SENSIBLE SOLUTIONS

CES INC

APPLICATION FOR A SOLID WASTE PROCESSING FACILITY

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

STATE OF MAINE
DENIS P.
ST. PETER
No. 9173
LICENSED
PROFESSIONAL ENGINEER

JUNE 2015
JN: 11293.001

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

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

www.ces-maine.com

Engineers • Environmental Scientists • Surveyors

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Solid Waste Program
Attn: Geraldine Travers
17 State House Station
Augusta, Maine 04333-0017
Telephone: (207) 287-2651

FOR DEP USE ONLY	
ATS ID: ________ Seq.: ______ DEP ID: ________	Received by DEP: ________
Bureau: S Type of Application: WK Activity: N	Fees Paid: ________
Project Analyst: ________	Check No.: ________

APPLICATION FOR A SOLID WASTE PROCESSING FACILITY

This form shall be used to request approval for the establishment of a new solid waste processing facility, pursuant to 38 MRSA, Section 1301 et seq., and Maine's Solid Waste Management Regulations.

PLEASE TYPE OR PRINT

Company Name: Fiberight, LLC **Telephone:** ________
Applicant's Last Name: ________ First Name: ________
Contact Person: Craig Stuart-Paul Telephone: 1-800-728-9886

Address Information

Applicant Name: Municipal Review Committee, Inc.
Telephone: 207-664-1700
Mailing Address: 395 State Street
Street Address: 395 State Street
Town: Ellsworth State: ME Zip: 04605

Applicant Name: Fiberight, LLC
Telephone: 410-340-9387
Mailing Address: 1450 South Rolling Road
Street Address: 1450 South Rolling Road
Town: Baltimore State: MD Zip: 21227

Address: Billing
Name: Fiberight, LLC
Mailing Address: 1450 South Rolling Road
Street Address: 1450 South Rolling Road
Town: Baltimore State: MD Zip: 21227

Agent/Consultant Name: CES, Inc. (Denis St. Peter)
Telephone: 989-4824
Mailing Address: P.O. Box 639
Street Address: 465 South Main Street
Town: Brewer State: ME Zip: 04412

Site/Activity Information

Project Description: New Solid Waste Processing Facility
Location: Coldbrook Road, Hampden, Maine **Directions to Site:** From I-95 take exit 180 onto the Coldbrook Road. Facility site access is located approximately 0.6 miles southeast of I-95.

PLEASE SEE PAGE 2 - SIGNATURE REQUIRED

SIGNATURE OF APPLICANT

By signing this application, the applicant certifies that he or she has: (1) published the public notice form once in a newspaper circulated in the area where the project is located, (2) sent a copy of the public notice form to the owners of property abutting the land upon which the project is located, (3) sent a copy of the public notice form to the chief municipal officer and chair of the municipal planning board of the municipality in which the project is located (4) filed a complete copy of this application in the municipal office of the municipality in which the project is located, (5) reviewed the instructions contained in this application form, and (6) reviewed the appropriate state laws that relate to the proposed project.

I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I, the property owner or lessee, authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

DATE: 5/13/2015

NAME: ______________________
Greg Lounder – Municipal Review Committee

TITLE: Executive Director

DATE: 5/13/2015

NAME: ______________________

TITLE: Craig Stuart-Paul – CEO, Fiberight LLC

(If other than applicant, attach letter of agent authorization.)

PLEASE SEE ATTACHED FEE SCHEDULE TO DETERMINE THE APPLICATION FEE FOR FOR A SOLID WASTE PROCESSING FACILITY.

INSTRUCTIONS

1. **<u>Please refer to Chapters 400 and 409 of the “Maine Solid Waste Management Regulations” to understand the standards and requirements for the design and operation of a solid waste processing facility.</u>** If you have any questions that arise at any point during the application or review process, please contact the DEP Solid Waste Program staff.

2. <u>Pre-Application meeting.</u> Applicants proposing to establish a new solid waste processing facility are encouraged to meet with DEP staff to discuss the proposed project. The meetings can help avoid unnecessary expense and processing delays.

3. <u>Fill out the application completely.</u> INCOMPLETE APPLICATIONS WILL BE RETURNED, CAUSING UNNECESSARY DELAYS IN THE REVIEW PROCESS. All work to support the investigation, design, and construction of a solid waste facility must be undertaken by individuals whose training, experience and professional certification is appropriate to accomplish the specific tasks with accuracy and technical proficiency. Reports, plans or other materials submitted in support of the application must bear the signature and, if appropriate, the seal of the individual who drafted or supervised the drafting of each document.

4. Publish a “Notice of Intent to File” this application once in a newspaper circulated in the area where the project is located. (A form for this notice is attached to this application.) The notice should appear in the newspaper within 30 days prior to filing the application with the DEP.

5. Send by certified mail, a copy of the “Notice of Intent to File” to all the owners of property abutting the project. Their names and addresses can be obtained from town tax maps or local public officials. Abutters must receive notice within 30 days prior to filing the application with the DEP. If your project abuts a road or other public or private right-of-way, the person on the opposite side of the right-of-way must be notified.

6. Send by certified mail, a copy of the “Notice of Intent to File” to the chief municipal officer and to the chairperson of the planning board in the municipality where the project is to be located. If the project is located in an unorganized area, send the notice and application to the appropriate Office of the County Commissioners and the Maine Land Use Regulation Commission, 22 State House Station, Augusta, Maine 04333-0022. The notice must be filed in the appropriate office within 30 days prior to filing with the DEP.

7. Submit to the Department the application along with all attachments, a copy of the “Notice of Intent to File”, and a check for the appropriate application fee made payable to “Treasurer, State of Maine”. <u>Please consult with DEP staff to determine how many copies</u> of the completed application form and supporting reports must be submitted to the Department. In general, three copies of site plans, drawings, soil maps, or other data on sheets larger than 8½" x 14" copies must be submitted unless the staff determines that fewer copies are needed. ALL PLANS SHOULD BE FOLDED TO SIZE 8½" x 11" unless otherwise indicated by DEP staff. Any part of the application which has been prepared by a P.E., C.G. or C.S.S. must be stamped and signed by that person. If the applicant is a corporation, a certificate of good-standing from the Secretary of State must be included.

8. Send one complete copy of the application and any amendments that are subsequently submitted to the Municipal Office of the town within which the project is located. If the project is located in an unorganized area, send the application to the appropriate Office of the County Commissioners and the Maine Land Use Regulation Commission, 22 State House Station, Augusta, Maine 04333-0022. The application must be filed in the municipal office or at the County Commissioners Office and LURC at the time of filing with the DEP.

9. <u>Keep a copy</u> of the completed application for your files. This copy will be helpful in speeding up communications with the DEP staff if any questions arise during the review of the project.

10. Upon the approval by the Department of Environmental Protection, a permit will be issued and sent to the applicant. The applicant should read the permit carefully in order to become familiar with any conditions. Failure to comply with the approved plan or conditions of approval may lead to enforcement action or the revocation of a permit.

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).

REQUIRED INFORMATION FOR
APPLICATION FOR A SOLID WASTE PROCESSING FACILITY

1. **Description**. Provide a brief description of the proposed processing facility, including the types of waste to be handled.
   REFER TO ATTACHMENT 1

2. **Schedule**. **REFER TO ATTACHMENT 2**
   a. Proposed date of start of construction: ______________________
   b. Proposed date of start of operation: ________________________
   c. Anticipated lifetime of facility use: _________________________

3. **Topographic Map**. Submit the most recent full size U.S.G.S. topographic map (7.5 minute series if available) showing the location of the proposed facility, the waste facility boundary and the property boundary. If the facility will be handling putrescible wastes, also show all airports within 10,000 feet of the waste handling area. The map must include all surrounding areas within one mile of the proposed waste handling area. **REFER TO ATTACHMENT 3**

4. **Title, Right, or Interest.** State the number of acres included in the facility site (see Chapter 400 for the definition of "facility site") __________. Attach copies of deeds, leases, contracts or agreements that establish the applicant's title, right or interest for the proposed site. **REFER TO ATTACHMENT 4**

5. **Abutters**. Attach a copy of the municipal tax map with the proposed site and names of abutting property owners clearly marked. Also, include a list of the names and addresses of all the owners of property abutting the proposed facility site. **REFER TO ATTACHMENT 5**

6. **Notice of intent to file.** Provide a copy of the completed "Notice of Intent to File" and evidence of compliance with the public notice requirements delineated in items 4, 5, and 6 of the instructions. **REFER TO ATTACHMENT 6**

7. **Financial ability**. Submit evidence that affirmatively demonstrates the financial ability of the applicant to develop the project in a manner consistent with the State environmental standards and laws. Refer to Chapter 400, section 4.B for standards and submission requirements. **REFER TO ATTACHMENT 7**

8. **Technical ability**. Include evidence that affirmatively demonstrates that the applicant has the technical ability to design, construct, operate, maintain and close the facility. If the proposed project will be managed by other than the applicant, state the persons or businesses that will be responsible for management and operation of the facility. This information should include the applicant's or operator's prior experience and/or appropriate training related to the nature of the proposed facility, and a description of the personnel who will be employed to design, construct, operate, maintain and close the facility. **REFER TO ATTACHMENT 8**

9. **Disclosure statement**. Include the criminal or civil record of the owner, operator, or anyone having a legal interest in the applicant or the facility, as described in Chapter 400, Section 12(A) of the Maine Solid Waste Management Regulations. **REFER TO ATTACHMENT 9**

10. Other authorizations. Identify all environmental or land use licenses, permits, or authorizations which are or may be required by any governmental agency. Indicate those now held with an asterisk(*); indicate when the remaining licenses and permits will be obtained. **REFER TO ATTACHMENT 10**

Building permit: _______ Waste discharge license: _______

Plumbing permit: ______ Highway entrance license: ________

Air emissions license: ______ Other (describe): __________

11. Fitting harmoniously into the natural environment. Identify all unusual natural areas on or adjacent to the facility site and include evidence that affirmatively demonstrates that the proposed facility will not unreasonably adversely affect protected natural resources. Also, submit information confirming that the waste handling area at the proposed facility will not be:

(a) Closer than 100 feet to the solid waste boundary of an active, inactive or closed solid waste landfill;
(b) Within a 100 year flood plain;
(c) Within 100 feet of a protected natural resource;
(d) In, on or over a protected natural resource, or on land adjacent to the following areas, without first obtaining a permit pursuant to 38 M.R.S.A. section 480-A et seq.:
   (i) A coastal wetland, great pond, river, stream or brook, or significant wildlife habitat contained within a freshwater wetland; or
   (ii) Freshwater wetlands consisting of or containing:
      - under normal circumstances, at least 20,000 square feet of aquatic vegetation, emergent marsh vegetation or open water, except for artificial ponds or impoundments or
      - peatlands dominated by shrubs, sedges and sphagnum moss;
(e) Closer than 300 feet to off-site water supply wells or water supply springs;
(f) Closer than 100 feet to public roads and property boundaries;
(g) Closer than 10,000 feet to any airport runway used by turbojet aircraft, or within 5,000 feet of any airport runway used by only piston-type aircraft, when putrescible waste is to be handled outdoors in an uncovered or exposed condition; and
(h) Closer than 500 feet to residences in existence at the time the application is filed, other than residences owned by the facility owner or operator. **REFER TO ATTACHMENT 11**

12. Site Design Information. Please submit the following:

(a) Site Plan. A detailed plan of the area within 500 feet of the waste handling area, at a scale of 1 inch = 100 feet or a larger engineering scale and prepared by a qualified professional. This plan must clearly show, if applicable: all structures; protected natural resources; roads; property boundaries; receiving, processing, curing and storage areas; residences; erosion and sedimentation control features; odor control structures; water supply wells and springs; water quality monitoring points; and barriers or fencing and gates to prevent unauthorized persons access to the site. For facilities involving outdoor handling of putrescible wastes in an uncovered or exposed condition, this plan must also note the direction and distance of airports within 10,000 feet of the waste and waste handling area.

