER AT DESIGN CONDITIONS IS 2 1/2" W.C.



LEFT ELEVATION



FRONT ELEVATION

MODEL NUMBER	MAX. CFM	A	B	C	D	E	F	℄	DRY WEIGHT	PUMP QTY. AND H.P.
F105-18S	500	18	10	39	44	3	2	34	784	(1) 2 HP
F105-22S	1,000	22	14	43	48	3	2	36	942	(1) 2 HP
F105-28S	2,000	28	20	49	54	3	2	39	1,094	(1) 2 HP
F105-32S	2,700	32	24	53	58	3	2	41	1,148	(1) 2 HP
F105-37S	3,700	37	29	58	63	3	2	43 1/2	1,237	(1) 2 HP
F105-41S	4,700	41	33	62	67	3	2	45 1/2	1,398	(1) 2 HP
F105-45S	6,000	45	37	66	71	3	2	47 1/2	1,491	(1) 5 HP
F105-52S	8,000	52	44	73	78	3	2	51	1,654	(1) 5 HP
F105-58S	10,000	58	49	78	84	3	3	53 1/2	1,849	(1) 5 HP
F105-64S	12,000	64	54	83	90	3	3	56	1,997	(1) 5 HP
F105-69S	14,000	69	59	88	95	3	3	58 1/2	2,437	(1) 5 HP
F105-74S	16,000	74	64	93	100	3	3	61	2,468	(1) 5 HP
F105-79S	18,000	79	67	97	105	4	3	63 1/2	2,561	(1) 7 1/2 HP
F105-84S	21,000	84	71	101	110	4	3	65 1/2	2,746	(1) 7 1/2 HP
F105-90S	23,000	90	73	103	116	4	3	66 1/2	2,990	(1) 7 1/2 HP
F105-96S	25,000	96	73	103	122	4	3	66 1/2	3,173	(1) 7 1/2 HP
F105-104S	27,000	104	73	103	130	4	3	66 1/2	3,524	(1) 7 1/2 HP
F105-112S	30,000	112	73	103	138	4	3	66 1/2	3,918	(1) 7 1/2 HP
F105-123S	32,500	123	73	103	149	4	3	66 1/2	4,081	(1) 7 1/2 HP
F105-135S	35,000	135	73	103	161	4	3	66 1/2	4,473	(1) 7 1/2 HP
F105-157S	40,000	157	73	103	183	4	3	66 1/2	5,137	(2) 7 1/2 HP
F105-179S	45,000	179	73	103	205	4	3	66 1/2	5,635	(2) 7 1/2 HP
F105-202S	52,000	202	73	103	228	4	3	66 1/2	6,233	(2) 7 1/2 HP
F105-224S	57,000	224	73	103	250	4	3	66 1/2	6,794	(2) 7 1/2 HP
F105-247S	63,000	247	73	103	273	4	3	66 1/2	7,329	(2) 7 1/2 HP

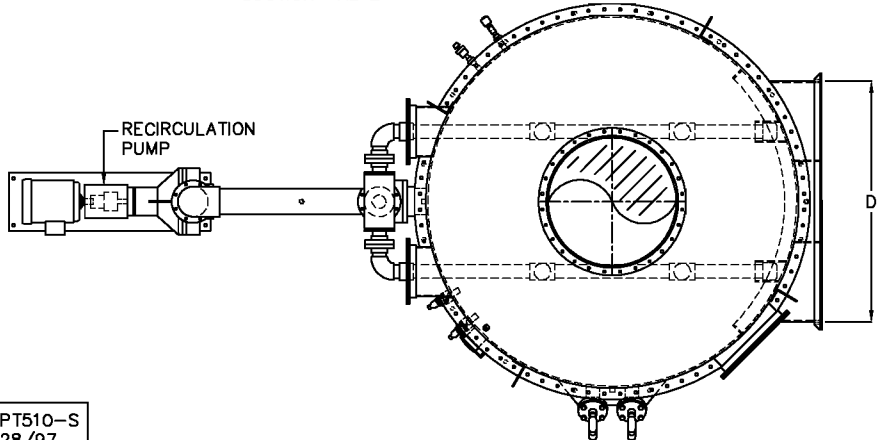
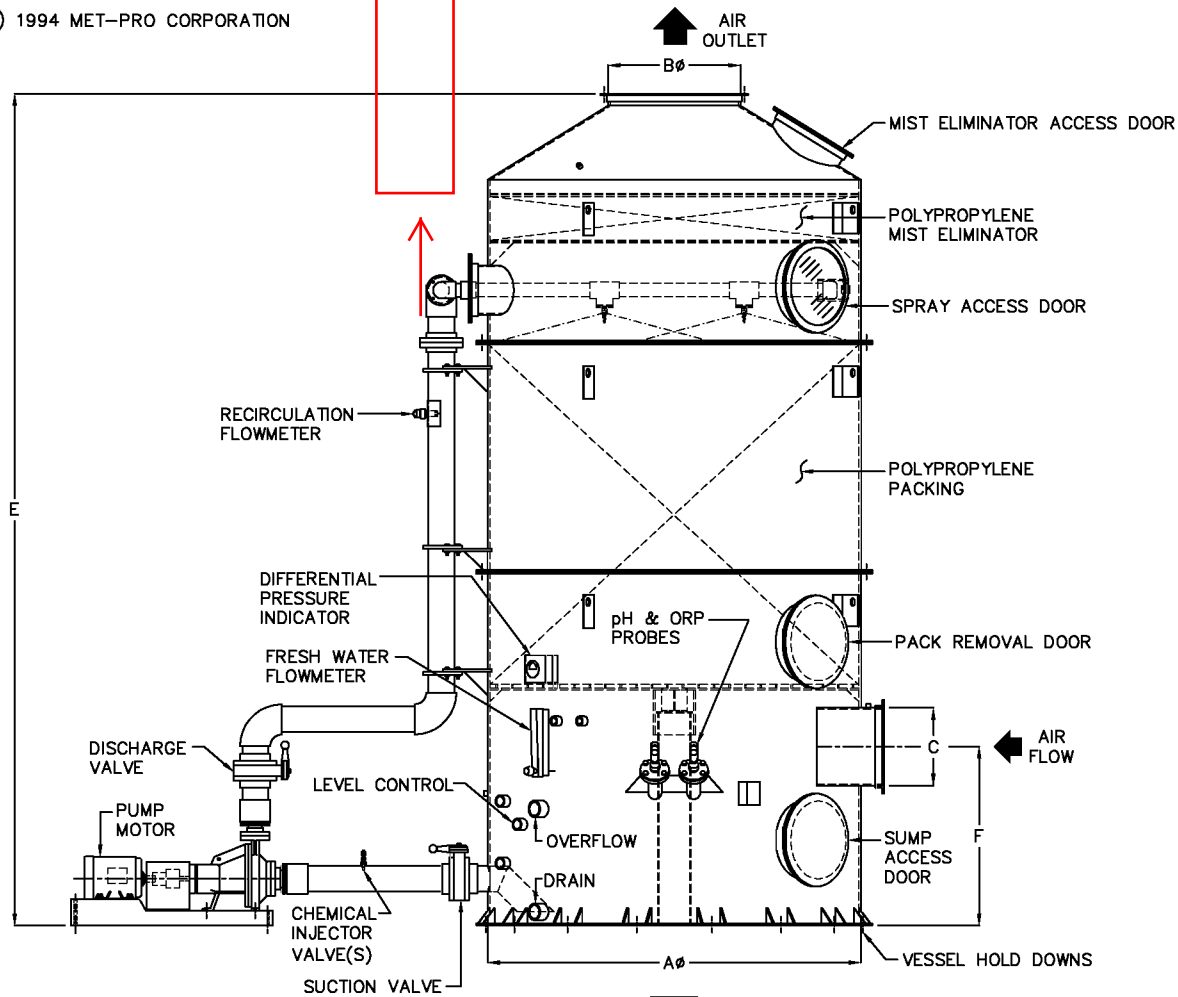
**MODEL F105 SCRUBBER
(SELF CONTAINED RECIRCULATION)**



DUALL DIVISION
1550 INDUSTRIAL DRIVE
OWOSSO, MI 48867

DATE	DUALL JOB NO.
AIR FLOW RATE	C.F.M.
PRESSURE DROP	W.C.
RECYCLE RATE	G.P.M.
MAKE-UP RATE	G.P.H.

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MODEL NUMBER	MAX. CFM	Aφ	Bφ	C	D	E	F	RECYCLE RATE	PUMP HP	DRY WEIGHT
PT510-24	1,500	24	12 3/4	12 3/4 φ	232	42	20	1 1/2	900	
PT510-36	3,500	36	16	16" φ	236	44	46	3	1,600	
PT510-48	6,500	48	20	20" φ	242	46	82	3	2,300	
PT510-60	10,500	60	26	26" φ	246	49	126	5	2,700	
PT510-72	15,500	72	30	30" φ	250	51	185	5	4,300	
PT510-84	21,000	84	36	19 5/8	255	45	250	7 1/2	5,700	
PT510-96	27,500	96	42	20 1/2	250	46	326	7 1/2	6,900	
PT510-108	34,500	108	46	24	256	48	415	15	8,300	
PT510-120	43,000	120	52	26	262	49	510	15	10,900	
PT510-132	52,000	132	56	29	268	51	620	20	11,400	
PT510-144	62,000	144	62	32	274	52	735	20	12,900	

NOTES:

1. DIMENSIONS IN INCHES, WEIGHTS IN POUNDS.
2. DIMENSIONS ARE APPROXIMATE ONLY, DO NOT USE FOR FABRICATION.
3. STANDARD MATERIALS ARE PVC, CPVC, PP, & PVC/FRP.
4. MAXIMUM PRESSURE DROP ACROSS THE SCRUBBER AT DESIGN CONDITIONS IS 4 1/2" W.C.
5. LIFTING LUGS ARE SUPPLIED BY DUALL AS REQUIRED.

**MODEL PT510
ODOR CONTROL SCRUBBER**



DUALL DIVISION
1550 INDUSTRIAL DRIVE
OWOSSO, MI 48867

DATE	DUALL JOB NO.
AIR FLOW RATE	C.F.M.
PRESSURE DROP	W.C.
RECYCLE RATE	G.P.M.
MAKE-UP RATE	G.P.H.

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APPENDIX 1

NHSM NON-WASTE APPLICATION

Non-Waste Determination Application for
Non-hazardous Secondary Material -
Fermentate from a Cellulosic Ethanol Plant
Pursuant to 40 CFR Section 241.3, Standards and Procedures for
Identification of Non-Hazardous Secondary Materials
6/7/2013

Submitted to U.S. EPA Region 7
Administrator Bob Perciasepe
11201 Renner Blvd.
Lenexa, KS 66219

Submitted by:
Fiberight LLC
PO Box 21171
Catonsville, MD 21228
Craig Stuart Paul, CEO
410-340-9387

Summary:

This document is an application submitted pursuant to 40 CFR Section 241.3(c). That regulation allows for certain types of non-hazardous secondary materials (NHSM) to be determined by the U.S. EPA to be non-wastes when they are used for combustion. Fiberight proposes herein that the material it wishes to produce for sale at its cellulosic ethanol plant to various customers for use in combustion units meets the criteria spelled out in the above referenced regulation; and as such is not a solid waste.

The material is similar in content to more widely used fuels, and emissions from its burning should be similar as well. Tables are included in this document that compare both constituents with other fuels, and likely air emissions.

Emission factors for criteria pollutants are likely to be similar to the burning of wood or bagasse. Metals emissions were calculated directly from analyses of the NHSM for metals content. Neither the criteria nor hazardous waste pollutants are much different from those emitted from wood, bagasse, coal, TDF, and so on. The material has a significant heating value, similar to bagasse and wood and as such, should be harvested to produce renewable energy. With its fuel made from what would otherwise be waste, Fiberight is at the forefront of the cellulosic ethanol production technology.

Introduction:

The Process: Fiberight is a privately held company founded in 2007 with current operations in Virginia, Maryland and Iowa. As a leading edge clean technology company, our team focuses on transforming post-recycled municipal solid wastes and other organic feed stocks into next generation renewable biofuels, with cellulosic ethanol as the core product. Pilot plant facilities have been on-going during 2008-2009. In November 2009, Fiberight purchased a former dry-mill corn ethanol plant in Blairstown, IA with the intent to cost efficiently retrofit this plant for commercial level operations. Initial stage investment for the company's \$30 million Iowa plant will enable the company to commence production of its demonstration scale facility in early 2015 to convert industrial and municipal solid wastes into cellulosic ethanol and biogas using proprietary sorting, pulping, enzymatic hydrolysis and recycling technology. Following the demonstration phase at our Virginia plant from 3rd Qtr 2012 – 1st Qtr, 2013 the Iowa plant will be scaled to commercial production capacity of 6 MMgy by early 2016 Fiberight is targeting rapid expansion of its proto-type commercial plants in markets with 100,000 or more population within a five mile radius, with special focus on municipalities with high-stranded trash costs or landfill limitations.