(b) Plan views of structures and utilities. A large scale construction plan view drawing, with a minimum engineering scale of 1 inch = 40 feet, clearly showing any building(s) with foundations; processing unit(s); utilities; leachate, storm water, and erosion and sedimentation control details; and, if applicable, odor control systems.

(c) Subsurface Investigation Information. Whenever the proposed processing facility includes the use of in-situ soils as any part of a soil base pad for handling solid wastes, including structures requiring foundations, or includes subsurface wastewater holding or disposal systems, the application must include information from a subsurface investigation. The subsurface investigation must provide soil test data in the proposed handling areas from a certified professional describing the surficial geology and/or the subsurface soils. This information must demonstrate that the facility design is compatible with the site's soil characteristics and will not pose an unreasonable risk that a discharge to a significant groundwater aquifer will occur, as determined by applicable engineering standards of practice.

(d) Aquifer map. Submit a copy of the most recent Maine Geological Survey Significant Aquifer Map or Sand and Gravel Aquifer Map with the facility site and the waste handling area clearly delineated. **REFER TO ATTACHMENT 12**

13. Process Design Information. Please submit a general description of the facility's waste processing system. This must include, if applicable, process flow diagram(s), the source, volume, and characteristics of wastes to be received, the products and wastes to be generated; the methods to be utilized to mix, process and store wastes and products; the processing equipment to be used on site; provisions for characterization, including analytical information demonstrating that the incoming wastes meet the classification proposed to be handled at the facility; an identification of applicable standards for the product that the facility will produce, including, when applicable, an identification of waste derived product standards from Chapter 418, and/or residual standards from Chapter 419, or other applicable standards from these rules, and a description of how these standards will be met. **REFER TO ATTACHMENT 13**

14. Environmental Monitoring Plan. A processing facility may be required to submit an environmental monitoring program for review and approval by the Department if the Department determines that the facility may pose a potential threat to public health or safety or to the environment because of the nature of the waste proposed to be handled and/or the location, design and operation of the facility. This plan may include a waste characterization plan. The department may make the determination that such a plan is needed as part of a pre-application meeting process or after the application has been received and initially reviewed. **REFER TO ATTACHMENT 14**

15. Traffic Movement. Submit information in compliance with the submission requirements of Chapter 400, section 4.D(2) to demonstrate that the facility will meet the standards of Chapter 400, Section 4.D(1). **REFER TO ATTACHMENT 15**

16. Existing Uses and Scenic Character. Describe the existing use of the site. Also, provide information sufficient to meet the standards and submission requirements of Chapter 400, section 4.F. **REFER TO ATTACHMENT 16**

17. Air Quality. Provide information sufficient to meet the standards and submission requirements of Chapter 400, section 4.G. This may include a demonstration that the materials handled at the facility do not generate objectionable odors; comparative studies with similar existing facilities taking into account similarities and differences in feed stocks, composting processes, facility design, throughput, proximity to neighbors, meteorological conditions and topography; or odor dispersion modeling studies demonstrating that the facility will not cause more than a one hour average odor impact of 2 dilutions to threshold (2D/T), in any calendar year at any occupied buildings. **REFER TO ATTACHMENT 17**

18. Stormwater and erosion and sedimentation control. Provide information sufficient to meet the standards and submission requirements of Chapter 400, section 4.H and Chapter 400, section 4.J. **REFER TO ATTACHMENT 18**

19. **Other Natural Resources.** Provide information sufficient to meet the standards and submission requirements of Chapter 400, section 4.I. **REFER TO ATTACHMENT 19**

20. **Adequate Provisions for Utilities.** Provide information sufficient to meet the standards and submission requirements of Chapter 400, section 4.L**.** **REFER TO ATTACHMENT 20**

21. **Flooding.** Provide information sufficient to meet the standards and submission requirements of Chapter 400, section 4.M. This must include the most recent Federal Emergency Management Agency's flood insurance rate map of the area, if applicable, with the location of the facility site clearly marked when the site is within ¼ mile of the 100 year floodplain. **REFER TO ATTACHMENT 21**

22. **Residuals and waste derived product distribution plan.** Where residuals are proposed for agronomic utilization, the applicant must also submit the application information required for licensing under Chapter 567. Where waste derived products are proposed for other beneficial uses, the applicant must also submit the application information required for licensing under Chapter 418. The applicant must describe the disposition of other materials generated at the facility that are not covered under a beneficial use or agronomic utilization program. The Department may require financial assurance in the form of a letter of credit, escrow account, or other approved financial security to finance the cost of potential remediation or disposal of waste or secondary products. **REFER TO ATTACHMENT 22**

23. **Operations manual**. Submit an operations manual, suitable for use by the facility, which includes at a minimum all information that would enable supervisory and operating personnel and persons evaluating the operation of the facility to determine what sequence of operation, plans, diagrams, policies, procedures, and legal requirements are to be followed for orderly and successful operation on a daily and yearly basis. The operations manual must address all the applicable requirements specified in Chapter 409, section 4. Variances from operational requirements may be requested pursuant to Chapter 400, Section 13 of the Solid Waste Management Regulations. **REFER TO ATTACHMENT 23**

24. **If a variance or variances are being requested as part of this application, specify the nature of the variance and the justification for why it should be granted.** Refer to Chapter 400, Section 13 of the Solid Waste Management Rules for the standards and submissions required in this variance application. **REFER TO ATTACHMENT 24**

END

STATE OF MAINE
Department of the Secretary of State
Bureau of Corporations, Elections and Commissions
101 State House Station
Augusta, Maine 04333-0101

May 20, 2015

TRACEY STUART-PAUL
FIBERIGHT LLC
107 FOREST DRIVE
CATONSVILLE MD 21228

ATTESTED COPIES
WR DCN: 2151402230006

Enclosed please find copies of documents recently placed on file with our office. Each copy has been attested as a true copy of the original and serves as your evidence of filing. We recommend that you retain these permanently with your records.

Charter#: 20150853FC Legal Name: FIBERIGHT LLC

FOREIGN QUALIFICATION

DCN: 2151402230007 Page(s)

Total Pages

FOREIGN
LIMITED LIABILITY COMPANY

STATE OF MAINE

STATEMENT OF FOREIGN QUALIFICATION TO CONDUCT ACTIVITIES

File No. 20150853FC Pages 5
Fee Paid $ 250
DCN 2151402230007 QUAL
-----FILED-----------------------
05/19/2015

Deputy Secretary of State

A True Copy When Attested By Signature

Deputy Secretary of State

Fiberight LLC
(Name of Limited Liability Company in Jurisdiction of Organization)

Pursuant to 31 MRSA §1622, the undersigned limited liability company executes and delivers the following Statement of Foreign Qualification:

FIRST: If the name of the limited liability company in the jurisdiction of organization does not contain one of the words or abbreviations required by 31 MRSA § 1508.1 ("limited liability company" or "limited company" or the abbreviation "L.L.C.," "LLC," "L.C." or "LC" or, in the case of a low-profit limited liability company, "L3C" or "l3c"), the proposed name to be used in this State in compliance with this requirement is: * (If not applicable, so indicate.)

____

SECOND: If the name of the limited liability company in the jurisdiction of organization is unavailable pursuant to 31 MRSA §1508, the fictitious name under which it seeks authority to conduct activities in the State of Maine is: (If not applicable, so indicate.)

____

☐ Form MLLC-5 accompanies this application. (See 31 MRSA § 1624.1)

THIRD: Date of formation: 10/3/2007 Jurisdiction where formed: Delaware

Address of the principal office, wherever located:

107 Forest Drive, Catonsville, MD 21228
(physical location - street (not P.O. Box), city, state and zip code)

PO Box 21171, Catonsville, MD 21228
(mailing address if different from above)

FOURTH: The foreign limited liability company is a foreign limited liability company as defined in 31 MRSA §1502.11.

FIFTH: The nature of the business or purpose(s) to be conducted or promoted in the State of Maine is:

Solid waste processing of trash into biofuels.

SIXTH: The Registered Agent is a: (select either a Commercial or Noncommercial Registered Agent)

☑ Commercial Registered Agent CRA Public Number: P10098

Michael E. High
(name of commercial registered agent)

☐ Noncommercial Registered Agent

(name of noncommercial registered agent)

(physical location, not P.O. Box – street, city, state and zip code)

(mailing address if different from above)

SEVENTH: Pursuant to 5 MRSA §105.2, the registered agent listed above has consented to serve as the registered agent for this limited liability company.

EIGHTH: The name and business, residence and mailing address of each manager (if any):

NAME	ADDRESS
Craig Stuart-Paul	107 Forest Drive, Catonsville, MD 21228
Richard Golden	3 Drumlin Road, Weston, MA 02493
James Long	PO Box 972, Great Falls VA 22066

☑ Names and addresses of additional managers are attached as Exhibit _/_, and made a part hereof.

NINTH: The date on which the foreign limited liability company commenced or expects to commence conducting activities in the State of Maine is 6/1/15.

TENTH: Check only if applicable

☐ This is a professional limited liability company qualified pursuant to 13 MRSA Chapter 22-A to provide the following professional services (see 13 MRSA, chapter 22-A for information on what constitutes professional services):

(type of professional services)

ELEVENTH: **(Check if applicable)**

☐ The foreign limited liability company is governed by an agreement that establishes or provides for the establishment of designated series having separate rights, powers or duties with respect to specified property or obligations of the foreign limited liability company or profits and losses associated with specified property or obligations. Additional information required pursuant to MRSA 31 §1622.2.J are attached hereto as Exhibit ________, and made a part hereof.

TWELFTH: This statement of qualification is accompanied by a certificate of existence or such other document that the Secretary of State determines to be suitable for purposes of proving the valid existence of the foreign limited liability company under the law of the State or other jurisdiction listed in item Third. The certificate or other document must not have been issued more than 90 days before the delivery of this statement to the office of the Secretary of State.

Dated 5/11/15

(Authorized Signature**)

Craig P. Stuart-Paul CEO

(Type or print name and capacity)

*The limited liability company name as used in the State of Maine must contain one of the following: "limited liability company" or "limited company" or the abbreviation "L.L.C.," "LLC," "L.C." or "LC" or, in the case of a low-profit limited liability company, "L3C" or "l3c" – see 31 MRSA 1508). If the limited liability company's name in its jurisdiction of organization complies with 31 MRSA § 1508 with the addition of these words, then no fictitious name filing is required pursuant to 31 MRSA §§ 1622.2.A and 1624.1.

Statement **MUST be signed by at least one **authorized person** (31 MRSA §1676.1B).

The execution of this statement constitutes an oath or affirmation under the penalties of false swearing under 17-A MRSA §453.

Please remit your payment made payable to the Maine Secretary of State.

Submit completed form to:

Secretary of State
Division of Corporations, UCC and Commissions
101 State House Station
Augusta, ME 04333-0101
Telephone Inquiries: **(207) 624-7752** Email Inquiries: CEC.Corporations@Maine.gov

Exhibit 1

Part 8 – Managers

Steve Ragiel
2740 Centenary St.
Houston, TX 77005

Philip Sheibley
281 Turtleback Road
New Cannan, CT 06840

Delaware

The First State

I, JEFFREY W. BULLOCK, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY "FIBERIGHT LLC" IS DULY FORMED UNDER THE LAWS OF THE STATE OF DELAWARE AND IS IN GOOD STANDING AND HAS A LEGAL EXISTENCE SO FAR AS THE RECORDS OF THIS OFFICE SHOW, AS OF THE FOURTEENTH DAY OF MAY, A.D. 2015.

SECRETARY OF STATE · 1776 · DELAWARE · 1970

Jeffrey W. Bullock, Secretary of State

4434359 8300

AUTHENTICATION: 2379502

150652638

DATE: 05-14-15

You may verify this certificate online at corp.delaware.gov/authver.shtml

ATTACHMENT 1

DESCRIPTION

ATTACHMENT 1

DESCRIPTION

Municipal Review Committee, Inc. (MRC) and Fiberight LLC, (Fiberight) have prepared this joint application to construct and operate a regional Solid Waste Processing Facility in Hampden, Maine, to process municipal solid waste (MSW) (the Facility).

MRC and Fiberight have partnered together to develop the Facility to manage MSW generated in 187 MRC member municipal communities in north, central, and eastern Maine. The new Facility is needed in part as a result of contracts set to expire on March 31, 2018, between MRC member municipalities and Penobscot Energy Recovery Company (PERC).

MRC generates an average of 410 to 550 tons of MSW per day. The Facility will be designed to accept up to 650 tons of MSW per day to account for seasonal fluctuations in waste deliveries. MSW received at the Facility will be generated by existing MRC member communities. MRC and Fiberight also have interest in serving the MSW disposal needs of other non-MRC communities that have historically relied on PERC for MSW disposal as well as other Maine communities who may decide to contract with MRC and Fiberight for solid waste disposal[1]. MSW received will be unloaded on a tip floor located inside a 144,000 square foot building that is part of the Facility. The tip floor in the building is designed to accommodate two days inside storage capacity for raw MSW and two days inside storage capacity for first cut material from which unsuitable waste such as textiles and large bulky items have been removed. A second sort will separate the curbside-type recyclables from food waste and other organics in the waste stream, which will then ultimately be processed into sugars and bio-methane. Initially, the sugars along with the soluble organics will be converted to bio-methane and piped into the natural gas pipeline located adjacent and to the east of the Facility. In the future, the sugars maybe sold directly as industrial sugars subject to prevailing market conditions.

Fiberight anticipates approximately 80 percent of all incoming waste to the Facility will be converted into renewable fuels and the remaining 20 percent will be in the form of (i) bailed recyclables which will be sold on the commodities market, (ii) larger metals removed from the process and sold as recyclables, and (iii) process residues, glass, and grit to be disposed off-site. In addition to residues, MRC and Fiberight have planned for disposal of MSW bypass waste due to scheduled and unscheduled downtimes or for other unforeseen reasons when the plant cannot process waste. As part of this planning effort, MRC and Fiberight have received letters of intent form Waste Management, Crossroads Landfill, and Tri-Community Landfill (Refer to Attachment 22) to accept residue and bypass waste generated at the Facility.

To facilitate development of the project, MRC and Fiberight have entered into a Development Agreement (Refer to Attachment 4). As outlined in the Development Agreement, Fiberight will own the Facility and be responsible for the design, engineering, acquisition of permits, procurement of equipment, financing[2], construction, start-up, testing, commissioning, operations, and maintenance. MRC will secure fee ownership or long term control of the project site and

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[1] By December 1, 2015, the MRC and Fiberight will enter into a Master Waste Supply Agreement, which will set forth terms under which joining municipalities will deliver MSW to the Facility. After the Master Agreement is finalized, MRC will be responsible to enter into agreements with Joining Municipalities based on the terms and conditions established in the Master Agreement and will outline agreements by which those municipalities will deliver MSW to the Facility.
[2] MRC and Fiberight will apportion financing of costs with respect to road access, environmental mitigation, and other infrastructure upgrades to support development of the project site (Refer to Attachment 4).

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 MRC.

The project site where the Facility is located is within a 90 +/- acre parcel currently accessed by a private road. To acquire the land necessary to develop the Facility, MRC has entered into an "Option to Purchase" agreement (Refer to Attachment 4) with the current landowner. In addition to the Facility parcel, MRC's option also allows it to acquire sufficient property interests to construct a 4,460 foot access road to the processing building. Although the access road is discussed in this permit application to provide a complete overview of the project, it will be permitted separately under 06-096 CMR Chapter 500, Stormwater Management, as well as under MDEP Natural Resources Protection Act and U.S. Army Corps of Engineers permits.

Attachments 12 and 13 of this joint application provide detailed design plans of the overall Facility, as well as a detailed description of the process utilized to convert MSW to renewable fuels referenced above.

Prior to submission of this joint application, MRC, Fiberight, and their representatives attended a pre-application meeting with MDEP on March 19, 2015. The purpose of the meeting was to provide an opportunity to determine the statutory and regulatory requirements that apply to the project, and to identify the Department staff member who will serve as Project Manager for the application. During the meeting, specific issues were identified as well as processing times, fees, and types of information and documentation necessary for the Department to assess the project. A written summary of the pre-application meeting was prepared by the Department. A copy of the written summary with comments added by the MRC, Fiberight, and their consultants CES, Inc. and CommonWealth Resource Management Corp. is included in this Attachment.

As discussed at the pre-application meeting, this project will be a multi-bureau permitting effort. The current joint application is intended to satisfy the requirements for the establishment of a new solid waste processing facility, pursuant to 38 MRSA, Section 1301 et seq. and Maine's Solid Waste Management Regulations (SWMR), including 06-096 Code of Maine Rules (CMR) Chapter 409 "Processing Facilities". In addition to obtaining a solid waste processing facility license, all necessary approvals under the Maine Natural Resources Protection Act and Section 404 Program of the Clean Water Act administered by the U.S. Army Corps of Engineers will be sought and obtained for the Facility (in addition to the access road noted above). In this respect, natural resource work is currently ongoing at the project site and all necessary permit applications are anticipated to be submitted concurrently to MDEP and the U.S. Army Corps of Engineers by the end of June 2015.

MRC-Fiberight Pre-Application Meeting Minutes

Prepared by MDEP

MDEP Office, March 19, 2015

12PM – 2:45PM

1. Meeting began with an overview of each project team and their respective roles (see attached attendee list). CommonWealth Resource Management Corporation is a consultant to MRC. CES is a consultant to both MRC and Fiberight. Denis St. Peter, CES, will serve as the project manager for both applicants. Melanie Loyzim, Director, Bureau of Remediation & Waste Management, gave an overview of the MDEP project team structure. David Burns has been assigned to serve as the MDEP project manager responsible to coordinate the multi-bureau permitting effort (see attached e-mail delineating project team roles). Discussion occurred regarding points of contact between MDEP and the co-applicant team of MRC-Fiberight. Denis St. Peter will develop a communications plan on behalf of the applicant. David Burns stated that he wants to be copied on significant communications between the applicant and the various permitting programs, but that communications should occur directly with the appropriate licensing staff member.
2. Greg Lounder, Executive Director, MRC, gave an overview of MRC and its member towns. Current MRC communities generate approximately 180,000 tons per year of waste (2014 data); 150,000-160,000 tons per year is the minimum anticipated tonnage needed for the proposed facility. All waste accepted will be from Maine communities, with a priority given to those communities that have disposal agreements with PERC which are scheduled to end in 2018. MRC-Fiberight expects a maximum of 30-40,000 tons per year of residuals needing disposal; the target is 20% or less of incoming tonnage. MRC-Fiberight is under discussions with facilities to secure disposal and bypass outlets but does not currently have arrangements. Discussion occurred regarding the timing of securing an arrangement versus submittal of an application. Agreement was reached that a Chapter 409 application can be accepted for processing as long as 1) it includes a letter of intent from a disposal facility to accept the bypass and residuals and shows the disposal facility has adequate capacity to do so, and 2) the contractual terms of this relationship are completed prior to any final agency decision.
3. CES presented an overview of the site and its features. The proposed Hampden location is zoned industrial. Sewer/water is needed; these are most likely to come into the site from the adjacent Ammo Industrial Park. There is an existing 10-15’ wide gravel access road from Coldbrook Road into the site as far as the intersection with the Bangor Gas pipeline. This road will need to be widened to two 12’ travel lanes with 3’ shoulders; the length of the road will be approximately 4500’. A portion of the road near Coldbrook Road may already be permitted under the Site Law. Jim Beyer will do a file search to

determine the status of this segment of the road. A decision on the permitting mechanism for the access road will be made once the file search is completed. CES has not completed a full delineation of wetlands within the project area, nor have they been able to evaluate the existence of vernal pools. Preliminary findings indicated up to 2 acres of wetland area may be impacted, most of which are impacted due to the access road. There are 2 streams within the project watershed area, one of which is Shaw Brook, a designated 'Urban Impaired Stream'. CES also noted that there is a mapped deer wintering area within the site boundary. IF&W has commented that the site has been cut within the last 10 years and the quality of cover within this area is low. CES presented an overview of the processing facility building, an overall site plan, and ancillary support features. The processing building will be approximately 144,000 square feet plus a 9,800 square foot administrative building. CES mentioned that the site plan presented is preliminary and the version presented is subject to change as progress is made.