Fiberight's Targeted Fuel Extraction (TFE) process recognizes that solid waste is neither homogeneous nor fully convertible to energy. Fiberight has developed a remarkably innovative system that bifurcates organic and inorganic wastes and converts them according to type. Fiberight's TFE process separates, cleans and processes organic and hydrocarbon fractions then converts the organic fraction into cellulosic biofuel, the hydrocarbon fraction into plant energy and electricity, and the inert fraction into recyclables or other beneficial products. It is the

residue from the fermentation of the organic (biomass such as paper and cardboard) contained in the waste that Fiberight is targeting for sale for the use of replacing other fuels at the end use facilities.

Novel technologies such as enzyme recycling and cellulosic sugar concentration are being developed to control costs and the company has tested these processes on a commercial scale. During 2012, Fiberight achieved high yield conversion factors at its Lawrenceville, VA pilot plant due to recent evolution of the robust enzyme catalysts used in strategic partnership with technical partner, Novozymes. Fiberight is now able to forecast, with extensive data back-up, its ability to produce cellulosic ethanol in a commercially viable process.

It is the understanding of the different compositions of materials contained in the nation's MSW, and the ability to focus optimized processes for their conversion without creating dangerous emissions or effluents, that differentiates Fiberight's technology from other less efficient thermal or chemical waste to energy projects. Most importantly, the technology platform has been tested at an industrial scale, all the way through finished transportation grade fuel; making Fiberight one of the first companies in the US to achieve this important milestone.

By applying a combination of expertise in the waste industry with specialty biotech knowledge, Fiberight has created a means to efficiently sort, pulp, process, digest and refine the abundant cellulosic content in organic waste materials. Our processes produce high yields of glucose which is converted into alcohol and then into the end product – fuel grade cellulosic ethanol. What differentiates Fiberight from other biofuel approaches is that we have applied our practical materials handling expertise in the recycling and waste management industries to develop the concept into a commercially viable business. Our team has taken its knowledge about production plant design, waste processing methodologies, and our expertise regarding enzymatic hydrolysis to build a profitable and solution-driven business.

Fiberight's Key Process:

- Pre-sort & primary pulping removes possibly useable materials to optimize process
- Separates Biogenic from hydrocarbon based components for efficient conversion to biofuel and credit qualification
- Creates clean plastics stream for recycling
- Wash stage for quality fractionation & ash removal
- Continuous fed batch – high solids loading for cellulosic sugar concentration
- Cellular disruption for yield maximization combined with sterilization stage
- Sterility management in enzymatic digestion & fermentation
- Secondary wash to overcome glucose inhibition & glucose losses

- Enzyme recovery enables high enzyme dosing and yield improvement while controlling cost
- Glucose concentration step improves ethanol yield & energy balance while obviating “stuck” fermentations
- By products for beneficial sale or energy production –including residual organic biomass and waste plastic fraction which is unsuitable for recycling but ideal for energy

Definition of Biomass output -The fermentation process is designed around a clean biomass pulp. It is optimized for enzymatic conversion. The Hydrolysis of the biomass fraction of the community's waste produces liquid sugars for conversion to biofuels, and a byproduct that we refer to as fermentate or NHSM. These are the materials left after the extractable sugars have been removed from the organic fraction of the carefully targeted separated waste.

This document is intended to meet the requirements of 40 CFR 241.3(c) and (d)(2) which allow that certain materials meeting the rule specified legitimacy criteria are not wastes when combusted for energy recovery.

These provisions are codified into regulations at [40 CFR part 241.3](#). According to the regulation at 241.3(c) The Regional Administrator may grant a non-waste determination that a non-hazardous secondary material that is used as a fuel, which is not managed within the control of the generator, is not discarded and is not a solid waste when combusted. The Fiberight facility is located within Region 7. This application is submitted to the Region 7 Administrator. The criteria and process for making such non-waste determinations includes the following:

(1) Submittal of an application to the Regional Administrator for the EPA Region where the facility or facilities are located or the Assistant Administrator for the Office of Solid Waste and Emergency Response for a determination that the non-hazardous secondary material, even though it has been transferred to a third party, has not been discarded and is indistinguishable in all relevant aspects from a fuel product. The determination will be based on whether the non-hazardous secondary material that has been discarded is a legitimate fuel as specified in paragraph (d)(1) of this section and on the following criteria:

(i) Whether market participants treat the non-hazardous secondary material as a product rather than as a solid waste;

(ii) Whether the chemical and physical identity of the non-hazardous secondary material is comparable to commercial fuels;

(iii) Whether the non-hazardous secondary material will be used in a reasonable time frame given the state of the market;

(iv) Whether the constituents in the non-hazardous secondary material are released to the air, water or land from the point of generation to the point just prior to combustion of the secondary material at levels comparable to what would otherwise be released from traditional fuels; and

(v) Other relevant factors.

Section (d)(1) establishes the legitimacy of the material as a fuel product. Each of these criteria above and the legitimacy criteria are addressed separately below.

40 CFR 241.3(c)(1)(i): Do market participants treat the material as a product rather than a solid waste?

The Fibright process is innovative, and there are no competitors to compare this material to. We believe that in the future the market will treat this newly developed material as a valuable product, based on its significant heating value, and its similarity to other fuels, including fossil fuels. Using the fermentate for energy recovery is an opportunity to reduce greenhouse gas emissions (GHG) by replacing fossil fuels with material derived from what is essentially biomass; mostly paper and cardboard.

40 CFR 241.3(c)(1)(ii): Is the chemical and physical identity of the NHSM comparable to commercial fuels?

Table 1 is a comparison of the constituents of the material and several other fuel types.

Table 1
Comparison of Fermentate to Common Fuels

% by wt.	Spr Crk Coal ^c	Ill. Coal ^{c,m}	Oil ^b	Wood ^{a,m}	Bagasse ^p
Ash	5.7	10.80	0.09	5.30	0.80
Carbon	79.3	69.00	85.71	49.70	19.20
Chlorine		0.04	-	-	-
Hydrogen	5.9	4.90	10.14	5.40	2.60
Nitrogen	0.96	1.00	0.51	0.20	0.15
Oxygen	17.89	10.00	0.92	39.30	77.10
Sulfur	0.35	4.30	2.63	0.10	trace
HHV (Btu/lb)	9,190	10,300	18,192	8,370 (dry)	3,280
Moisture	24.1	17.6	0	5 - 75	58.7
Mercury (lb/mmBtu)^s	8.30E-05			3.50E-06	

% by wt.	MSW ^l	RDF ^l	TDF ^q	Poult.Litter	NHSM. ^o
Ash	16.00	6.00	4.78	15.7	4.30
Carbon	27.90	36.10	83.87	27.2	56.30
Chlorine	0.10	0.10	0.09	0.71	0.20
Hydrogen	3.70	5.10	7.09	3.7	7.92
Nitrogen	0.20	0.80	0.24	2.7	0.49
Oxygen	20.70	31.60	2.17	23.1	21.40
Sulfur	0.10	0.10	1.2	0.29	0.05
HHV (Btu/lb)	5,100	6,200	15,500	4,637	3,787
Moisture	31.3	20.2	0.62	27.4	65.1
Mercury (lb/mmBtu)^s		5.50E-06		5.43E-06	3.96E-05

As the table shows, the fermentate has a similar composition to the other commonly used fuels. Moisture is comparable with wood or bagasse, and the carbon and hydrogen components are similar to wood. In fact, the composition of the residuals is most similar to wood. Green wood is generally accepted to have an average moisture content of 40 to 50%, with as-received heating values of around 4500 Btu/lb..

Therefore, to estimate emissions from burning the material we have used EPA's AP42 criteria pollutant emission factors for wood. There is robust data for the emission factors for wood, which is not the case for biomass or paper mill sludge. For metals, we have conservatively assumed that metals in the washed pulp would not participate in the fermentation process, and would be 100% contained in the residual material. The volatility of each of the metals was then determined, and the destination (fly ash, bottom ash) was determined from research paper authored by Leslie Sloss titled, *Volatility of Trace Elements Found in Coals and Solid Fuels* (Clarke and Sloss). The metals that were assumed to be in the fly ash would be controlled by the existing bag house on Boiler No. 5. A conservative control efficiency of 93% was used to develop final emission factors. Ninety three percent is the collection efficiency given in Minnesota Rules for particles smaller than 10 microns. We, again conservatively, assumed that the emitted particles would all be smaller than 10 microns.

The emission rate of these elements was compared to emissions from coal, wood, oil bagasse, RDF, and MSW. EPA presents factors for coal, oil and wood as both controlled and uncontrolled. We assumed that most of the measurements would be controlled because boilers burning these types of fuels do have particulate emission controls; typically ESPs or bag house filters.

Table 2, shows the estimated emission rates of criteria pollutants of various fuel, and we have assumed that the most similar emissions would result from wood burning, with its similar moisture content and material makeup. Also, the NHSM discussed here is primarily derived from wood (paper and cardboard). Table 3 shows the estimated element emission rates of NHSM and other fuels. The emissions of elements are compared in Table 4. by dividing the NHSM emission rate by those factors from coal, or from wood when no factor for coal was available for a given pollutant. Table 4 shows that many of the metals are emitted in quantities equal to those from other fuels, and some of them are emitted at lower rates. There is a higher level of emissions predicted for some of the metals as compared to coal. Many of the metals listed are not considered hazardous, and they will not be discussed further herein. Those metals that are classified as hazardous air pollutants by 40 CFR Part 63, (HAPs), and that do show predicted emissions at higher values than other fuels are manganese and nickel.

Manganese is considered hazardous at air concentrations that are much higher than that found in ambient air. . The danger from manganese over exposure is in the work place; most commonly from those working as welders. The metal causes neurological damage at chronic exposures greater than 0.2 ug/m³ on an annual basis. There is no danger quantified by the Minnesota Department of Health for short term exposures. For illustrative purposes, a 25 MW coal power plant would produce approximately 0.0092 ug/m³ at maximum; approximately one percent of the health benchmark in the air surrounding the facility. This is according to an exercise performed for a utility boiler using Minnesota's Risk Assessment Screening Spreadsheet, also referred to as an AERA (See New Ulm Public Utilities Major Amendment to a Part 70 Permit application, 2009). Computer dispersion models used in the analysis are

generally believed to predict results that are higher than that that will actually occur; they are a conservative estimation tool.

Nickel is a respiratory irritant, and has an acute health benchmark of 11 ug/m³, and a chronic health benchmark of 0.05 ug/m³. Nickel is also thought to cause cancer at high chronic exposures. Nickel has not been identified in Minnesota as a pollutant of concern in the ambient air. Again, likely over exposures are due to workplace contamination. Using the AERA, the maximum ambient concentration that a 25 MW coal power plant would produce is 0.11 ug/m³ on a 1-hour basis, and 0.00061 ug/m³ on an annual basis. Both estimated values are approximately one percent of the health benchmark.

All three tables are shown below.

Table 2
Emission Factors for Criteria Pollutants for Coal and Wood

Emission Factors lb/mmBtu	Coal^{d,e,f}	Oil^g	Wood^h	Bagasse^p	MSW^u	RDF	Poult. Litter^t	NHSM^o
NOx	0.35	0.37	0.22	0.16		0.46	0.03 to 0.20	0.22
SOx	0.49	1.57	0.03		0.35	0.35		0.03
PM	0.68	0.11	0.56	2.06	2.52	0.63	0.02	2.06
PM2.5	0.18	0.06	0.43					0.43
PM10	0.50	0.10	0.50	0.18				0.50
CO	0.20	0.03	0.60		0.05	0.17	0.20	0.60
CO2	205.48	165.22	206.36	205.97	198.44	243.64		206.36

Criteria Pollutants are assumed to be very similar to those emitted by wood. The higher emission factor between wood and bagasse is used due to the similarity of moisture and heating value.