4. Alan Iantosca, Fiberight, gave an overview of the processing facility. The facility is being designed to process 650 tons per day. They intend to process MSW in the front end materials recovery section of the plant using 2 shifts with the third shift preserved for maintenance. The back end of the plant will run 24/7. Process outputs were discussed, including plans to clean up the biogas from the anaerobic digester and inject it into the adjacent Bangor Gas pipeline. Wastewater discharge from the facility will be minimal, and discussions are underway locally with the Bangor Wastewater Treatment Facility to handle the discharge. See the attached overview presentation for further details on the processing facility components. Fiberight did indicate there will be potential proprietary components of the processing line identified in the application. Fiberight stated that off-site fuel sources will normally not be necessary for either boiler startup or as a supplemental fuel to sustain the combustion process. However, the boiler will be designed with the capability to fire biogas and/or natural gas should it be required to sustain plant operations in the event that there is an interruption in the normal boiler fuel supply system. Fiberight indicated they will have 2 days inside storage capacity for raw MSW and 2 days inside storage capacity for 1st cut material.
5. MRC and Fiberight intend to be co-applicants on many, if not all, applications to MDEP. A final decision will be made once the permitting status of the existing access road is determined. MRC mentioned that their general counsel reported to the MRC Board that the co-applicant approach would satisfy title/right/interest thresholds for the application process. MRC also reported progress on drafting of the site lease agreement between MRC and Fiberight which is on course to be finalized by late April. For the solid waste program, Chapter 409 will be the governing licensing chapter. Paula Clark stated that any approvals required under the provisions of Chapter 418 for the use and/or distribution of waste-derived products could be combined with the Chapter 409 license into a single order. For the air program, further information is necessary in order to determine if the facility will be considered a minor source as expected, or a major source. Air modelling

may or may not be necessary. Fiberight will provide a drawing showing all emission points. CES and MDEP staff members in the Air Bureau are having on-going discussions regarding this. Chapter 500 and NRPA permits are anticipated, although Chapter 500 may be incorporated into the Chapter 409 permit once the access road issue is resolved. It may be possible to grade the site in a manner that avoids drainage from the project into Shaw Brook. Jim Beyer indicated that an Army Corps of Engineers permit for the wetland work will also be needed. Industrial stormwater Multi-Sector General Permit (MSGP) requirements were discussed but Angie Dijanic indicated that a decision could not be made as to whether the facility will come under Notice of Intent (NOI) to comply with MSGP or No Exposure Certification (NEC) until the facility is operational and real time activities can be observed. Denis St. Peter clarified that they will need to make a determination and file an NOI or NEC prior to operation in order to remain in compliance. For the consolidated application process, the longest identified guaranteed processing time is one year for the Chapter 409 license. All other permitting programs anticipate reaching a licensing decision before this time. MDEP indicated that the guaranteed processing time may be extended dependent upon the level of public interest. MRC-Fiberight anticipates submitting the Chapter 409 application on May 15, 2015. Other permit applications may lag a month behind submittal of the Chapter 409 application. MDEP indicated that the Chapter 2 requirements for public notice regarding the intent to file an application, as well as the requirements for a public information meeting and a pre-submission meeting, are applicable to this application. MDEP noted that the Air Bureau regulations state that their requirements for pre-filing requirements and public notice for applications and draft licenses supersede Chapter 2 requirements. For the Chapter 409 permit, this will be considered a "Special Fees Project". The Department is still evaluating whether the Air and Land permits will be Special Fees Projects. Fiberight personnel need to confirm that Fiberight is registered with the Secretary of State to do business in Maine.

6. MRC-Fiberight presented their overall proposed project schedule, as follows:
    a. Application submittals beginning on May 15, 2015.
    b. Final agency decision within 1 year of submittal and acceptance.
    c. Access road construction improvements – summer 2016.
    d. Initiate construction of processing facility – fall 2016.
    e. Commencement of operational startup – fall 2017.
7. At the meeting conclusion, the following action items were summarized:
    a. Ensure Fiberight is registered to do business in Maine – applicant
    b. Develop a communications plan for Department interaction with MRC, Fiberight, and CES – applicant
    c. Confirm that material storage will be inside – applicant
    d. Confirm that both residuals and bypass disposal provisions are under discussion with licensed solid waste disposal facilities - applicant

e. Provide calculations for on-site storage of inputs and outputs – applicant
f. Continue discussions with Air permitting staff to determine if facility will be a minor or major source – Air staff and applicant
g. Develop a drawing showing all anticipated air emissions points - applicant
h. Send a copy of the Fiberight-Iowa air permitting information to Air permitting staff – applicant
i. Resolve current MDEP SLODA licensing status of the access road on the Coldbrook Road end and convey to applicant - MDEP

Attachment 1

Pre-Application Meeting Agenda

MRC | FIBERIGHT PRE-APPLICATION MEETING
MARCH 19, 2015, AUGUSTA, MAINE

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1. **Project Team Introductions/Roles**
   a. MRC/Fiberight/Consultants
   b. Maine DEP

2. **Project Overview**
   a. MRC Structure and MSW Quantities/Location – Greg Lounder
   b. Proposed Location, Existing Infrastructure, Local Zoning, Proposed Improvements (site plan and access road & utilities extension) – CES, Inc. (Denis St. Peter, Sean Thies, Roger St.Amand)
   c. Fiberight Process Description, General Arrangement of Piping/Equipment, and Outputs – Alan Iantosca

3. **Permitting Approach/Requirements**
   a. Co-applicants
   b. Processing Facility
      i. Chapter 409
      ii. Air Emissions Regulations (minor source?)
   c. New Public Way for Town of Hampden/Road
      i. Chapter 500
   d. *Urban Impaired Stream – Shaw Brook*Natural Resource Protection Act
   e. Other Permits (e.g., 418)?

   f. **Schedule**Public Notice (Ch. 2)
   g. Pre-submission Meeting (Ch. 2)
   h. Public Informational Meeting (Ch. 2)
   i. Application
   j. Maine DEP Permitting Process
   k. Construction
   l. Operation

4. **Action Items/Agreements**

Attachment 2

Attendee List

MRC/Fiberight Pre-Application Meeting

MDEP Office, March 19, 2015

Name	Company	Phone #	E-mail Address
DAVID BURNS	MDEP-BRWM	287-7743/592-9104	dave.e.burns@maine.gov
Lynn Muzzey	MEDEP-Air	287-2229	lynn.muzzey@maine.gov
Roger St. Amand	CES	989-4824	rstamand@ces-maine.com
~~Roger~~ George Aronsen	CRMC	781-784-8835	garonson@crmcx.com
Sean Thies	CES	989-4824	sthies@ces-maine.com
DENIS ST. PETER	CES	989-4824	dstpeter@ces-maine.com
Melanie Loyzim	MDEP-BRWM	287-7890	melanie.loyzim@maine.gov
Greg Lounder	MRC	207-664-1700	glounder@mrcmaine.org
Angie Dijanic	DEP-MSGP/Industrial	207-735-3667	angie.a.dijanic@maine.gov
Karen Knuuti	DEP-BRWM-Solid Waste	941-4561	karen.knuuti@maine.gov
Paula Clark	DEP-BRWM-Solid Waste	287-7718	paula.m.clark@maine.gov
Jim Beyer	DEP-Bangor	446-9026	Jim.R.Beyer@maine.gov

MRC/Fiberight Pre-Application Meeting

MDEP Office, March 19, 2015

Name	Company	Phone #	E-mail Address
Tiffany LaClair	DEP Bangor	215-7346	Tiffany.LaClair@maine.gov
Eric Kennedy	DEP-Air	287-5412	eric.kennedy@maine.gov
ALAN IANTOSCA VIA PHONE	FIBERIGHT	908-656-4485	aiantosca@fiberight.com

Attachment 3

Project Management Structure

Burns, Dave E

From: Loyzim, Melanie
Sent: Wednesday, March 11, 2015 3:11 PM
To: Cone, Marc A; Kennedy, Eric; Kuhns, Mick; Bergeron, Mark; Beyer, Jim R; Clark, Paula M; Knuuti, Karen; Darling, Cyndi W; Seel, George J; Burns, Dave E; Muzzey, Lynn; Aho, Patricia
Subject: Project Management for MRC Materials Recovery Facility applications

In anticipation of multiple license applications from the Municipal Review Committee (MRC) for a Materials Recovery Facility (MRF), the Department is establishing a project team and Project Manager (PM) to coordinate the Department's application review efforts for the proposed site and facility.

Project Team
Project Manager – David Burns
Program Licensing staff:
  Solid Waste – Karen Knuuti
  Land – Jim Beyer
  Air – Lynn Muzzey
  Others as needed

Project Manager responsible for:
- Coordinating and scheduling pre-application meeting(s), and other meetings with applicant(s)
- Communicating with project team and tracking status of application review activities across multiple DEP bureaus
- Providing regular updates to senior managers regarding project status
- Project Manager will also be responsible for completing any portion of the license application review process included in their position's job duties

Program Licensing staff responsible for:
- Processing and reviewing license application and associated submissions
- Completing the license application review process for their respective programs, including communicating with license applicants, PM and others as appropriate
- Providing regular updates to their program managers and bureau directors, including copies of relevant documents and correspondence
- Communicating with Project Manager to track project timelines, application review status, and application review activities