Table 3
Emission Factors for Coal and Wood
Metals Concentration of Fermentate

	Coal	Oil	Wood	MSW	RDF	NHSM			NHSM
	lb/mmBtu	lb/mmBtu	lb/mmBtu	lb/mmBtu	lb/mmBtu	lb/mmBtu	Percent ⁽ⁿ⁾		lb/mmBtu
	(emission)	(emission)	(emission)	(emission)	(emission)		Volatile	Control	(emission)
Pollutant - lb/mmBtu	controlled and uncontrolled mixed			uncontr.	uncontr.	concentration			controlled
Antimony	7.22E-07	3.50E-05	7.90E-06				10%	90%	0.00E+00
Arsenic	5.42E-04	1.32E-03	2.20E-05	4.39E-04	5.40E-04	6.87E-04	50%	90%	3.43E-05
Barium		1.71E-05	1.70E-04				10%	90%	0.00E+00
Beryllium	8.42E-07	1.85E-05	1.10E-06				10%	90%	0.00E+00
Cadmium	4.30E-05	2.65E-06	4.10E-06	1.10E-03	7.94E-04	1.85E-04	50%	90%	9.24E-06
Chromium, total	1.57E-03	5.63E-06	2.10E-05	9.02E-04	1.27E-03	1.03E-02	10%	90%	1.03E-04
Chromium, hexavalent	3.17E-06	1.65E-06	3.50E-06				10%	90%	0.00E+00
Cobalt		4.01E-05	6.50E-06			5.81E-04	10%	90%	5.81E-06
Copper		1.17E-05	4.90E-05			1.85E-02	10%	90%	1.85E-04
Iron			9.90E-04			8.19E-01	10%	90%	8.19E-03
Lead	5.07E-04	1.01E-05	4.80E-05	2.14E-02	1.83E-02	5.81E-03	50%	90%	2.90E-04
Manganese	1.97E-05	2.00E-05	1.60E-03			1.56E-02	10%	90%	1.56E-04
Mercury	1.60E-05	7.53E-07	3.50E-06	5.63E-04	5.09E-04	7.92E-05	100%	90%	7.92E-06
Molybdenum	0.00E+00	5.25E-06	2.10E-06			5.28E-04	10%	90%	5.28E-06
Nickel	1.12E-05	5.63E-04	3.30E-05	7.89E-04	7.14E-04	5.28E-03	10%	90%	5.28E-05
Phosphorus		6.31E-05	2.70E-05			4.75E-01	10%	90%	4.75E-03
Potassium	0.00E+00		3.90E-02			1.24E-01	10%	90%	1.24E-03
Selenium	5.21E-05	4.55E-06	2.80E-06			0.00E+00	100%	90%	0.00E+00
Silver			1.70E-03			0.00E+00	10%	90%	0.00E+00
Socium			3.60E-04			0.00E+00	50%	90%	0.00E+00

Strontium		1.00E-05		1.14E-02	50%	90%	5.68E-04
Tin		2.30E-05		1.19E-02	50%	90%	5.94E-04
Titanium		2.00E-05		2.22E-02	50%	90%	1.11E-03
Vanadium	2.12E-04	9.80E-07		1.03E-02	10%	90%	1.03E-04
Yttrium		3.00E-07		0.00E+00	10%	90%	0.00E+00
Zinc	1.94E-04	4.20E-04		6.87E-02	50%	90%	3.43E-03

To more easily quantify the metals predicted emission rates with that of another fuel, in this case coal, with wood factors used when there existed no factor for coal for a given pollutant, we produced a ratio of predicted NHSM emissions to that of the other fuels. A value greater than one in the table below indicates that the NHSM will produce higher emissions of that pollutant. A value less than one shows that the NHSM emits less than the other fuels. The elements that are considered hazardous are highlighted

Table 4

Ratio of Element Emissions from NHSM and coal and wood

	NHSM emissions/ coal or wood emissions				
	HAP?				HAP?
Antimony	0.00	yes	Molybdenum	1.76	no
Arsenic	0.04	yes	Nickel	3.29	yes
Barium	0.00	no	Phosphorus	123.23	no
Beryllium	0.00	yes	Potassium	0.02	no
Cadmium	0.15	yes	Selenium	0.00	yes
Chromium, total	0.05	yes	Silver	0.00	no
Chromium, hex	0.00	yes	Socium	0.00	no
Cobalt	0.63	yes	Strontium	39.74	no
Copper	2.64	no	Tin	18.08	no
Iron	5.79	no	Titanium	38.82	no
Lead	0.40	yes	Vanadium	73.56	no
Manganese	5.55	yes	Yittrium	0.00	no
Mercury	0.35	yes	Zinc	5.72	no

40 CFR 241.3(c)(1)(iii) Will the the non-hazardous secondary material will be used in a reasonable time frame given the state of the market?

Fiberight will transfer the fuel in pellet form in covered trucks as generated. Once it reaches the customer, it will likely be dumped into underground hoppers. From the hoppers the material is conveyed via covered conveyor to silos used for fuel and/or biomass. The silo prevents exposure of the material to rain and the elements.

Section 241.3(d)(1) Legitimacy Criteria:

The rule reads:

"(d) Legitimacy criteria for non-hazardous secondary materials.

(1) Legitimacy criteria for non-hazardous secondary materials used as a fuel in combustion units include the following:

(i) The non-hazardous secondary material must be managed as a valuable commodity based on the following factors:

(A) The storage of the non-hazardous secondary material prior to use must not exceed reasonable time frames;

(B) Where there is an analogous fuel, the non-hazardous secondary material must be managed in a manner consistent with the analogous fuel or otherwise be adequately contained to prevent releases to the environment;

(C) If there is no analogous fuel, the non-hazardous secondary material must be adequately contained so as to prevent releases to the environment;

(ii) The non-hazardous secondary material must have a meaningful heating value and be used as a fuel in a combustion unit that recovers energy.

(iii) The non-hazardous secondary material must contain contaminants or groups of contaminants at levels comparable in concentration to or lower than those in traditional fuel(s) which the combustion unit is designed to burn. In determining which traditional fuel(s) a unit is designed to burn, persons may choose a traditional fuel that can be or is burned in the particular type of boiler, whether or not the combustion unit is permitted to burn that traditional fuel. In comparing contaminants between traditional fuel(s) and a non-hazardous secondary material, persons can use data for traditional fuel contaminant levels compiled from national surveys, as well as contaminant level data from the specific traditional fuel being replaced. To account for natural variability in contaminant levels, persons can use the full range of traditional fuel contaminant levels, provided such comparisons also consider variability in non-hazardous secondary material contaminant levels. Such comparisons are to be based on a direct comparison of the contaminant levels in both the non-hazardous secondary material and traditional fuel(s) prior to combustion."

Each of the legitimacy criteria requirements are discussed separately:

40 CFR Section 241.3(d)(i) Is the non-hazardous secondary material managed as a valuable commodity based on the following factors?

(A) The storage of the non-hazardous secondary material prior to use must not exceed reasonable time frames;

As discussed earlier in this document, the NHSM will be generated on a daily basis as a pellet, and will normally be transferred directly to a trailer and transported to the customer. There will be a facility to store material for a short time (maximum 5 days) to allow for transport disruption.

(B) Where there is an analogous fuel, the non-hazardous secondary material must be managed in a manner consistent with the analogous fuel or otherwise be adequately contained to prevent releases to the environment;

The material will not be exposed to the environment in any stage of the process. This meets or exceeds the containment of most similar fuels.

(C) If there is no analogous fuel, the non-hazardous secondary material must be adequately contained so as to prevent releases to the environment;

As above, there will be no exposure to the environment

40 CFR Section 241.3(d)(ii) Does the non-hazardous secondary material have a meaningful heating value and will it be used as a fuel in a combustion unit that recovers energy?

The heating value of the fuel is 3787 Btu/lb. This is higher than the heating value of Bagasse, which is recognized as a valuable fuel. The stoker boiler that will be used for the material's combustion recovers heat in its water walled boiler for providing comfort heat to the buildings on campus.

40 CFR Section 241.3(d)(iii) .Does the non-hazardous secondary material contain contaminants or groups of contaminants at levels comparable in concentration to or lower than those in traditional fuel(s) which the combustion unit is designed to burn? In determining which traditional fuel(s) a unit is designed to burn, persons may choose a traditional fuel that can be or is burned in the particular type of boiler, whether or not the combustion unit is permitted to burn that traditional fuel. In comparing contaminants between traditional fuel(s) and a non-hazardous secondary material, persons can use data for traditional fuel contaminant levels compiled from national surveys, as well as contaminant level data from the specific traditional fuel being replaced. To account for natural variability in contaminant levels, persons can use the full range of traditional fuel contaminant levels, provided such comparisons also consider variability in non-hazardous secondary material contaminant levels. Such comparisons are to be based on a direct comparison of the contaminant levels in both the non-hazardous secondary material and traditional fuel(s) prior to combustion."

We refer the reader to the detailed tables, Tables 1, 2, and 3, that present comparisons of material composition to widely used fuels, and that compare projected emissions of criteria and hazardous air pollutants with other fuels.

Conclusion: On July 5, 2012 Fiberight after obtaining public comments, received the first EPA approved pathway for municipal solid waste (MSW) to biofuel under 40 CFR 80.1450. This application demonstrates additional legitimate fuels that can be derived from the MSW. The analysis presented in this document shows that the material that Fiberight proposes to sell as fuel meets the requirements for a legitimate fuel under 40 CFR Section 241.3(d)(1). This document is an application submitted pursuant to 40 CFR Section 241.3(c). That regulation allows for certain types of non-hazardous secondary materials (NHSM) to be determined by the U.S. EPA to be non-wastes when they are used for combustion. Fiberight proposes herein that the material it wishes to produce for sale at its cellulosic ethanol plant to various customers for use in combustion units meets the criteria spelled out in the above referenced regulation; and as such is not a solid waste.

The material is similar in content to more widely used fuels, and emissions from its burning should be similar as well. Tables are included in this document that compare both constituents with other fuels, and likely air emissions.

Emission factors for criteria pollutants are likely to be similar to the burning of wood or bagasse. Metals emissions were calculated directly from analyses of the NHSM for metals content. Neither the criteria nor hazardous waste pollutants are much different from those emitted from wood, bagasse, coal, TDF, and so on. The material has a significant heating value, similar to bagasse and wood and as such, should be harvested to produce renewable energy.

9/25/13 & 10/7/13 E-mail Exchange with EPA re: Non-Waste Determination Application

From: Bredehoft, Deborah [mailto:bredehoft.deborah@epa.gov]
Sent: Wednesday, September 25, 2013 3:19 PM
To: Jenny Reinertsen - Reinertsen Environmental Services (jreiner@frontiernet.net)
Cc: Toensing, Don
Subject: Additionally Requested Information on Fiberight

Ms. Reinertsen –

Thank you for taking a few minutes to speak with me this morning about Fiberight. As I mentioned during the call, I have outlined EPA's questions below. After you have received and reviewed these questions, could you provide me with an approximately date by which you believe you will respond?

EPA's questions:

1. Is the 8/12/2013 table in ppm of lb/MMBtu? Both units are indicated on the table.
2. Chlorine is on a dry basis, but it does not appear that any of the other pollutants are. What is the % moisture used for the other pollutants?
3. On the same table, footnote "aa" says "residual solids." Is this the NHSM material as-burned, or something else? Also, can they provide the "Summary of Chemical Analysis" spreadsheet referenced in this footnote?
4. Could you provide the moisture content in fuel product?
5. Could you provide the nitrogen and sulfur values for the finished product.
6. Could you provide the general composition of fermentate (paper, cardboard, enzyme used, tannins, etc.)? We are not looking for the chemical composition, but for more general information on what composes the fermentate.
7. How much paper stock is in the skimmings from the DAF? Are the skimmings high in plastic? Are the skimmings similar to what comes off in a recycling process?
8. Could you please indicate if there is a buyer currently lined up and interested in purchasing the fuel generated from this process?

Thanks!
Deborah Bredehoft
Environmental Engineer
RCRA Compliance Officer
USEPA/AWMD/WEMM
Phone: 913-551-7164+
Fax: 913-551-9164
E-mail: Bredehoft.Deborah@epa.gov

RESPONSE: From: Jenny Reinertsen [mailto:jreiner@frontiernet.net]
Sent: Monday, October 07, 2013 1:26 PM
To: 'bredehoft.deborah@epa.gov'
Cc: 'TInayes'; 'Brian Ryerson'
Subject: FW: FW: Additionally Requested Information on Fiberight

Deborah: Please see my answers to your questions below. Let me know if you have further questions, or require any additional information.

EPA Questions:

1. Is the 8/12/2013 table in ppm of lb/MMBtu? Both units are indicated on the table.
The values given for concentration are % by weight (see cell C8 and I8) unless otherwise noted. For instance, mercury is given in lb/mmBtu units.
The second and third tables are in lb/mmBtu units so that emissions can be compared between the fuels on a standardized basis.
The fourth table gives elements in units of concentration, either ppm or ppmw depending on the data available. I would assume that the data given in ppm is equivalent to ppmw.
2. Chlorine is on a dry basis, but it does not appear that any of the other pollutants are. What is the % moisture used for the other pollutants?
The numbers provided in this table are retrieved from EPA data. No % moisture is provided in those documents. For more information, see corresponding footnotes.
3. On the same table, footnote "aa" says "residual solids." Is this the NHSM material as-burned, or something else? Also, can they provide the "Summary of Chemical Analysis" spreadsheet referenced in this footnote?

This "Summary of Chemical Analysis" spreadsheet was provided in original correspondence. The spreadsheet is attached for your convenience. 'Residual solids' refers to the form of the NHSM as tested by the lab. (Washed pulp, composite, residual solids, etc...) It is the residual solids that will be burned.

4. Could you provide the moisture content in fuel product?

Please see Summary of Chemical Analysis spreadsheet with total moisture listed.
It is 65.1% moisture.

5. Could you provide the nitrogen and sulfur values for the finished product.
Please see Chemical Composition and Emissions Comparison Sheet. The NHSM is:
N-0.49% by wt.
S-0.05% by wt.

6. Could you provide the general composition of fermentate (paper, cardboard, enzyme used, tannins, etc.)? We are not looking for the chemical composition, but for more general information on what composes the fermentate.

The fermentate tested in 2010 was the same as Fiberight is processing now – MSW source biomass. Therefore the biomass composition would include some quantity of each of the following: cardboard, newspaper, card stock or chip board, cellulosic based packaging materials. Our enzymes used were provided by Novozymes and would have been C-Tech.

7. How much paper stock is in the skimmings from the DAF? Are the skimmings high in plastic? Are the skimmings similar to what comes off in a recycling process?

Plastics are not in the skimmings from the DAF, as most are separated from the pulp in the washing process and exit separately. The composition is approximately 60% fine cellulosic fibers and 40% ash (primarily calcium carbonate and bentonite or clay).

8. Could you please indicate if there is a buyer currently lined up and interested in purchasing the fuel generated from this process?

There is a buyer, but that entity would prefer to remain anonymous at this time. This entity uses solid fuel fired boilers for comfort heating for a large number of buildings.

Please let me know if you need additional information.

We appreciate your efforts in this matter.

Thank you,

Jenny L. Reinertsen, P.E.

Environmental Engineer

218-834-5872

218-830-1040

jreiner@frontiernet.net

Two Harbors, MN

www.reinertsenenvironmental.com



August 12, 2013

Don Toensing, Chief, Waste Enforcement and Materials
 Management Branch
 EPA-Region 7
 11201 Renner Boulevard
 Lenexa, Kansas 66219

2411 Highway 3, Two Harbors, MN 55616
 (218)834-5872 www.reinertsenenvironmental.com

Subject: Additional Information For The Fiberight Request For Feedback as To The Applicability Of 40 CFR Section 241.3 Which Allows That Some NHSM Are Non-wastes

Dear Mr. Toensing;

This letter is in response to your email dated August 5th, 2013. In it, you requested a comparison of the actual contaminant concentrations between other fuels and the fermentate produced in the Fiberight process. You also requested a more detailed description of the Fiberight processing of the “fermentate” that occurs after it is separated from the ethanol process.

First, Table 1 shows a comparison of the actual contaminant concentrations in the NHSM compared to coal and other relevant fuels. The elements in bold are considered hazardous air pollutants.

Table 1

Element Concentrations						
Pollutant^{cc}- lb/mmBtu	Coal ppm	Oil^v ppm	Wood^w ppm	MSW^x ppm dry	RDF^{bb} ppm	NHSM^{aa} ppm
Antimony^{cc}	nd	nd	26.00	13.30	<5.0	22.00
Arsenic^{cc}	7.60	0.306	6.80	6.90	~3.0	2.60
Barium	150.00	nd	nd	nd	nd	150.00
Beryllium^{cc}	0.99	0.027	nd	nd	~1.0	<0.2
Cadmium^{cc}	0.06	0.02	3.00	13.60	1.0-10.0	0.70
Chlorine	nd	131	2600.00	0.716 ^y	nd	0.58 ^z
Chromium, total^{cc}	22.00	0.31	130.00	94.60	50.0-250.0	39.00
Cobalt	3.90	1.63	24.00	46.70	nd	2.20
Copper	12.00	nd	nd	325.00	<1000.0	70.00
Fluorine	nd	17.5	300.00	0.014 ^y	nd	nd
Iron	140.00	nd	nd	752.70	nd	3100.00
Lead^{cc}	4.80	1.41	340.00	226.00	100.0-500.0	96.00
Manganese^{cc}	35.00	0.35	840.00	156.80	~250.0	59.00
Mercury^{cc}	0.22	0.0092	0.20	0.60	1.0-10.0	<0.3
Molybdenum	0.19	nd	nd	29.00	nd	2.00

Nickel^{cc}	9.40	26	540.00	59.60	10.0-100.0	20.00
Phosphorus	900.00	nd	nd	546.70	nd	1800.00
Potassium	0.00	nd	nd	nd	nd	470.00
Selenium^{cc}	1.50	0.095	2.00	nd	3.0-6.0	<0.5
Silver	nd	nd	nd	nd	nd	nd
Sodium	nd	nd	nd	nd	nd	370.00
Strontium	nd	nd	nd	nd	nd	nd
Tin	nd	nd	nd	0.10	~500.0	45.00
Titanium	nd	nd	nd	145.00	nd	84.00
Vanadium	nd	nd	nd	37.30	nd	39.00
Yttrium	5.90	nd	nd	nd	nd	nd
Zinc	11.00	nd	nd	306.30	300.0-800.0	260.00

v: Oil; Table d-8b. trace element concentrations in fuel oil (for 1994 estimates). (1994). Retrieved from <http://www.epa.gov/ttn/atw/combust/utiltox/addendum.pdf>

w: Numbers are highest in range given, from: Contaminant concentrations in traditional fuels: Tables for comparison. (2011, November 29). Retrieved from http://www.epa.gov/wastes/nonhaz/define/pdfs/nhsm_cont_tf.pdf

x: Table 3.1 Elemental Composition of Bulk MSW, #'s mean of references. Municipal Solid Waste (MSW) to Liquid Fuel Synthesis, Volume 1: Availability of Feedstock and Technology. December, 2008. http://www.pnl.gov/main/publications/external/technical_reports/PNNL-18144.pdf

y: wt% daf

z: Chlorine content as a dry basis

aa: residual solids. Summary of Chemical Analysis spreadsheet.

bb: Zevenhoven. , & Kilpinen (2001, June 19). Chapter 8 trace elements, alkali metals. Retrieved from <http://users.abo.fi/rzevenho/tracalk.PDF>

cc: Pollutants noted (or compounds of) listed as Hazardous Air Pollutants (HAPs) in Section 112 of the U.S. Clean air Act (1970). (In Bold)

Secondly, a more detailed description of the processing of the “fermentate” that occurs after it is separated from the ethanol process follows;

Anaerobic digestion (AD) Feed Preparation System;

1. Hydrolysis solids removed in the Hydrolysis Centrifuge and Hydrolysis Filter, sludge from the wash system dissolved air flotation (DAF) sludge tank, stillage from the bottom of the beer stripper and sludge from AD plant are collected in the Dilution Tank (TK-9100).
2. This stillage is then centrifuged to remove the bulk of the solids. The concentrate, is sent to the high flow DAF Feed Tank (TK-9500) where it will be combined with the wash water system purges from the Regenex Filtrate Tank, White Water Tank and the filtrate from the Wet Cake Re-slurry Tank Belt Press (FB-9300).

3. The water from the high flow DAF feed tank is first passed through a DAF unit to reduce the suspended solids and then is sent through the Clarified Waste Water Filter Press (FP-9600) to further clarify the waste water prior to being sent to the AD plant.
4. Sludge from the DAF along with the wet cake from the stillage centrifuge is discharged to the Wet Cake Re-slurry Tank (TK-9300) to re-suspend the solids in a liquor that is low in COD. These re-slurried solids are directed to the Belt Press (FB-9300) to remove approximately 50% of the moisture.
5. The filtrate from the belt press is directed back to the high flow DAF feed tank to be reprocessed. The pressed cake from the belt press as well as filter cake from the clarified waste-water filter press is sent to a designated storage area.
6. The cake material will then be routed to a pellet mill where biomass fuel pellets will be made and subsequently dried and sold for biomass combustion. (Ref. "Scope Definition for Blairstown Renewable Energy Project at page 30 of 42, #3. AD Feed Preparation System", Fiberight, 4-2-2013.)

We hope that this answers your questions. If this description is confusing, or you would like any other information, please do not hesitate to contact me at jreiner@frontiernet.net or (218) 834 5872.

Regards,

Jenny L. Reinertsen, P.E.

ATTACHMENT D
NOTICE OF INTENT TO FILE

PUBLIC NOTICE OF INTENT TO FILE

Please take notice that the Municipal Review Committee, Inc. (MRC) of 395 State Street, Ellsworth, Maine 04605, (207) 664-1700 and Fiberight, LLC (Fiberight), 1450 South Rolling Road, Baltimore, Maryland 21227, (410) 340-9387 are intending to file joint applications with the Maine Department of Environmental Protection (Department) on or about June 22, 2015 pursuant to the provisions of: 38 M.R.S.A., Section 1301 et seq. (Maine's Solid Waste Management Act and implementing regulations); 38 M.R.S.A Section 420-D (Stormwater Management and implementing regulations); 38 M.R.S.A Section 590 (Licensing and implementing regulations); and 38 M.R.S.A. Section 480-A et seq. (Natural Resources Protection Act and implementing regulations).

The following is a listing of regulations under which MRC and Fiberight will seek permits: 06 096 CMR Chapters 400 and 409: Solid Waste General Provisions and Processing Facilities; 06 096 CMR Chapter 310: Wetlands and Waterbodies Protection; 06 096 CMR Chapter 335: Significant Wildlife Habitat; 06 096 CMR Chapter 500: Stormwater Management; and 06 096 CMR Chapter 115: Major and Minor Source Air Emission License Regulation.

The applications are for a proposed municipal solid waste (MSW) processing and recycling facility (Facility) to be located in Hampden, Maine. The proposed Facility will be located on a 90 acre parcel of land approximately one mile to the northeast of the Coldbrook Road and ¼ mile to the southeast of I-95. The parcel will be owned by MRC and the Facility and infrastructure will be owned and operated by Fiberight. To access the Facility site, a 4,620-foot access roadway with utilities located opposite Bryer Lane intersecting Coldbrook Road will be owned and constructed by MRC as part of this project.

According to Department regulations, interested parties must be publicly notified, written comments invited, and if justified, an opportunity for public hearing given. A request for a public hearing, or that the Board of Environmental Protection assume jurisdiction of an application(s), must be received by the Department, in writing, no later than 20 days after the application(s) are accepted by the Department as complete for processing. A public hearing may or may not be held at the discretion of the Commissioner or Board of Environmental Protection. Public comments on the applications will be accepted throughout the processing of the applications.

The applications and supporting documentation will be available for review at the Maine Department of Environmental Protection, Division of Technical Services, Bureau of Remediation and Waste Management at the Augusta, Maine DEP regional office, during normal working hours. A copy of the applications and supporting documentation may also be seen at the municipal office in Hampden, Maine.

Send all correspondence to: David Burns, P.E., Project Manager, Maine Department of Environmental Protection, Division of Technical Services, Bureau of Remediation and Waste Management, 17 State House Station, Augusta, Maine 04333-0017 (207) 287-2651 or 1-800-452-1942).

Legal Notices

PUBLIC NOTICE OF INTENT TO FILE

Please take notice that the Municipal Review Committee, Inc. (MRC) of 395 State Street, Ellsworth, Maine 04605, (207) 664-1700 and Fiberight, LLC (Fiberight), 1450 South Rolling Road, Baltimore, Maryland 21227, (410) 340-9387 are intending to file joint applications with the Maine Department of Environmental Protection (Department) on or about June 22, 2015 pursuant to the provisions of: 38 M.R.S.A., Section 1301 et seq. (Maine's Solid Waste Management Act and implementing regulations); 38 M.R.S.A Section 420-D (Stormwater Management and implementing regulations); 38 M.R.S.A Section 590 (Licensing and implementing regulations); and 38 M.R.S.A. Section 480-A et seq. (Natural Resources Protection Act and implementing regulations).

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The applications are for a proposed municipal solid waste (MSW) processing and recycling facility (Facility) to be located in Hampden, Maine. The proposed Facility will be located on a 90 acre parcel of land approximately one mile to the northeast of the Coldbrook Road and 1/4 mile to the southeast of I-95. The parcel will be owned by MRC and the Facility and infrastructure will be owned and operated by Fiberight. To access the Facility site, a 4,620-foot access roadway with utilities located opposite Bryer Lane intersecting Coldbrook Road will be owned and constructed by MRC as part of this project.

According to Department regulations, interested parties must be publicly notified, written comments invited, and if justified, an opportunity for public hearing given. A request for a public hearing, or that the Board of Environmental Protection assume jurisdiction of an application(s), must be received by the Department, in writing, no later than 20 days after the application(s) are accepted by the Department as complete for processing. A public hearing may or may not be held at the discretion of the Commissioner or Board of Environmental Protection. Public comments on the applications will be accepted throughout the processing of the applications.