Attachment 4

Fiberight Project Overview Presentation

Maine MRC/Fiberight Project

Maine DEP

Pre-application Meeting

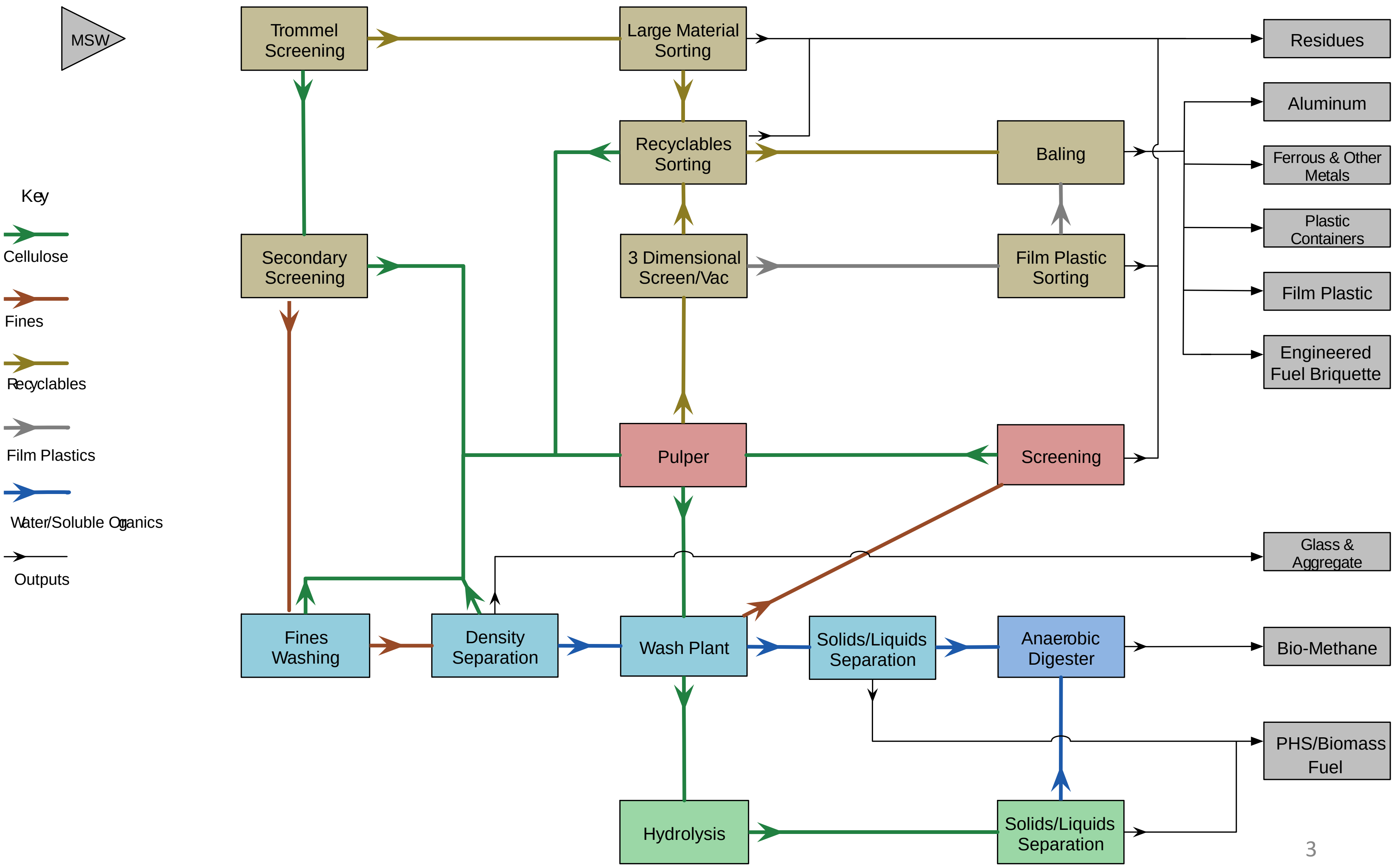
19 March 2015

Project Overview – Design Basis 650 TPD MSW

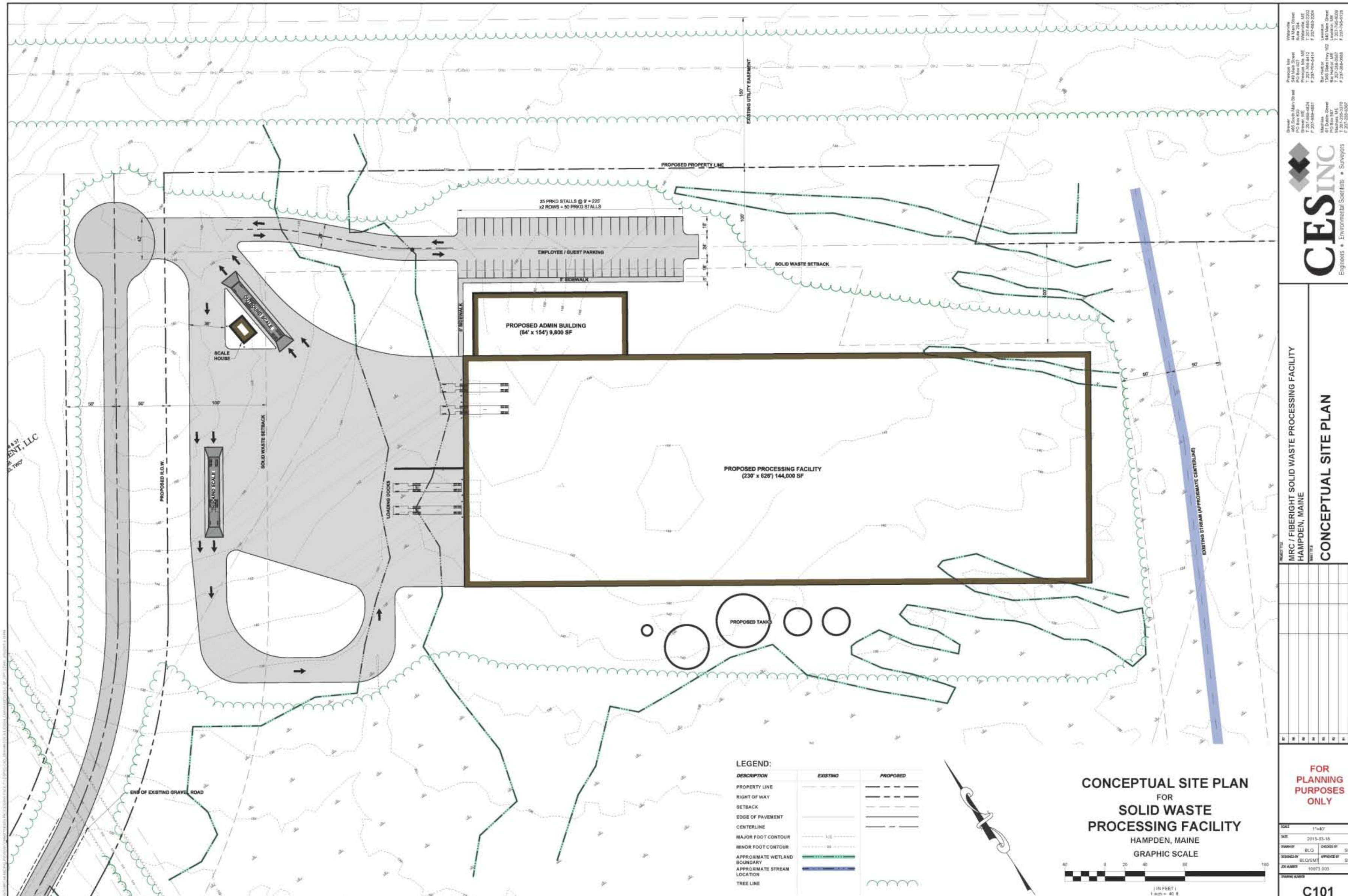
- Project Design
  - 45 Tons per hour MSW Materials Recovery System (MRF)
  - Pulping System & Wash Line
  - Fines Processing
  - Anaerobic Digester 45-50 mmBtu/hr Bio-methane Output
    - Expanded Granular Sludge Bed System
    - Food Waste/Sugars yield Bio-methane output
    - Compressed Bio-methane pipeline injected (Bangor Gas)
    - Potential to also feed on-site CNG fueling station
  - Hydrolysis of Cellulose increases sugars fed to digester & increases BTU content of Biomass
    - Post Hydrolysis Solids (PHS)/Biomass to solid fuel
    - PHS fed to onsite gasifier producing steam/power

Fiberight

Project Overview – Process Flow Diagram



Project Overview – Site Plan



Recyclable Materials

Project Overview – Outputs

- Paper
  - Cardboard and Mixed Paper sorted from delivered recyclables
  - Markets include national and regional paper producers
  - Commodity value exposure is managed through contract structure that rebates or charges supplier based on price received
- Rigid Plastic Containers
  - Fiberight process creates premium grade without labels
  - Markets include manufacturers of agricultural pipe
  - National markets include KW Plastics – seeking ways to access more plastics through recovery from MSW
  - Commodity value exposure is managed as above, and with the negotiation of floor or fixed pricing.

Fiberight

Project Overview – Outputs

- Film Plastics
  - Fiberight process creates films significantly cleaner than other sources providing a quality advantage
  - Markets include plastics recyclers; purchasers of mixed film plastics for plastic decking manufacuring
  - Film may be upgraded and sold as a polyethylene feedstock for manufacture of agricultural pipe (Greenline)
  - Backup market is as an “energy bale” for steelmakers
  - Commodity value exposure may be managed through long-term contracts with manufacturers of agricultural pipe and other products.
- Metals
  - Fiberight process creates quality metals with all labels removed.
  - Metals are sold as a commodity grade to steel producers and aluminum manufacturers such as Alcoa
  - Pricing may be fixed by selling forward contracts on London Metals Exchange

Project Overview – Outputs

- Biomass Fuel
  - EPA designated non-hazardous renewable biomass
  - Qualifies for RECs
  - Awaiting final determination by EPA as a NHSW not a waste
  - HHV 23 mj/kg (dry Basis) – higher than wood pellets
  - Material to be fed to on-site gasifier for HP/MP steam/power production
  - May be mixed with other elements of waste stream deemed renewable (food waste, yard waste, wood)
  - If sold, may be extruded or briquetted to suit customer's feed system needs
- Engineered Fuel Briquette
  - EPA designated non-hazardous fuel from waste
  - Does not qualify for RECs
  - Very high heating value – to 30 mj/kg due to plastic blend
  - Very low cost of energy >$3.00/gj
  - Ideal for co-firing with coal

Fiberight

Project Overview – Outputs

- Bio-Methane (Compressed Natural Gas)
  - Fiberight's process produces very clean bio-methane from its anaerobic digester, requiring little clean up expense
  - Facility bio-methane production will be pipeline injected with a portion potentially to be used in an on-site CNG fueling station.
  - Lowest risk, highest yield hydrolysis production pathway
- Renewable Identification Numbers (RINs)
  - Fiberight qualifies for valuable D-3 RINs because bio-methane is produced from renewable sources (food waste)
  - RINs are released when fuel is sold – in this case at the pipeline connect or CNG filling station

Fiberight

Projected Milestones

- Project Permit Applications Submitted – Spring 2015
- Project Permits Obtained – Spring 2016
- Facility Fully Operational – Summer 2017

Fiberight

CES INC

ATTACHMENT 2

SCHEDULE

ATTACHMENT 2

SCHEDULE

The proposed start of construction of the processing facility is September 1, 2016 with a construction completion date of September 1, 2017. The construction of 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.

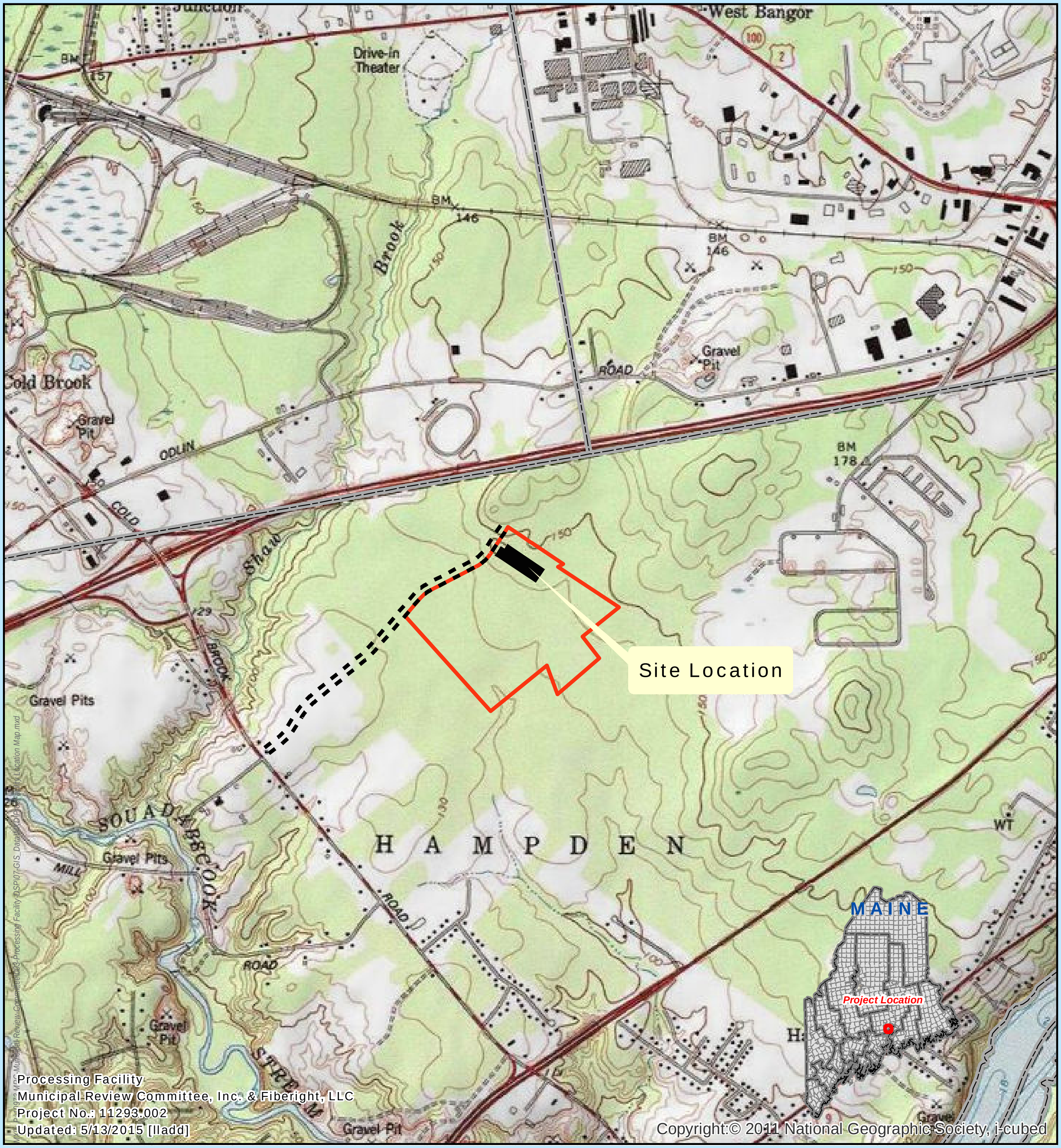
The Development Agreement (Refer to Attachment 4) between the MRC and Fiberight has an initial term of 15 years with at least two appropriate options for extension provided Fiberight has met performance standards under the Master Agreement. For purposes of this application, the initial anticipated lifetime of facility use is 15 years.

CES INC

ATTACHMENT 3

TOPOGRAPHIC MAP

USGS Topographic Map



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Feet

CES INC
Engineers • Environmental Scientists • Surveyors

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 4

TITLE, RIGHT, OR INTEREST

ATTACHMENT 4

TITLE, RIGHT, OR INTEREST

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, a copy of which is included in this attachment. 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 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

Witness: ____________________

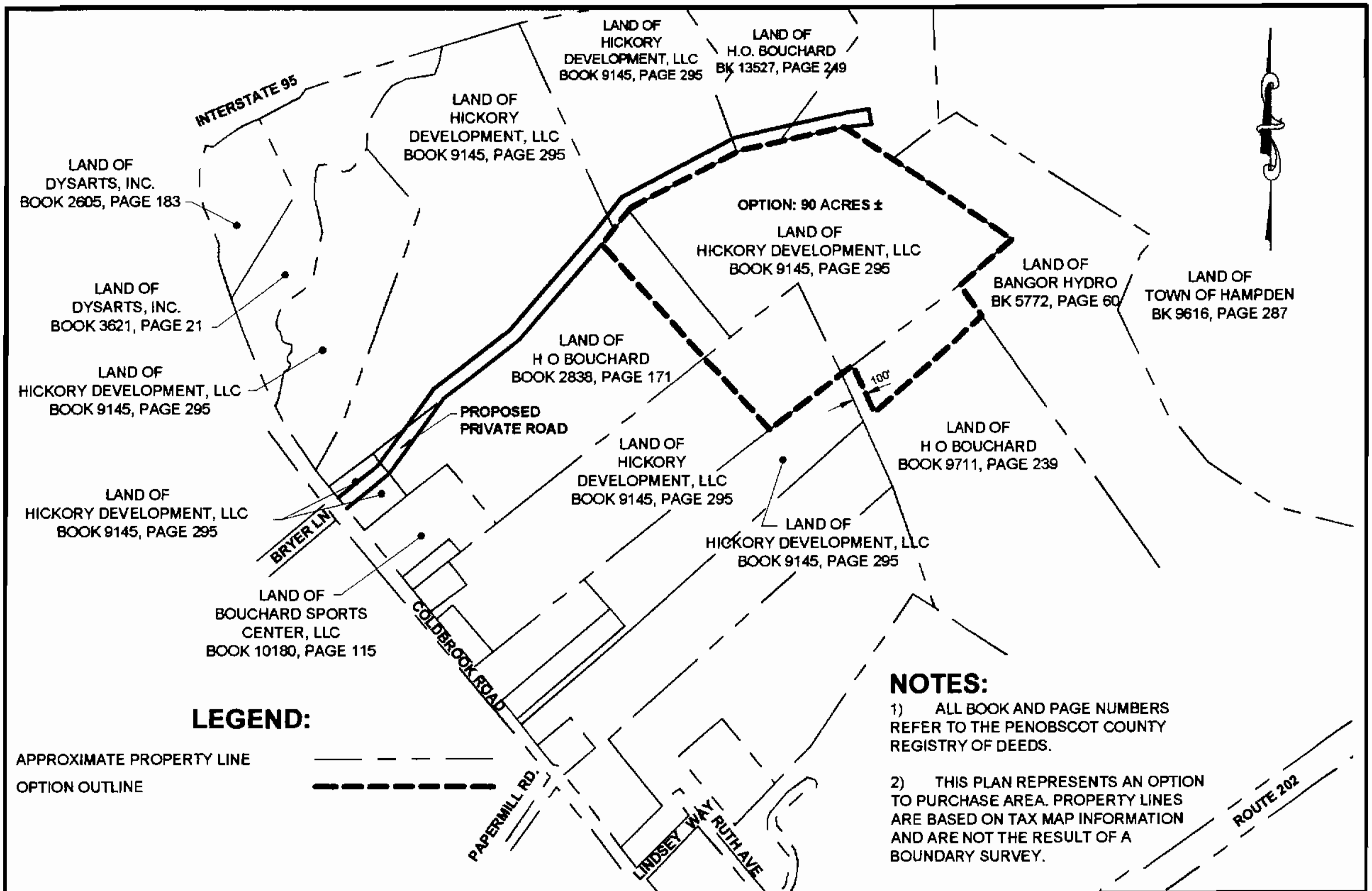
Hickory Development, LLC

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

____

Municipal Review Committee, Inc.

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



LEGEND:

APPROXIMATE PROPERTY LINE

OPTION OUTLINE

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.

PROJECT TITLE: **EXHIBIT A HAMPDEN, PENOBSCOT COUNTY, ME**	DWG:	BY: JAT	CES Engineers • Environmental Scientists • Surveyors
		DATE: 12-01-2014	
SHEET TITLE: **MUNICIPAL REVIEW COMMITTEE TOWN/OWNER PREFERRED LOCATION**	JN: 10973-2	REV:	
	SCALE: 1"=2000'	REV DATE:	

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, Its President
Duly Authorized

Witness:

____

Hickory Development, LLC

By: ______________________
Brian Bouchard, Its 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 6, 2020

[redacted]

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 tothe 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 agreementsbetween 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 shallset forth terms under which Joining Municipalities will deliverMSWto the Facility. The Master Agreement shall include commercially reasonable terms and conditions necessary to support the development, financing, construction and longterm operation of the Facilityincluding, 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 ona timely basis.

d. **Permitting.** Fiberight shall be responsible for preparation and filing of applications for allfederal, 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. **JoinderAgreements**.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 Municipalitieson 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 unprocessible 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 theSite Lease to be executed not later than needed to accommodate financing of the Project. TheSite 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 Fiberight shall be responsible for property taxes, host fees and any other similar taxes and fees.

e. **Insurance.** Provide that Fiberightshall 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 Fiberight shall be responsible for compliance with all agreements and permit requirements.

g. **Out-of-State Waste.** Provide that Fiberight 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:

Schedule	*Milestone*
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.** TheMRC 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,Fiberightshall 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 ofJoining 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 Fiberight 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.** ThisAgreement 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 ____________________

Its President

FIBERIGHT, LLC

By ____________________

Its CEO

{EP - 01724284 - v4 }

CES INC

ATTACHMENT 5

ABUTTERS

ATTACHMENT 5

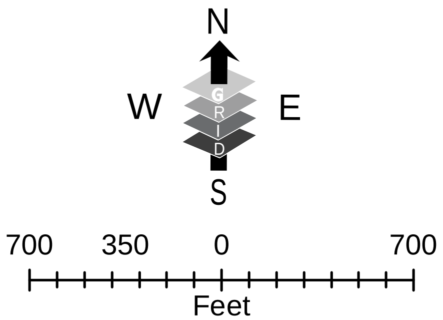
ABUTTERS

Included in this Attachment is a copy of the municipal tax map with the proposed site and lot numbers clearly marked and list of the names and addresses of all the owners of property abutting the proposed Facility.

ABUTTER'S LIST

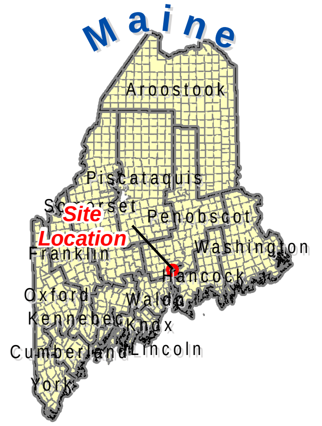
MAP	LOT	NAME / ADDRESS
9	27	HO Bouchard, Inc. PO Box 249 Hampden, ME 04444-0249
9	35	
14	1	
14	01-01	
15	12	
15	12A	
15	13	
15	14	
9	32	Hickory Development, LLC PO Box 249 Hampden, ME 04444
9	33A	
9	34	
9	36	
9	38	
9	39	
9	40	
9	42	
14	7	
14	8	
9	35	Bouchard Sports Center, LLC PO Box 249 Hampden, ME 04444
10	11A	Emera Maine PO Box 932 Bangor, ME 04402-0932

Parcel Map



Legend

- Approximate Proposed Facility Property Boundary
- Approximate Proposed Road Location
- Approximate Proposed Building Location
- Parcels
- Streams



MAP NOTES:

1: SITE DATA DEVELOPED BY CES, INC., DECEMBER, 2015.

2: PARCEL DATA AND LOT NUMBERS COURTESY OF THE TOWN OF HAMPDEN. PARCEL IDs ARE MAP AND LOT NUMBERS POPULATED FROM THE [MAP_LOT] FIELD. ALL PARCEL BOUNDARIES SHOULD BE CONSIDERED APPROXIMATE. THIS MAP DOES NOT REPRESENT A SURVEY.

3. OWNERSHIP RECORD OF LOT 09-0-037 IS BASED OFF OF THE LATEST ASSESSMENT RECORD WHICH WAS UPDATED MORE RECENTLY THAN ARCHIVE GIS DATA RECORDS.

4. BASE MAPPING LAYERS ARE SERVER-BASED IMAGERY, TOPOGRAPHIC IMAGES, OR TERRAIN DEPICTIONS COURTESY OF ESRI. ACQUIRED OCT., 2014.