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Send all correspondence to: David Burns, P.E., Project Manager, Maine Department of Environmental Protection, Division of Technical Services, Bureau of Remediation and Waste Management, 17 State House Station, Augusta, Maine 04333-0017 ((207) 287-2651 or 1-800-452-1942).

June 13, 2015

ATTACHMENT E
TITLE, RIGHT, INTEREST

ATTACHMENT E

TITLE, RIGHT, OR INTEREST

Included in this Attachment, the MRC has acquired an *Option to Purchase* the property necessary for the development of the proposed Facility from HO Bouchard, Inc. and Hickory Development, LLC. The MRC and Fiberight estimate that approximately 95 +/- acres will be acquired which includes a 90 acre parcel where the Facility will be developed and a five acre parcel for a new 4,460 foot road to access the processing plant. Fiberight will retain ownership of the Facility and will lease the property owned by the MRC as outlined in the *Development Agreement between MRC and Fiberight* included in this Attachment.

OPTION TO PURCHASE

H. O. Bouchard, Inc., a Maine corporation with a place of business in Hampden, Maine and **Hickory Development, LLC**, a Maine limited liability company with a place of business in said Hampden (hereinafter collectively referred to as *Seller*), grants to **Municipal Review Committee, Inc.**, a Maine nonprofit corporation with a place of business in Ellsworth, Maine (hereinafter referred to as *Buyer*), an option to purchase, upon the terms and conditions set forth below, the real estate, together with any improvements thereon and all easement and access rights thereto, including those described in conveyances to Seller and those exercised by Seller, located easterly of Coldbrook Road in **Hampden, Penobscot County, Maine**, generally depicted on Exhibit A attached hereto, together with an easement for a right of way for all purposes, including utility services, along the private road depicted on Exhibit A (hereinafter collectively referred to as *the Property*).

TERMS AND CONDITIONS:

1. Option Term. This Option shall be for a term commencing on the date of this agreement through March 31, 2017. This Option shall expire if not exercised on or before March 31, 2017.
2. Exercise of Option. Buyer shall exercise this Option, if at all, at any time during the term of this Option, and any renewals thereof, by giving written notice delivered by hand or by certified mail, return receipt requested, at the address provided below. Upon exercise of this option, the terms and provisions herein shall govern the purchase and sale of the Property.
3. Option Consideration. Buyer shall pay to Seller an initial option consideration of twelve thousand dollars (\$12,000.00), payable within five (5) business days after Seller's execution of this agreement. Upon exercise of this Option, the initial option consideration and any additional option consideration shall be deemed an earnest money deposit and applied toward the purchase price. Except as provided herein, if the Option is not exercised, the Option Consideration shall be retained by Seller.
4. Restrictions during Option Term. During the term of this Option, and any renewals thereof, and prior to closing, Seller agrees not to sell the Property, offer to sell, mortgage, encumber, or otherwise transfer or dispose of or alter the Property without prior written consent of Buyer.
5. Inspection. Within thirty (30) days of the date of this agreement, Seller shall provide Buyer with copies of all existing engineering and environmental site assessments and reports. Seller grants to Buyer, Buyer's duly authorized agents and employees, the right, during the term of this Option and prior to Closing to enter upon the Property to conduct whatever tests and inspections of the Property that Buyer deems necessary. In the event the results of such tests and inspections are unsatisfactory to Buyer, Buyer may terminate this agreement upon written notice to Seller, which

written notice must be delivered to Seller not later than twenty (20) days prior to closing. Buyer shall defend, indemnify and hold Seller harmless from and against any and all claims, demands, suits and actions of any person or entity arising out of Buyer's tests and inspections.

6. Property. Prior to exercise of the Option by Buyer, if any, Buyer shall cause the Property to be surveyed by a licensed Maine surveyor. The survey shall depict:

a. a parcel of land containing not less than ninety (90) acres and not more than one hundred twenty (120) acres in substantially the same location and configuration as depicted on Exhibit A, and bounded northeasterly by land and/or easements now or formerly of Bangor Hydro Electric Company, bounded southerly and southwesterly by land now or formerly of Seller, and bounded northerly by the centerline of said private road referred to above; and

b. a private road leading from Coldbrook Road to the northeasterly corner of the Property. The width of said private road shall be not less than the width required by any laws, rules and regulations applicable to Buyer's intended use of the Property.

The final configuration and location of the parcel of land and the private road will be determined by a joint evaluation of the parties, including a determination as to the most favorable location for said private road and utility connections, and is subject to Seller's approval which shall not unreasonably be withheld, conditioned or delayed.

UPON EXERCISE OF THIS OPTION, THIS AGREEMENT SHALL BE CONSIDERED A PURCHASE AND SALE AGREEMENT AND THE FOLLOWING PARAGRAPHS 1 - 6 SHALL APPLY TO CONVEYANCE OF THE PROPERTY.

1. Purchase Price. The total purchase price for the Property shall be based on the valuation of \$3,300.00 per acre. For purposes of determining the Purchase Price, the number of acres comprising the Property as finally configured will be rounded up or down to the nearest whole acre. After application of the option consideration/deposit, the remaining purchase price shall be paid to Seller with cash or by bank check or certified check at closing.

2. Deed. At the closing of the sale, Seller shall deliver to Buyer or Buyer's agent a duly executed and acknowledged quitclaim deed with covenant conveying to Buyer good and marketable title to the Property, free of all encumbrances other than easements, restrictions or agreements of record which do not have a material adverse effect on the value of Property or the Buyer's intended use of the Property, and existing laws, ordinances, or regulation governing the use of the Property.

3. Title Documents. Examination of the title shall be the responsibility of Buyer at Buyer's sole expense. Within thirty (30) days of the date of this agreement, Seller shall provide Buyer with copies of all existing title abstracts, title insurance policies or other title or survey information which Seller may have in Seller's possession. If Buyer finds title to the Property not to be good and marketable or subject to any easements, restrictions or agreements of record which have a material adverse effect on the value of Property or the Buyer's intended use of the Property ("defect or defects"), then the closing shall be delayed for not more than thirty (30) days in order for Seller to cure

the defect or defects. If such defect or defects cannot be removed by Seller (Seller having used reasonable efforts), Buyer may, at Buyer's sole option, either (a) terminate this agreement, in which case all parties shall be released from their obligations hereunder and the option consideration/deposit shall be returned to Buyer, or (b) accept such title as Seller can convey and consummate purchase of the Property in accordance with this agreement.

4. Possession. Exclusive possession of the Property shall be delivered to Buyer at the time of the delivery of said deed.

5. Closing. The closing of the sale contemplated hereby shall take place at the offices of Eaton Peabody, 80 Exchange Street, Bangor, Maine,, within sixty (60) days of Seller's receipt of notice of Buyer's exercise of the option as stated herein or such earlier date as specified by Buyer in its notice of exercise, unless delayed in accordance with the terms hereof.

6. Conditions of Closing. It is a condition of Closing that the private road accessing the Property shall be accepted as a public way by the Town of Hampden and that utilities, including but not limited to water and sewer, to service the Property are installed and connected to their respective service systems providers. Buyer shall be responsible for construction of the private road to standards required by the Town of Hampden for acceptance as a public way and Buyer shall have the right, at any time after the date of this agreement, to enter onto lands of Seller for purposes incidental to the same. Seller shall cooperate with Buyer in connection with any applications required for such construction and acceptance.

7. Closing Adjustments. Real property taxes and any other assessments, utility charges or other charges levied against the Property shall be prorated as of the date of the closing. Real property taxes shall be prorated based on the fiscal year of the Town of Hampden. State of Maine transfer tax shall be shared equally by Buyer and Seller. Seller shall pay all charges for recording any documents necessary to remove encumbrances from record title to the Property.

8. Confidentiality. Except to the extent required by law or as otherwise agreed by both parties in writing, neither party will disclose or use, and will direct its representatives not to disclose or use, to the detriment of the other party, the existence of this agreement, the letter of intent dated November 7, 2014, or any information concerning its subject matter unless such disclosure or use is required by law or unless such information already is publicly available through no fault of the disclosing party. If disclosure is required by law, the disclosing party shall provide to the other party notice of its intended disclosure in a manner calculated, to the greatest extent practicable under the circumstances, to afford the other party opportunity to challenge such disclosure. Upon written request of a party, the other party will promptly return or destroy any such information furnished to it.

9. Publicity. Neither party will publicly disclose the existence of this agreement or said letter of intent or the terms described herein or therein without the prior written consent of the other party.

10. Costs. Unless otherwise specifically agreed in writing, each party shall be

responsible for its own costs and expenses incurred with respect to any of the matters set forth in this agreement, including, but not limited to, legal fees, accounting fees and consulting fees. Each party agrees to indemnify the other against any claim for finder's fees or broker's commissions arising out of any commitment made by the indemnifying party.

11. Default. In the event Buyer fails to fulfill any of Buyer's obligations hereunder, this agreement shall, at the option of Seller, be terminated, and Buyer's said option considerations/deposit shall be retained by Seller as Seller's sole remedy. In the event Seller fails to fulfill any of Seller's obligations hereunder, then the option considerations/deposit shall be returned to Buyer and Buyer, at Buyer's option, may pursue its remedies at law or in equity, including but not limited to specific performance.

12. Notices. Any notice by either party to the other, as provided herein, shall be in writing and shall be effective if delivered by certified mail, return receipt requested, or by reputable overnight courier to the following address:

- a. If to Seller, 349 Coldbrook Road
Hampden, ME 04444
Attn: Brian Bouchard

- b. If to Buyer, c/o Karen A. Huber, Esq.
Eaton Peabody P.A.
P.O. Box 1210
80 Exchange Street
Bangor, ME 04402-1210
khuber@eatonpeabody.com

13. General Provisions.

a. This agreement shall inure to the benefit of and be binding upon the parties hereto and their respective successors and assigns. Buyer may assign this agreement, provided that Buyer shall give written notice to Seller after such assignment of the name and address for any assignee.

b. This agreement constitutes the entire agreement between the parties, supersedes all prior negotiations and understandings between them, and shall not be altered or amended except by a written amendment signed by Seller and Buyer.

c. This agreement may be simultaneously executed in any number of counterparts, each of which when duly executed and delivered shall be an original; but such counterparts shall constitute but one and the same agreement. For purposes of this agreement, a facsimile signature shall be deemed an original.

d. Seller agrees that it shall keep the terms of this agreement and the transaction contemplated herein confidential, except as may be set forth in the Memorandum of Option contemplated below. Seller acknowledges and agrees that breach of this agreement could result in irreparable harm to Buyer and that money damages would not be a sufficient remedy for any breach of this agreement by Seller. In the event of any breach, Buyer shall be entitled to specific performance and injunctive relief as remedies for any such breach. Such remedies will not be deemed to be the exclusive remedies for a breach of this agreement by Seller but will be in addition to all other remedies available at law or in equity to Buyer. Seller's obligations under this provision shall survive closing.

e. The parties agree that this Option shall not be recorded. A Memorandum of this Option to Purchase may be prepared for recording for the purpose of giving notice to third persons of the existence of this agreement.

f. If any provision of this agreement is found to be invalid or unenforceable, such finding shall not affect the validity or enforceability of any other provision hereof.

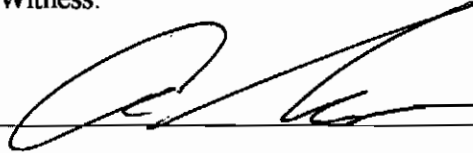
g. This agreement shall be construed and enforced in accordance with and governed by the laws of the State of Maine.

h. For purposes of this agreement, the date of this agreement shall ~~be the~~ date Seller executes this agreement.

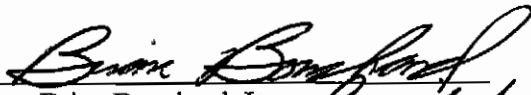
**[THIS SPACE LEFT INTENTIONALLY BLANK.
SIGNATURES CONTINUED ON THE NEXT PAGE.]**

In witness whereof, the parties hereto have hereunto set their hands and seals as of the date set forth below.

Witness:




H.O. Bouchard, Inc.