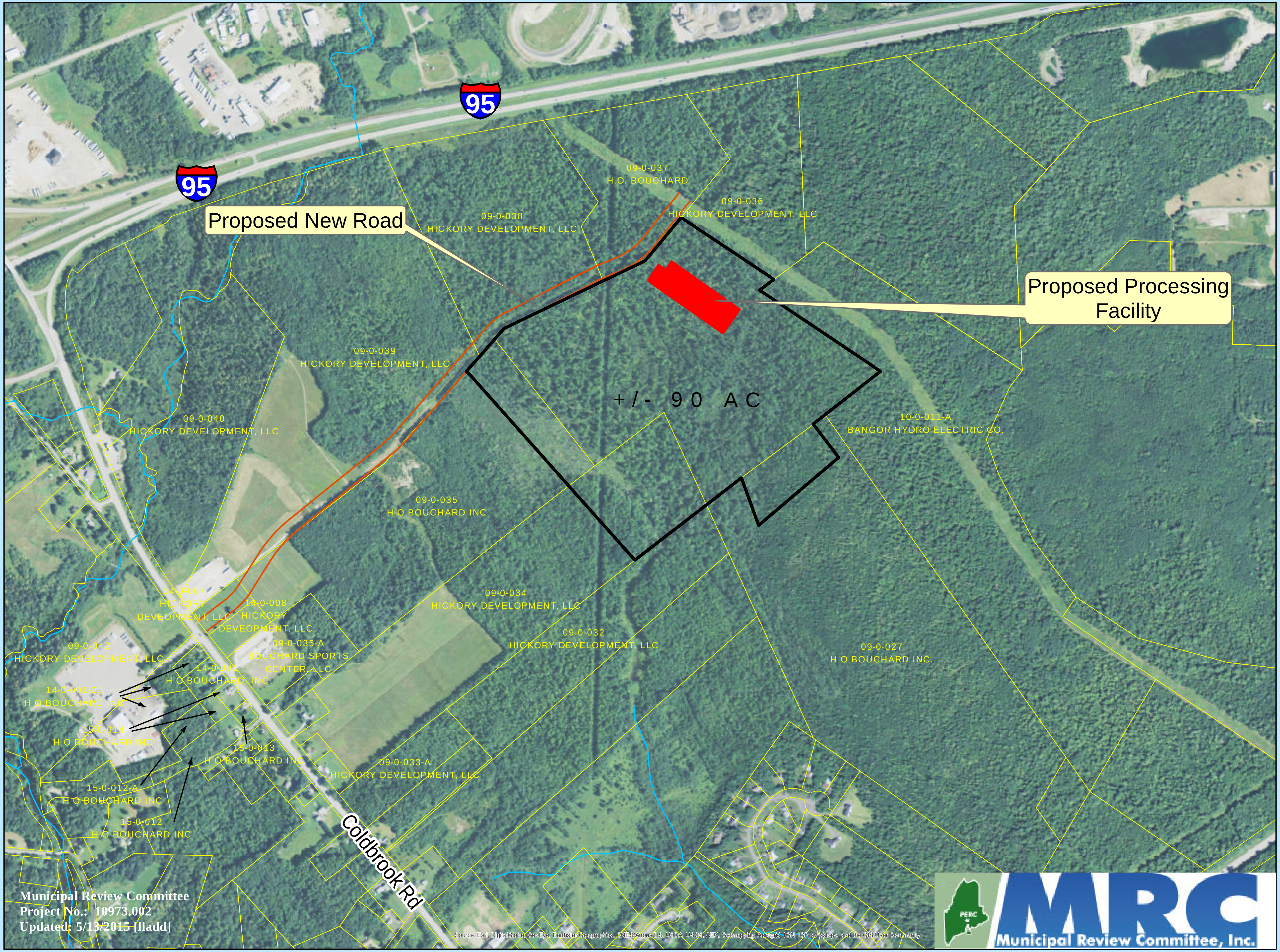
5: MAP IS PROJECTED USING THE UNIVERSAL TRANSVERSE MERCATOR (UTM) PROJECTION, ZONE 19 NORTH, METERS AND REFERENCES THE NORTH AMERICAN DATUM OF 1983 (NAD83).

6: NORTH ARROW IS REFERENCED TO GRID NORTH.

7: INTENDED FOR REFERENCE PURPOSES ONLY. THE MRC & CES, INC. AND THEIR AFFILIATES ARE NOT RESPONSIBLE FOR THE MISUSE OF THIS MAP OR DATA DEPICTED HEREIN. ALL ACREAGES ARE APPROXIMATE.

CES INC
Engineers • Environmental Scientists • Surveyors

MXD: P:\10973-MRC-Municipal-Review-Committee\003-Processing Facility-DSP\07-GIS_Data\MXD\ParcelMap_11x17_050815.mxd



MRC
Municipal Review Committee, Inc.

CES INC

ATTACHMENT 6

NOTICE OF INTENT TO FILE

ATTACHMENT 6

NOTICE OF INTENT TO FILE

Provided in this Attachment are copies of the completed Notices of Intent to File (NOIs), copies of the NOIs as published in the Bangor Daily News, and copies of the certified mail receipts of the NOIs sent to the owners of property abutting the project and to the Town of Hampden. Two separate rounds of NOIs were prepared, mailed, and published. Initially, MRC and Fiberight intended to file the application on or about May 15; however, the Co-Applicants subsequently decided to file the application on or about June 22, which required a second round of NOIs.

In accordance with 06 096 CMR Chapter 2, Section 13, the applicant must hold a public informational meeting (PIM) prior to filing that application. At least 10 days prior to the PIM, notice of the meeting must be sent by certified mail or certificate of mailing to abutters and to the municipal office of the municipality where the project is located. At least 7 days prior to the PIM, notice must also be published once in a newspaper of general circulation in the area where the project is located.

In compliance with the PIM requirements and the NOI, the Co-Applicants held a meeting on April 27, 2015. Notices to abutting property owners and the Town of Hampden municipal office were sent via certified mail on April 17, 2015, and a notice was provided to the Bangor Daily Newspaper (BDN) on April 15, 2015 to be published in the April 18, 2015 edition; although the certified mailings were sent out, the notice did not appear in the BDN's April 18, 2015 edition. To comply with the PIM notice requirements, the Co-Applicants published the notice in the BDN's April 25 edition and held a second PIM; the first on April 27, 2015 and the second on May 5, 2015.

Both PIMs were held in the Community Room of the Town of Hampden Municipal Building located at 106 Western Avenue in Hampden, Maine. The PIMs held meet the notice requirements for purposes of this Application, specifically abutting property owners were sent a notice at least 10 days prior to the April 27, 2015 PIM and the notice was published in the Bangor Daily News at least 7 days prior to the May 5, 2015 public informational meeting. Copies of the certified mailings sent to abutting property owners and the Town of Hampden municipal office along with the notice published in the Bangor Daily Newspaper are provided in this Attachment.

During the public informational meeting, MRC, Fiberight, and their consultant CES, Inc. presented a summary of the project, including the expected environmental impacts and the state, local, and federal licenses necessary. An opportunity for public questions and responses was provided at the end of the presentation.

Included in this Attachment is a signed certification attesting that the April 27, 2015 and May 5, 2015 public informational meetings were noticed and held in accordance with this section. The submission includes an estimate of the number of attendees and a narrative responsive to any significant issues relevant to the licensing criteria that were raised at the meeting.

Even though not required, the Co-Applicants decided to hold a third informational meeting to continue to educate the public about the project. This meeting was held in the Community Room of the Town of Hampden Municipal Building located at 106 Western Avenue in Hampden, Maine. The Co-Applicants have also participated in voluntary public meetings during Town of Hampden Council Meetings to provide project information and answer questions from both the Council and the public. The Co-Applicants intend to continue to offer the public opportunities to learn about the project and to provide questions and comments.

PUBLIC NOTICE FILING AND CERTIFICATION

The DEP Rules, Chapter 2, require an applicant to provide public notice for all projects requiring new or amended licenses from more than two bureaus with the exception of minor revisions and condition compliance applications. In the notice, the applicant must describe the proposed activity and where it is located. **"Abutter"** for the purposes of the notice provision means any person who owns property that is BOTH (1) adjoining and (2) within one mile of the delineated project boundary, including owners of property directly across a public or private right of way.

1. **Newspaper:** You must publish the Notice of Intent to File in a newspaper circulated in the area where the activity is located. The notice must appear in the newspaper within 30 days prior to the filing of the application with the Department. You may use the attached Notice of Intent to File form, or one containing identical information, for newspaper publication and certified mailing.

2. **Abutting Property Owners:** You must send a copy of the Notice of Intent to File by certified mail to the owners of the property abutting the activity. Their names and addresses can be obtained from the town tax maps or local officials. They must receive notice within 30 days prior to the filing of the application with the Department.

3. **Municipal Office:** You must send a copy of the Notice of Intent to File <u>and</u> a **duplicate of the entire application** to the Municipal Office.

See ATTACHMENT 5 – ABUTTERS for a list of the names and addresses of the owners of abutting property.

Attached is a narrative responsive to any significant issues relevant to the Licensing Criteria that were raised at the Public Informational Meeting.

<u>CERTIFICATION</u>

By signing below, the applicant or authorized agent certifies that:

1. A Notice of Intent to File was published in a newspaper circulated in the area where the project site is located within 30 days prior to filing the application;
2. A certified mailing of the Notice of Intent to File was sent to all abutters within 30 days of the filing of the application;
3. A certified mailing of the Notice of Intent to File, and a duplicate copy of the application was sent to the town office of the municipality in which the project is located; and
4. Provided notice of, if required, and held a public informational meeting in accordance with Chapter 2, Rules Concerning the Processing of Applications, Section 13, prior to filing the application. Notice of the meeting was sent by certified mail to abutters and to the town office of the municipality in which the project is located at least ten days prior to the meeting. Notice of the meeting was also published once in a newspaper circulated in the area where the project site is located at least seven days prior to the meeting.

Two Public Informational Meetings were held on <u>April 27, 2015 and May 5, 2015</u>.
Date

Approximately <u>66</u> members of the public attended the Public Informational Meetings.

June 18, 2015

Signature of Applicant or authorized agent Date

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), 853 Industrial Park Drive, Lawrence, VA 23868, 410-340-9387 is intending to file a joint application with the Maine Department of Environmental Protection (DEP) on or about May 15, 2015 pursuant to the provisions of 38 M.R.S.A., Section 1301 et. seq. and Maine's Solid Waste Management Regulations.

The application is for a municipal solid waste processing and recycling facility as regulated under 06 096 CMR Chapters 400 and 409, to be located in Hampden, Maine. The proposed facility will be located on a 90 acre parcel to be conveyed to the MRC and Fiberight. The parcel is located approximately one mile to the northeast of the Coldbrook Road and ¼ mile to the southeast of I-95.

The MRC and Fiberight have scheduled a Public Informational Meeting on May 5, 2015 at 7:00 pm. The meeting will be held in the Community Room of the Town of Hampden Municipal Building located at 106 Western Avenue in Hampden, Maine.

The purpose of the Public Informational Meeting is to inform the public of the project and its anticipated environmental impacts and to educate the public about the opportunities for public comment on the project. In addition to the 06 096 CMR Chapter 409 Processing License, the following is a listing of other statutes and/or rules under which the MRC and Fiberight will seek permits: Maine Department of Environmental Protection Natural Resource Protection; Section 404 of the Federal Clean Water Act; 06 096 CMR Chapter 500: Stormwater Management; and 06 096 CMR Chapter 115: Major and Minor Source Air Emission License Regulation.

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 the application, must be received by the Department, in writing, no later than 20 days after the application is accepted by the Department as complete for processing.

The application and supporting documentation will be available for review at the Bureau of Remediation and Waste Management (BRWM) at the appropriate DEP regional office, during normal working hours. A copy of the application and supporting documentation may also be seen at the municipal office in Hampden, Maine.

Send all correspondence to: Maine Department of Environmental Protection, Bureau of Remediation and Waste Management, 17 State House Station, Augusta, Maine 04333-0017 (207-287-2651 or 1-800-452-1942), or to the appropriate regional office, if known.

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), 853 Industrial Park Drive, Lawrence, VA 23868, 410-340-9387 is intending to file a joint application with the Maine Department of Environmental Protection (DEP) on or about May 15, 2015 pursuant to the provisions of 38 M.R.S.A., Section 1301 et. seq. and Maine's Solid Waste Management Regulations.

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Send all correspondence to: Maine Department of Environmental Protection, Bureau of Remediation and Waste Management, 17 State House Station, Augusta, Maine 04333-0017 (207-287-2651 or 1-800-452-1942), or to the appropriate regional office, if known.