By: 
Brian Bouchard, Its President
Duly Authorized
Date: Dec 1, 2014

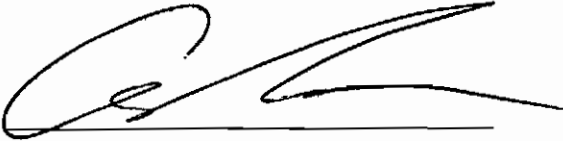
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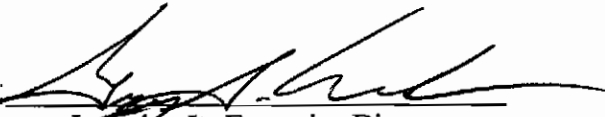


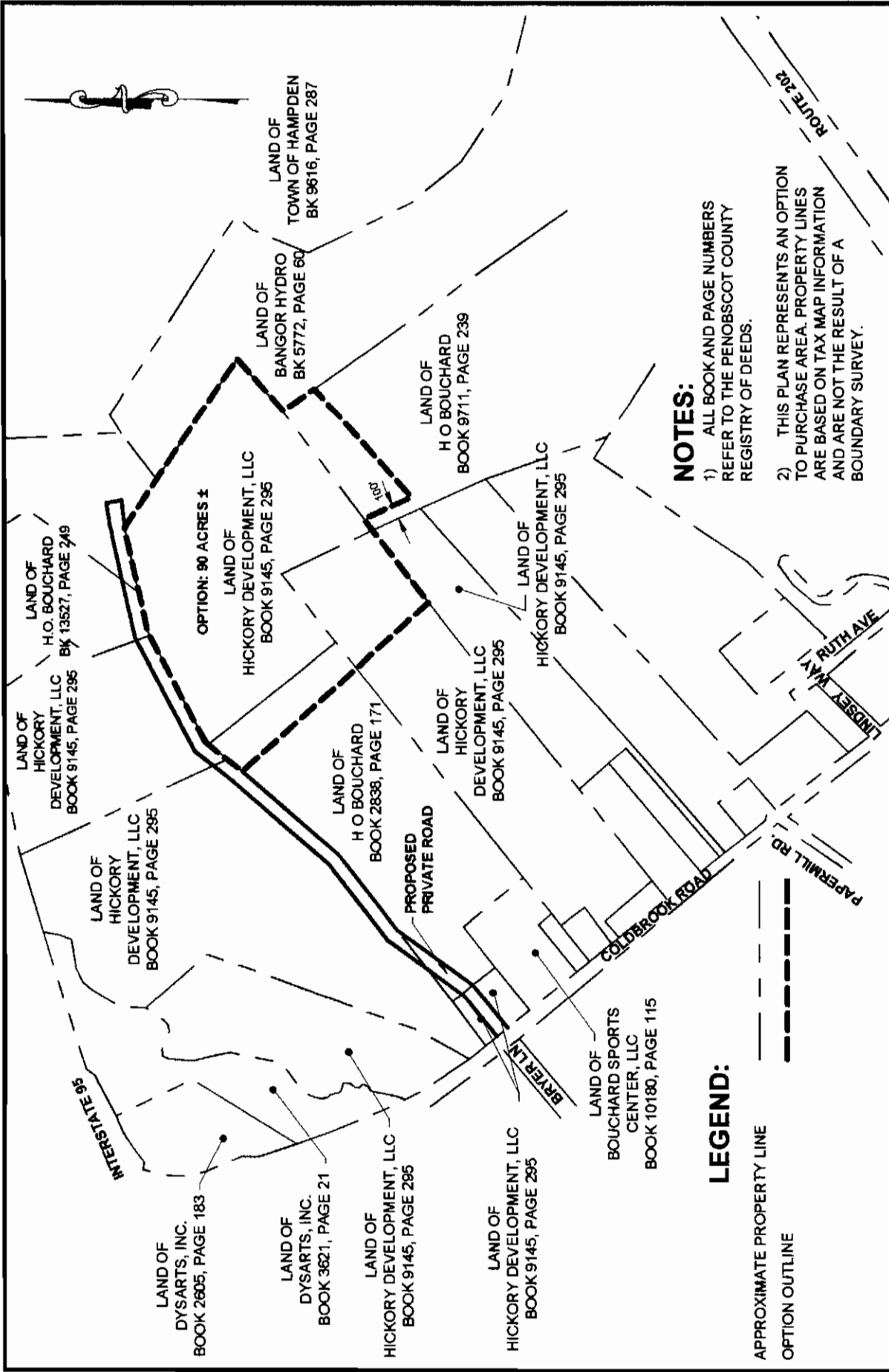
Hickory Development, LLC

By: 
Brian Bouchard, Its President
Duly Authorized
Date: Dec 1, 2014

Municipal Review Committee, Inc.



By: 
Gregory Louder, Its Executive Director,
Duly Authorized
Date: Dec 1, 2014



NOTES:

- 1) ALL BOOK AND PAGE NUMBERS REFER TO THE PENOBSCOT COUNTY REGISTRY OF DEEDS.
- 2) THIS PLAN REPRESENTS AN OPTION TO PURCHASE AREA. PROPERTY LINES ARE BASED ON TAX MAP INFORMATION AND ARE NOT THE RESULT OF A BOUNDARY SURVEY.

LEGEND:

- APPROXIMATE PROPERTY LINE
- OPTION OUTLINE

PROJECT TITLE:

**EXHIBIT A
HAMPDEN, PENOBSCOT COUNTY, ME
MUNICIPAL REVIEW COMMITTEE
TOWN/OWNER PREFERRED LOCATION**

DWG

BY: JAT

DATE: 12-01-2014

REV:

JN: 10973-2

REV DATE:

SCALE: 1"=2000'



**MEMORANDUM OF
OPTION TO PURCHASE REAL ESTATE**

Optionor: H. O. Bouchard, Inc.
Hickory Development, LLC

Optionee: Municipal Review Committee, Inc.

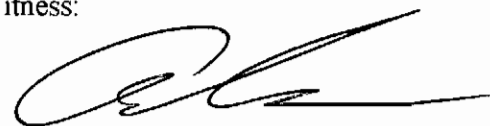
Property: A certain lot or parcel of land containing not less than 90 acres and not more than 120 acres located on the easterly side of the Coldbrook Road in Hampden, Maine, in substantially the same location and configuration as generally depicted on Exhibit A, and bounded northeasterly by land and/or easements now or formerly of Bangor Hydro Electric Company, bounded southerly and southwesterly by land now or formerly of Optionor, and bounded northerly by the centerline of a private road leading from Coldbrook Road to the northeasterly corner of the Property in substantially the same location as depicted on Exhibit A.

Date of Option: Dec 1, 2014


Term of Option: Commences on Dec. 1, 2014 until ~~December 31, 2016.~~ ^{MARCH 31, 2017} *BAB*

Renewal Term: None.

IN WITNESS WHEREOF, H. O. Bouchard, Inc. and Hickory Development, LLC have caused the foregoing instrument to be signed by the undersigned, duly authorized, as of this 1st day of December, 2014.

Witness:


H.O. Bouchard, Inc.
By: Brian Bouchard
Brian Bouchard, Its Vice President
Duly Authorized

Witness:


Hickory Development, LLC
By: Brian Bouchard
Brian Bouchard, Its Vice President
Duly Authorized
Date: Dec 1, 2014

STATE OF MAINE

Penobscot County

Dec 1, 2014

Personally appeared before me, the above named Brian Bouchard, as President of H. O. Bouchard, Inc., and acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of said corporation.

Elizabeth A. Lavin
Notary Public/Attorney at Law

Elizabeth A. Lavin
Print or type name as signed

ELIZABETH A. LAVIN
Notary Public • State of Maine
My Commission Expires April 8, 2020

February 4, 2015

Development Agreement

This Development Agreement is between the MUNICIPAL REVIEW COMMITTEE, INC. (the "MRC"), a Maine non-profit corporation with offices at 395 State Street, Ellsworth, Maine 04605, and FIBERIGHT, LLC ("Fiberight"), a Delaware limited liability company with offices at, 1450 South Rolling Road, Baltimore, Maryland 21227.

Recitals

- The MRC and Fiberight each are interested in the development of a facility in eastern or central Maine for the processing of municipal solid waste ("MSW").
- The MRC represents 133 municipal entities known as Charter Municipalities that deliver MSW to a facility owned by the Penobscot Energy Recovery Company, L.P. ("PERC") under waste disposal agreements that are scheduled to terminate on March 31, 2018. The MRC anticipates that the existing waste disposal agreements with PERC will not be extended beyond their termination dates and will not be replaced with a new set of agreements to extend delivery of MSW from the Charter Municipalities to the PERC facility beyond March of 2018.
- In June 2013, the MRC issued a Request for Expressions of Interest (RFEI) to solicit proposals to develop an MSW management facility to replace the PERC facility starting in 2018. Fiberight responded to the RFEI with a proposal to develop a mixed-MSW processing and conversion facility utilizing its proprietary technology.
- The MRC Board of Directors has determined that the Fiberight proposal, if implemented, (a) could meet the MRC's objective of developing a facility to replace the PERC facility by April 1, 2018; and (b) would be advantageous as compared either to the proposals provided by other respondents to the RFEI or to the extension of existing waste disposal arrangements with PERC.
- The MRC has resolved to work exclusively with Fiberight on development of a mixed-MSW processing and conversion facility per the proposal submitted in response to the RFEI, as subsequently clarified, and both the MRC and Fiberight are committed to working diligently to bring such facility into commercial operation by April 1, 2018.
- The MRC and Fiberight are entering into this Agreement in order to clarify their respective roles and responsibilities and to identify contingencies related to the proposed facility development.

Terms

In consideration of the mutual covenants contained herein, the parties, intending to be contractually bound, hereby agree as follows:

ARTICLE I DEFINITIONS

"Acceptable Waste" means MSW which will be deemed acceptable for processing at the Facility in accordance with standards to be set forth in the Master Agreement.

"Change in Control" means any transaction or other event as a consequence of which (i) the owners of more than 50% of the equity of Fiberight prior to such transaction or event cease to own at least 50% of such equity; or (ii) there occurs a change in effective voting control over Fiberight; or (iii) there occurs a sale of the Facility to a party other than contemplated in the Master Agreement or otherwise approved by the MRC; or (iv) there occurs any other event resulting in transfer of operational control of the Facility to any person or entity other than Fiberight or a Fiberight Affiliate.

"Charter Municipalities" means the 133 municipal entities that deliver MSW to the PERC Facility under waste disposal agreements that are scheduled to terminate on March 31, 2018

"Joining Municipalities" means municipalities and other municipal entities that may contract to deliver MSW to the Facility under the Master Agreement.

"Facility" means the mixed-MSW processing and conversion facility utilizing Fiberight's proprietary technology to be developed pursuant to this Agreement.

"Fiberight" means Fiberight, LLC, a Delaware limited liability company.

"Fiberight Affiliate" means a person or entity controlled by, or under common control with, Fiberight.

"Joinder Agreements" means agreements between the MRC and the Joining Municipalities whereby Joining Municipalities would agree to deliver MSW to the Facility pursuant to the terms and conditions set forth in the Master Agreement.

"Master Agreement" means the master waste supply agreement to be entered into by Fiberight and the MRC pursuant to which Joining Municipalities will deliver MSW to the Facility as contemplated by Section 2.1 of this Agreement.

"MRC" means the Municipal Review Committee, Inc., a Maine nonprofit corporation, and any affiliated or successor entity.

"MSW" means any municipal solid waste.

"PERC" means the Penobscot Energy Recovery Company Limited Partnership, a Maine limited partnership that presently owns and operates the PERC Facility.

"PERC Facility" means the waste-to-energy plant in Orrington, Maine currently operated by PERC.

"Project" means the acquisition, permitting, development, construction and operation of the Facility and related infrastructure.

"Project Site" means the land on which the Project will be constructed and operated.

"RFEI" means the Request for Expressions of Interest issued by the MRC in June 2013 as further described in the recitals to this Agreement.

"Site Lease" means the lease of the Project Site from the MRC to Fiberight.

ARTICLE II ROLES AND RESPONSIBILITIES

2.1. Basic Responsibilities. The MRC and Fiberight agree on the following structure and allocation of basic roles and responsibilities for development of the Project:

- a. **Ownership of Facility.** Fiberight and its affiliates and/or approved joint partners shall own the Facility and shall be responsible for the design, engineering, acquisition of permits, procurement of equipment, financing, construction, start-up, testing, commissioning, operations and maintenance thereof.
- b. **Ownership of Project Site.** The MRC shall secure fee ownership or long term control of the Project Site appropriate for development of the Project and shall lease or sublease the Project Site to Fiberight under a long term agreement having terms and conditions that

support the development, financing, construction and operation of the Facility, with appropriate oversight by the MRC.

- c. **Master Waste Supply Agreement.** The MRC and Fiberight shall negotiate in good faith to reach agreement on a master waste supply agreement (the "Master Agreement") by December 1, 2015. The Master Agreement shall set forth terms under which Joining Municipalities will deliver MSW to the Facility. The Master Agreement shall include commercially reasonable terms and conditions necessary to support the development, financing, construction and long term operation of the Facility including, but not limited to, the terms set forth in Section 3.1 hereof. In the event of conflicts between the terms of the Master Agreement and the terms of this Agreement, the Master Agreement shall take precedence.
- d. **Waste Disposal Agreements.** The MRC will enter into appropriate waste disposal agreements with Joining Municipalities ("Joinder Agreements") pursuant to which each Joining Municipality will agree to deliver MSW to the Facility under the terms and conditions set forth in the Master Agreement.

2.2 Responsibility for Specific Development Tasks. The MRC and Fiberight agree that responsibility for specific Project related tasks shall be allocated as follows:

- a. **Site Control.** The MRC shall purchase and own, or otherwise secure long term control of, the Project Site and will consult with Fiberight regarding the suitability of any potential site before it is secured.
- e. **Site Lease.** The MRC and Fiberight agree to negotiate in good faith the terms of a long term lease of the Project Site adequate to protect the interests of each party and to accommodate development and financing of the Facility in accordance with the terms, conditions and principles set forth in this Agreement including, but not limited to, the terms set forth in Section 3.2 hereof. In the event of conflicts between the terms of the Site Lease and the terms of this Agreement, the Site Lease shall take precedence.
- b. **Site Development.** The MRC shall secure, or assist Fiberight in securing, zoning and other land-use designations necessary in connection with development of the Project Site and the Facility. The MRC and Fiberight will work together with the host community on planning of road access, water supply, sewer capacity and other similar infrastructure upgrades related to development of the Project Site. The MRC and Fiberight agree to negotiate in good faith to reach agreement on allocation and financing of costs related

toroad access, environmental mitigation and other infrastructure upgrades to support development of the Project Site, and such agreement shall be incorporated as part of the Site Lease. Fiberight will be responsible for designing, implementing, managing, financing and contracting for utilities necessary for development and operation of the Project Site and the Facility including, but not limited to, water, sewer, electricity, natural gas and telecommunications. The Site Lease shall provide for adequate access to related utility interconnections. The MRC will ensure that Fiberight and its agents have reasonable access to the Project Site prior to the execution of the Site Lease as needed for site testing and characterization activities.

- c. **Facility Design.** Fiberight will prepare a conceptual design of the Facility in sufficient detail to support (a) evaluation of potential environmental and land use impacts; (b) acquisition of required permits and approval; (c) implementation of infrastructure upgrades and utility interconnections; and (d) preparation of a pro forma economic analysis to support projections of tip fees and rebates. Fiberight will provide the MRC with an opportunity to review and comment on the conceptual design and will complete the final design as appropriate upon acquisition of all permits and prior to construction, all on a timely basis.
- d. **Permitting.** Fiberight shall be responsible for preparation and filing of applications for all federal, state and local permits required in connection with development, construction and operation of the Facility and Project Site. Fiberight will consult with the MRC on permit acquisition strategy and will provide the MRC with an opportunity to review and comment on permit applications. The MRC agrees to perform such review on a timely basis. The MRC will work with federal, state and local authorities to clarify permitting requirements and will support and facilitate issuance of required permits.
- e. **Facility Agreements.** Fiberight shall be responsible for entering into agreements with third party contractors related to final design, engineering, procurement, construction, start-up, testing and commissioning of the Project Site and Facility and, following commencement of commercial operation, for operations and maintenance thereof. All material contracts shall be submitted to the MRC for review and comment prior to execution. The MRC agrees to perform such review on a timely basis.
- f. **Analysis of Waste Supply.** Prior to final design and development of the Facility, the MRC shall prepare for Fiberight an analysis of MSW generation and disposition among its existing members, accounting for the status of waste reduction programs and diversion through recycling programs.

- g. **Joinder Agreements.** The MRC agrees to utilize its best efforts to cause the Joining Municipalities to enter into Joinder Agreements as contemplated by Section 2.1(d) in order to accommodate development and financing of the Facility as contemplated by this Agreement and to assure an adequate supply of waste to the facility. Fiberight shall be responsible for acquiring MSW in excess of the quantities provided under the Joinder Agreements and the Master Agreement to the extent needed for the Facility to operate at capacity; provided, however, that Fiberight shall not accept MSW originating outside of the State of Maine. The MRC agrees to support Fiberight's efforts to acquire additional quantities of in-state MSW, should that be necessary, based on its knowledge of local and state conditions, provided, however, that such support shall not be deemed to require economic concessions or other financial support.
- h. **Waste transportation arrangements.** The MRC and Fiberight will work together to evaluate and, if indicated, to facilitate arrangements for, efficient and cost-effective delivery of MSW from Joining Municipalities to the Facility. To the extent such arrangements involve development of remote facilities as part of a "hub-and-spoke" system, the MRC and Fiberight will work together on the development of such remote facilities either on sites to be acquired or as add-ons to existing facilities. Nothing in this paragraph shall be construed to require either Fiberight or the MRC to commit to make any capital investment in such transfer and transportation facilities except as they may otherwise agree.
- i. **Product sales and related attributes and credits.** Fiberight shall be solely responsible for marketing and sale of all products produced at the Facility, including acquisition of beneficial use determinations or other regulatory approvals related to product marketing, distribution and sales. To the extent allowed by law, Fiberight shall own all tax credits, renewable energy certificates, carbon offsets, renewable fuel identification number (RIN) products, and other similar attributes that may be created or associated with construction and operation of the Facility and the production of associated products.
- j. **Residuals management.** The MRC, in consultation with Fiberight, shall be responsible for securing appropriate initial arrangements for management of non-hazardous residual materials to be generated as the result of normal operation of the Facility within anticipated limits to be set forth in the Master Agreement. Fiberight shall manage disposal of all residual materials from the Facility consistent with such arrangements and shall be responsible for securing appropriate contracts in connection therewith and for all extensions or replacements of the initial agreements for residuals disposal.

- k. **Financing.** Fiberight will provide funds, and will acquire financing as needed, for the costs of pre-construction development efforts related to the Project Site and the Facility including, without limitation, costs of construction of the Facility and related infrastructure, start-up, testing, commissioning, operations and maintenance. The MRC will provide funds, and will acquire financing as needed, to secure ownership or long term leasehold rights to the Project Site, for the cost of pre-construction development efforts related to the Site and for the costs of its monitoring of Facility implementation and operation.

ARTICLE III
PROJECT AGREEMENTS

3.1. Master Waste Supply Agreement. MRC and Fiberight agree to negotiate in good faith a master waste supply agreement (the "Master Agreement") with the objective of providing a structure for obtaining commitments by Joining Municipalities to deliver at least 150,000 tons per year of MSW starting in April of 2018 (such commitments to be prorated for any partial contract year). The Master Agreement shall incorporate the following principles or terms:

- a. **Tip Fee.** Provide an initial tip fee not to exceed \$70 per ton, with identified pass-through costs related to the actual cost of residuals disposal and other items as may be agreed upon.
- b. **Term.** Provide an initial term to match the term of the Project financing, anticipated to be 15 years, with at least two appropriate options for extension provided that Fiberight has met performance standards under the Master Agreement
- c. **Net Disposal Cost.** Incorporate product revenue rebates that, under anticipated conditions, would result in a net disposal cost to the Joining Municipalities on the order of (\$57) per ton.
- d. **Acceptable Waste.** Provide reasonable definitions of waste that will be acceptable for processing at the Facility ("Acceptable Waste"), which shall include municipal solid waste typically collected or accepted by Maine municipalities, with defined exclusions for unprocessable items readily managed through other means
- e. **Delivery.** Describe delivery obligations, which would require, to the extent permitted by law, all MSW collected or controlled by Joining Municipalities to be directed to the Facility. Joining Municipalities would retain the option to implement new waste reduction or recycling programs or to discontinue existing reuse and recycling programs,

in each case without penalty, provided that materials not reused or recycled and instead delivered to the Facility must constitute Acceptable Waste.

- f. **Delivery Guaranties.** Provide the terms on which guaranties of waste delivery quantities (guaranteed annual tonnages, or GATs) would be included if required for financing, and define opportunities for mitigation of penalties for potential shortfalls through acquisition of waste from commercial sources or other means.
- g. **Delivery Procedures.** Describe load delivery, inspection and acceptance procedures and requirements.
- h. **Invoicing and Payment.** Describe invoicing and payments procedures and requirements.
- i. **Bypass.** Address responsibility for bypass arrangements in the event commercial operation is delayed beyond April 1, 2018, or is thereafter interrupted, or in the event that the PERC Facility closes prior to March 31, 2018.
- j. **Interim Supply Arrangements.** Address interim waste supply arrangements to provide MSW supplies for Facility start-up, testing and commissioning prior to March 31, 2018.
- k. **Joinder Agreements.** Describe the form and content of the Joinder Agreements.
- l. **Out-of-State Waste.** Prohibit acceptance of out-of-state MSW.
- m. **Assignment.** Permit assignment of rights and obligations under the Master Agreement by Fiberight to a Fiberight Affiliate after the commencement of commercial operation provided that the assignee assumes all rights and obligations of Fiberight under the Master Agreement and the Site Lease and Fiberight remains liable for all obligations assumed by the assignee. Permit assignment of rights and obligations under the Master Agreement by the MRC to a successor entity representing the interests of the Joining Municipalities.

3.2 Site Lease Agreement. MRC and Fiberight agree to negotiate in good faith the Site Lease to be executed not later than needed to accommodate financing of the Project. The Site Lease shall:

- a. **Generally.** Provide terms generally adequate to permit development, construction and operation of the Facility by Fiberight. Fiberight shall have quiet enjoyment of the Project

Site during the term of the Site Lease for this purpose.

- b. **Term.** Be for a minimum term of 15 years from the earlier of the commencement of commercial operations or April 1, 2018, with appropriate renewal options up to a total of 40 years
- c. **Site Access.** Contemplate reasonable access to the Project Site with the MRC to be responsible for obtaining necessary easements and consents incident to such access.
- d. **Taxes and Fees.** Provide that Fiberright shall be responsible for property taxes, host fees and any other similar taxes and fees.
- e. **Insurance.** Provide that Fiberright shall be solely responsible for maintaining adequate insurance coverage for the Project, including general liability, property and casualty, workers compensation and other customary coverages with policy limits not less than is customary in the industry.
- f. **Compliance.** Provide that Fiberright shall be responsible for compliance with all agreements and permit requirements.
- g. **Out-of-State Waste.** Provide that Fiberright shall be precluded from accepting out-of-state waste at the Facility.
- h. **Reporting.** Include reporting requirements related to MSW received and processed, materials produced and sold, residuals generated and shipped, product revenues, financial performance, compliance with permit conditions and status of permit renewals, and other material matters, all in form and substance reasonably satisfactory to the MRC.
- i. **MRC Oversight.** Define an oversight role for the MRC with respect to conduct of operations, MSW supply, product marketing, residuals disposal, significant changes in operations or nature of the business, capital improvements, relevant legislative, regulatory and permit matters and events that affect viability of the Project.
- j. **Commercial Operation.** Define "commercial operation," which definition may require satisfactory completion of performance tests.
- k. **Lease Payments.** Provide for triple net lease terms with nominal lease payments, subject to upward adjustment if milestones are missed.

- l. **Amendment.** Allow the parties to amend the Site Lease by mutual agreement, subject to reasonable limits imposed by Fiberight's lenders.
- m. **Termination.** Allow either party to terminate if Fiberight has not put adequate financing in place by January 1, 2017, or if commercial operation is not achieved by January 1, 2020, it being understood that both parties will work in good faith and with reasonable diligence to achieve those milestones.
- n. **Assignment.** Permit Fiberight to assign its interest in the Site Lease to a Fiberight Affiliate after commencement of commercial operation provided that the assignee assumes all of Fiberight's rights and obligations under the Site Lease and the Master Agreement and that Fiberight remains liable for all such obligations. Permit the MRC to assign its interest in the Site Lease to a successor entity representing the interests of the Joining Municipalities.
- o. **Right of First Refusal.** Give the MRC an option and right of first refusal to purchase the Facility upon notice of a potential Change in Control.
- p. **Purchase Option.** Give the MRC the option to buy the Facility at fair market value at the end of the Site Lease term or upon earlier termination or breach of the Site Lease by Fiberight.
- q. **Site Restoration.** Provide for removal of the Facility and restoration of the Project Site by Fiberight upon termination (through a mechanism that survives termination).
- r. **Force Majeure.** Address issues related to force majeure, casualty loss and eminent domain.
- s. **Quiet Enjoyment.** Provide for customary quiet enjoyment rights.

ARTICLE IV OTHER PROVISIONS

4.1 Milestone Schedule. The MRC and Fiberight agree to use all reasonable efforts to fulfill their responsibilities and assigned tasks herein pursuant to the following milestone schedule, which presumes approval of this Development Agreement, and a resolution awarding exclusive development rights to Fiberight, on or about February 4, 2015:

<i>Schedule</i>	<i>Milestone</i>
March 15, 2015	Complete layout of the Project Site and confirm arrangements for development of a site access road, a water supply plan and a plan for wastewater treatment.
May 1, 2015	Prepare plan for internal use or external marketing of post-hydrolysis solids (PHS). Identify approach for supplying electricity to the facility, including fuels and equipment to be used for on-site generation of electricity, and implications of potential emissions from any on-site boiler or gasifier on air emission licensing requirements. Prepare plan for marketing and transport of industrial sugars and/or derived products. Prepare plan for processing bio-gas into pipeline-quality renewable gas, vehicle-ready compressed natural gas (CNG), or other products; and for marketing such products in light of applicable product specifications and requirements.
June 1, 2015	Prepare and submit requisite local, state and federal permit applications to the appropriate authorities. Prepare and submit applications for site plan review and any other required governmental or third party approvals.
September 1, 2015	Provide updated process flow diagram, mass, energy and water balances, facility design plans, estimates of capital costs and operating expenses; and a project pro forma and supporting assumptions and information. Provide sufficient detail to enable evaluation and verification of the feasibility of the project at the proposed performance levels and tip fees by an independent engineer/reviewer.
December 1, 2015	Complete negotiation of the Master Agreement and municipal Joinder Agreements.
December 18, 2015	MRC Board approval and execution of the Master Agreement and Site Lease at the MRC annual meeting.
January to September 2016	Votes by legislative bodies of Joining Municipalities approving the municipal Joinder Agreements.
June 30, 2016	Achieve approval of municipal Joinder Agreements with total aggregate commitment of 150,000 tons per year.
January 1, 2017	Achieve construction financing for the Facility.
April 1, 2018	Achieve commercial operation and be ready to accept incoming MSW.

4.2 Confidentiality.

- a. **Confidentiality.** The MRC and Fiberight each agree to keep confidential all Confidential Information of the other except that each may disclose such information to its officers, directors, stockholders, agents and outside legal counsel, accountants and other

consultants to the extent required in connection with negotiation or implementation of this Agreement. Each agrees to take reasonable steps to safeguard the confidentiality of any such limited disclosure.

- b. **Public Announcements.** Public announcement of the Project or this Agreement shall be made only with the prior written approval of both parties. Each party agrees to work with the other to agree upon an appropriate public announcement of the execution and delivery of this Agreement and of the achievement of milestones thereunder as they occur.
- c. **Use of Confidential Information.** The MRC and Fiberight each agrees that it will not use any Confidential Information obtained from the other for any purpose other than in connection with the negotiation and implementation of this Agreement.
- d. **Required Disclosures.** Notwithstanding the foregoing, either party may disclose Confidential Information to the extent that it reasonably believes that it is required to do so by applicable law, regulation or court order, provided that, prior to making such a disclosure, the disclosing party will provide notice to the non-disclosing party of its intended disclosure in a time and manner calculated, to the extent practicable under the circumstances, to afford the non-disclosing party an opportunity to challenge such disclosure.
- e. **Definition.** For purposes of this Agreement, "Confidential Information" means any data or information, design, process, procedure, formula, business method or improvement that is valuable to the holder thereof and which is not generally known to its competitors or to the public including, but not limited to, financial and marketing information, and specialized information and technology developed or acquired by such party, but specifically excluding any information that (i) becomes known to the general public without fault or breach on the part of the receiving party; (ii) the holder customarily provides to others without restriction on disclosure; or (iii) the receiving party obtains from a third party without breach of any nondisclosure obligation and without restriction on further disclosure.

4.3 Indemnification. Each party (for purposes of this paragraph, the "Indemnifying Party") agrees to indemnify and hold harmless the other party and its directors, officers, employees, agents and consultants (collectively, the "Indemnified Parties"), harmless against any and all liabilities, obligations, losses, damages, penalties, actions, judgments, suits, and reasonable costs, expenses or disbursements of any kind or nature whatsoever, including reasonable attorney's fees and disbursements, that may be suffered or incurred by any of the Indemnified Parties as a consequence of (i) activity related to the Project Site or the Facility undertaken by the

Indemnifying Party, its employees or agents; or (ii) a breach by the Indemnifying Party of its obligations hereunder. NOTWITHSTANDING THE FOREGOING, IN NO EVENT SHALL EITHER PARTY BE LIABLE TO THE OTHER FOR INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES OR FOR LOSS OF ANTICIPATED PROFITS.

4.4 Insurance. During the development process, Fiberight shall maintain adequate insurance policies, including general liability, property and casualty, builders' risk, workers compensation and other appropriate coverage covering the Project Site and Facility with policy limits not less than is customary in the industry. The MRC shall be named as an additional insured on all liability and casualty insurance policies and shall be provided with not less than thirty (30) days prior notice of cancellation.

4.5 Termination

- a. **Mutual Agreement.** This Agreement may be terminated at any time with the written mutual agreement of the parties.

- b. **Failure to Achieve Commercial Operation.** Each party understands that, despite good faith and reasonable commercial efforts, the project may not reach fruition for a variety of reasons that are outside the reasonable control of the parties, including but not limited to, the following:
 - i. Despite reasonable commercial efforts, the Project Site, including required infrastructure for road access or utility interconnections, might not receive necessary land use designations, approvals, licenses or permits.
 - ii. Facility permits might not be issued despite the best efforts of Fiberight to comply with existing standards related to design, operating performance and potential impacts.
 - iii. The number of Joining Municipalities willing and able to enter into Joinder Agreements might be insufficient to support timely acquisition of debt or equity financing or operation of the facility.
 - iv. Fiberight might otherwise be unable to secure financing on a timely and reasonable basis.

In the event that any of the foregoing should occur, either party may elect to terminate this Agreement by providing a thirty (30) day notice of termination to the other party.

- c. **Failure to Enter Into Master Agreement.** If, despite their best efforts, the parties fail to agree on the terms of a Master Agreement by January 1, 2016, then either party may terminate this Agreement by providing a thirty (30) day notice of termination to the other.

The MRC shall not be obligated to enter into a Master Agreement on terms that, in its reasonable judgment as disclosed in a written finding, a sufficient number of Joining Municipalities would be likely to find unacceptable such that it would not be possible to achieve the minimum delivery requirements contemplated by this Agreement. Fiberight shall not be obligated to approve entering into a Master Agreement that, in its reasonable judgment as disclosed in written finding, would preclude its acquisition of timely financing on reasonable terms.

- d. **Failure to Achieve Financing.** If Fiberight fails to achieve financing by January 1, 2017, then either party may terminate this Agreement by providing a thirty (30) day notice of termination to the other.
- e. **MRC Reimbursement of Fiberight Expenses.** If the Project fails to go forward due to (i) a unilateral withdrawal by the MRC of its exclusive award of development rights to Fiberight, other than as a consequence of a breach of this Agreement by Fiberight or a failure by one or both parties to achieve one or more milestones set forth herein despite their good faith efforts, or (ii) a material breach by the MRC of its obligations hereunder, then the MRC will reimburse reasonable development expenses of Fiberight incurred after the effective date of this Agreement.
- f. **Fiberight Reimbursement of MRC Expenses.** If the Project fails to go forward due to material misrepresentation by Fiberight of its capabilities to design, acquire permits for, construct or operate the facility, or other material breach by Fiberight of its obligations hereunder, then Fiberight will reimburse the reasonable development expenses of the MRC incurred after the effective date of this Agreement.

- g. **Survival.** The provisions of Sections 4.2, 4.3, and 4.6(b), (c), (d), (g), (h) and (i) shall survive termination of this Agreement.

4.6 Other provisions.

- a. **Mutual Cooperation.** The MRC and Fiberight agree to cooperate with each other and to use good faith and fair dealing to support completion of each task and achievement of each milestone required for development of the Project Site and the Facility, and to use reasonable commercial efforts to support the efforts of the other party.
- b. **Notices.** Any notice required to be provided hereunder shall be in writing and shall be (i) delivered in person, (ii) sent by recognized overnight courier with acknowledgement of receipt, (iii) sent by certified mail, return receipt requested, or (iv) sent by email with a confirmation copy sent promptly by overnight courier or certified mail, in each case to the following addresses:

If to the MRC:

Municipal Review Committee
395 State Street
Ellsworth, ME 04605
Attention: Executive Director
Email: glounder@mrcmaine.org

If to Fiberight:

_1450 South Rolling Road _____
_Baltimore, MD 21227 _____
Attention: Craig Stuart-Paul _____
Email: _Craigsp@Fiberight.com _____

Either party may change the address at which notices to it are to be delivered by providing notice of such change in the manner provided above.

- c. **Nature of Relationship.** The relationship between the parties established by this Agreement is contractual only and shall not be deemed to create a partnership or joint venture. Neither party shall have the right, power or authority in any way to bind the other party to any contract or obligation, expressed or implied. No employee, agent or consultant engaged by one party shall be deemed to be the employee, agent or consultant of the other.

- d. **Entire Understanding.** This Agreement embodies the entire understanding of the MRC and Fibrigh with respect to its subject matter and supersedes any prior agreements and understandings, whether oral or in writing. No supplement, modification or amendment of this Agreement shall be binding on the parties unless it is embodied in a writing signed by both parties. The failure of either party to enforce, or the delay of either party in enforcing, any of its rights or remedies under this Agreement shall not be deemed a continuing waiver of modification thereof.
- e. **Headings.** The headings and other captions in this Agreement are for convenience of reference only and shall not be used in interpreting, construing or enforcing any of the provisions hereof.
- f. **Assignment.** This Agreement shall be binding upon and shall inure to the benefit of the parties and their respective successors and assigns. Except as otherwise expressly provided herein, it may not be assigned by either party without the prior written consent of the other (which consent shall not be unreasonably withheld, delayed or conditioned), and any attempted assignment without such consent shall be void.
- g. **Force Majeure.** Neither party hereto shall be liable for failure or delay in performing any of its obligations hereunder if such failure or delay is occasioned by compliance with any governmental regulation, request or order, or by circumstances beyond the reasonable control of the party so failing or delaying, including, without limitation, acts of God, war, terrorism, insurrection, fire, flood, freezes, accident, labor strikes, work stoppage or slowdown (whether or not such labor event is within the reasonable control of the parties). Each party shall (i) promptly notify the other in writing of any such event of force majeure, the expected duration thereof, and its anticipated effect on the ability of such party to perform its obligations hereunder; and (ii) make reasonable efforts to remedy any such event of force majeure. Notwithstanding the foregoing, no event of force majeure shall affect the termination rights of either party pursuant to Section 4.5 of this Agreement.
- h. **Reformation.** Should any provision of this Agreement be determined to be illegal or in conflict with any law, rule, statute, ordinance or regulation, the illegal or conflicting provision shall be deemed amended to the extent necessary to remove such illegality or conflict and the validity of the remaining portion or provisions shall not be affected thereby.
- i. **Governing Law; Venue.** This Agreement shall be governed by and construed in accordance with the laws of the State of Maine without regard for conflict of law principles. The parties expressly agree that any action or proceeding to enforce the

rights of either party under this Agreement, or otherwise related to the subject matter hereof, may not be brought or prosecuted in any court or forum other than the courts of the State of Maine or the federal District Court for the District of Maine, and each party voluntarily, unconditionally and irrevocably submits to the jurisdiction of such courts.

- j. **Outside Investment.** The MRC understands that Fiberight will be seeking financing for the Facility from outside investors and lenders. The MRC agrees to make reasonable provision for, and will provide reasonable consents to support, protection of lender rights and other reasonable provisions for the security of Fiberight's investors and lenders including, without limitation, notices of defaults to identified investors and lenders with rights to cure, rights to name a replacement operator, and similar provisions related to investor and lender protection.

- k. **Continuation of Waste Disposal Services.** Fiberight understands that the facility will become an essential part of the infrastructure for management of MSW in central and eastern Maine, and that its operation will make an important contribution to the protection of public health, public welfare and the environment from potential adverse impacts of solid waste management. Fiberight will incorporate into its agreements reasonable provision for continuation of solid waste management services under a variety of scenarios in the event that the Facility is not developed and operated as contemplated by this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement under seal as of the 4th day of February, 2015.

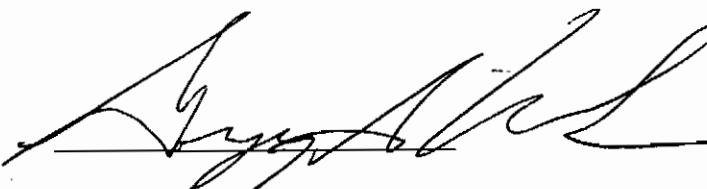
WITNESS:

MUNICIPAL REVIEW COMMITTEE



By Chris Renee
Its President

FIBERIGHT, LLC



By [Signature]
Its CEO

ATTACHMENT F
GENERAL CONSTRUCTION SCHEDULE

ATTACHMENT F

SCHEDULE

The proposed start of construction of the processing facility is September 1, 2016 with a construction completion date of September 1, 2017. The access road to the proposed facility will begin during the Summer of 2016. Operation of the facility will subsequently begin at the completion of construction and shall be fully on-line and accepting waste from MRC member municipalities by April 1, 2018.