April 25, 2015

CES INC

CERTIFIED MAIL LIST & RECEIPTS
(Mailed 04/17/2015)

HO Bouchard, Inc.
PO Box 249
Hampden, ME 04444-0249

Hickory Development, LLC
PO Box 249
Hampden, ME 04444

Bouchard Sports Center, LLC
PO Box 249
Hampden, ME 04444

Emera Maine
PO Box 932
Bangor, ME 04402-0932

Town of Hampden
106 Western Avenue
Hampden, ME 04444-1428

CES INC

PUBLIC INFORMATIONAL MEETING SIGN-IN

Date: April 27, 2015 Time: 7:00 PM Location: Community Room, Hampden Municipal Building, 106 Western Avenue

Project: MRC / Fiberight – Municipal Solid Waste Processing and Recycling Facility

NAME	ADDRESS	TELEPHONE	EMAIL
Chip Haskell	Brewer	207-991-0756	chaskell@ces-maine.com
Ken Fletcher	Winslow	207-872-6760	fletcher2@roadrunner.com
Cynthia Grant	Newburgh	207-234-4157	Newburghmgr@uninets.net
Laura Sanborn	Alton	745-8157	hlsanborn@aol.com
Bill Lippincott	Hampden	862 6946	wjl3@tds.net
Tonya McKay	Hampden	299-5006	scatsjandt@gmail.com
Rod Guilfor	Hampden	862-5585	kguillow79@gmail.com
Phil Levesque	Hampden	862-4109	phil.levesque@levesquesupply.com
Melissa Mahlen	Hampden	253-732-6344	mjmahlen@gmail.com
Corleen Iannazzi	Hampden	862-6640	jiannazzi@roadrunner.com
Frank Pergolizzi	Hampden	269 804 9619	fpergolizzi57@gmail.com

CES INC

PUBLIC INFORMATIONAL MEETING SIGN-IN

Date: April 27, 2015 Time: 7:00 PM Location: Community Room, Hampden Municipal Building, 106 Western Avenue

Project: MRC / Fiberight – Municipal Solid Waste Processing and Recycling Facility

NAME	ADDRESS	TELEPHONE	EMAIL
Elizabeth Kalogeris	115 Emerson Mill Rd	207-862-2292	betttomKAL@gmail.com
Madison Albert	759 N Main St Winterport	223 4717	
Ruey Yehle	25 Northern Ave	847-8572	
Vaughn Leach	P.O. 200 Blue Hill Me	266-2975	bhdcontainers At gmail.com
Ernest Mayo	82- Sidney BLVD	862-3161	
Pat Mayo	42 Sidney BLVD	862-3161	
Chris Reynolds	6 George ST.		
Don + Margaret Bebb	97 Main Trail	862-2585	donbebband@aol.com
Jane & Larry Clifford	56 Sunset Ave.	862-0099	
Bill + Carla Leathem	40 Summer St.	862-4386	
Dustin Shawn Ramsay	25 Main Trail	862-5623	dramsay1996@gmail.com sramsay@cianbro.com

CES INC

PUBLIC INFORMATIONAL MEETING SIGN-IN

Date: April 27, 2015 Time: 7:00 PM Location: Community Room, Hampden Municipal Building, 106 Western Avenue

Project: MRC / Fiberight – Municipal Solid Waste Processing and Recycling Facility

NAME	ADDRESS	TELEPHONE	EMAIL
Y. KALOUSTIAN	HAMPDEN	—	—
Roger St. Amand	Bass Harbor CES	207-989-4824	rstamand@ces-maine.com
DENIS ST. PETER	HAMPDEN	207-989-4824	dstpeter@ces-maine.com
Kyle Sullivan	Hermon	207-989-4824	~~Kyle~~ Ksullivan@ces-maine.com
FRED TRASK	MILO	943-7746	FTRASK@TRASKAGENCY.COM
Jerry Brown	Milo	965-3444	mrbrownivmilo@gmail.com
Ivan McPike	Hampden	745-4924	Ivan@MAINESAFE.COM
Craig Stuart-Paul	Fiberight LLC	410-340-9387	craigsp@fiberight.com
Mary Ellen Fletcher	Winslow	872-6760	fletcher2@roadrunner.com
Tim Pease	HAMPDEN	862-5914	—
Wayne Woodford	Hampden	862-4456	wwoodford5@AOL.COM
Karen Fussell	City of Brewer	989-8440	

CES INC

PUBLIC INFORMATIONAL MEETING SIGN-IN

Date: April 27, 2015 Time: 7:00 PM Location: Community Room, Hampden Municipal Building, 106 Western Avenue

Project: MRC / Fiberight – Municipal Solid Waste Processing and Recycling Facility

NAME	ADDRESS	TELEPHONE	EMAIL
CARLA LAFAYETTE	89 Main Rd N	862-4882	CJL43@aol.com
Wayne Reilly	24 Carver Rd.		
DAN DELAHANTY	32 JAYS WAY	862-6806	soxfan510@yahoo.com
Dennis Marble	58 Cottage St		
Gary Sivers	89 Carmel Rd S.		
Stephen Wilde	346 Old County Rd	~~8~~ 947-7411	—
Bill Shakespeare	1060 Western Ave.	862-4375	
TERRY McAVOY	59 MONROE ROAD	862-4895	
BILL LEATHEM			WLEATHEM@RSU22.US
Jerry Netko	56 MAIN TRAIL	862-6186	star56@tds.net
Sue Hahn			sueanne4444@gmail.com
Kim Guillow	79 Main Trail	862-5585	KGUILLOW79@GMAIL.com
SOPHIA L. WILSON	~~33 Co~~ 59 MAIN ST ORONO	889-6905	sophiew@orono.org

CES INC

PUBLIC INFORMATIONAL MEETING SIGN-IN

Date: April 27, 2015 Time: 7:00 PM Location: Community Room, Hampden Municipal Building, 106 Western Avenue

Project: MRC / Fiberight – Municipal Solid Waste Processing and Recycling Facility

NAME	ADDRESS	TELEPHONE	EMAIL
Chip Reeves	50 Public Works Way	Bar Harbor	chip@barharbormaine.gov

CES INC

PUBLIC INFORMATIONAL MEETING SIGN-IN

Date: May 5, 2015 Time: 7:00 PM Location: Community Room, Hampden Municipal Building, 106 Western Avenue

Project: MRC / Fiberight – Municipal Solid Waste Processing and Recycling Facility

NAME	ADDRESS	TELEPHONE	EMAIL
Chip Haskell (CES)	Brewer	989-4824	CHASKELL@CES-MAINE.com
Kyle Sullivan	Brewer	989-4824	Ksullivan@ces-maine.com
Pat Mayo	82 Sidney Dr. - Hampden	862-3161	ACorky4u@roadrunner.com
Ernest Mayo	82 Sidney Blvd Hampden	862-3161	
Tonya McVay	23 Lindsey Way Hampden	299-5006	
Rich Armstrong	109 Kennebec Rd	862-2822	—
Bob O'Donnell	Brewer	971-4750	
Dale Parkhurst	Hampden 22 Meadow Rd	802-9140	
CHARLES A GREEN	ORRINGTON	825-3109	
Debra Roy	95 Hughes Blvd. Hampden	—	
Bill Hoffman	95 Hughes Blvd Hampden	862 4885	

CES INC

PUBLIC INFORMATIONAL MEETING SIGN-IN

Date: May 5, 2015 Time: 7:00 PM Location: Community Room, Hampden Municipal Building, 106 Western Avenue

Project: MRC / Fiberight – Municipal Solid Waste Processing and Recycling Facility

NAME	ADDRESS	TELEPHONE	EMAIL
Keith Bowden	982 Center Dr Orrington		
Paul White	Lost City Orrington ME		
Peter Prata	PERC		
Frank Pergolizzi	98 Main Trail		fpergolizzi57@gmail
Paul Schroeder	Orono		
JEREMY W. JONES	HAMPDEN	862-5894	
Bill Lippincott	30 Wilson Dr Hampden		started in May 19th gmn wsl3@tds.net
Gretchen Keezer	Main Trail		

Questions Raised at Public Information Meetings

MAJOR QUESTION THEMES FROM BOTH PUBLIC INFORMATION MEETINGS

1.) Several questions were asked related to traffic, including concerns about the number of trips per day, congestion on the Cold Brook Road, congestion at the I-95 exit and items falling off trucks.

2.) Several questions were asked about air quality impacts, including about stack emissions, its CO2 and other potentially harmful emissions.

3.) Several questions were asked how odors would be regulated, monitored and prevented.

4.) Several questions were asked about what chemicals would be used in the facility's processing and what toxic materials would be in use or produced by the plant.

ADDITIONAL QUESTIONS FROM PUBLIC INFORMATION MEETING HELD ON 4/27/2015

1.) Will the facility take out of state waste? What will prevent it?

2.) Relative to PERC, what will the cost to towns be for using this?

3.) How will the facility be powered?

4.) What hours will the facility operate?

5.) Why would a town not want this facility?

6.) What impact will this have on the soccer fields?

7.) Has Fiberight developed facilities of this size before? How does this compare to FIberights other existing projects? Are those the same size? Have they ever built one of this size?

8.) Will this project protect the nearby ITS trail?

9.) In the future could more communities sign on to this?

10.) Will this facility need water, special water supply or special water treatment?

11.) What role does Cate Street have in this project?

12.) What sort of credibility does a study conducted by Old Town Fuel and Fiber have?

13.) Will the gas be hooking up with the process underway old Sawyer Landfill?

14.) How dependent will this project be on the use of RIN tax credits?

15.) With the gases being developed, is there a risk of an industrial accident?

16.) What is the breakeven tonnage?

17.) Can this facility adapt when new technology is developed?

18.) How many employees will this facility create?

19.) Will this facility be taxable?

QUESTIONS FROM PUBLIC INFORMATION MEETING HELD ON 5/5/15

1.) What landfill will residuals be going to?

2.) Does the town have capacity to provide water to this facility, will it require a pumping station?

3.) How will trucks get in and out of the facility?

4.) How do they prevent odors when the doors open for trucks?

5.) What is the decibel level at PERC and what is the proposed decibel level?

6.) How will recyclables be handled coming into the facility? Will they need to be separate streams? Hampden currently has zero sort, will that change?

7.) What are the comparable facilities?

8.) Is there any other development planned for that road at this point?

9.) What is the lifespan of the building?

10.) If a community had a very aggressive recycling program, would that make a big difference to help the town? Will this create a disincentive for recycling?

11.) What is going to be outside the plant?

12.) Will there be an odor associated with the outside tanks?

13.) Will the facility be gated, fenced or have security features?

14.) Will there be containment around the outside tanks?

15.) What color will the siding be?

16.) Will there be any public financing of this project?

17.) Will Hampden be able to get the natural gas produced at this facility?

18.) Will the PUC be involved in approving this process because of the natural gas production?

19.) Will the new road be a public way?

20.) Has Fiberight secured financing yet? Have there been delays in Iowa?

21.) Has MRC hired someone to conduct an independent engineering review of this concept?

22.) Who will the onsite management be? MRC or Fiberight?

23.) Have the violations at the Iowa facility been cleared up?

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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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

CERTIFIED MAIL LIST & RECEIPTS
(Mailed 06/22/2015)

HO Bouchard, Inc.
PO Box 249
Hampden, ME 04444-0249

Hickory Development, LLC
PO Box 249
Hampden, ME 04444

Bouchard Sports Center, LLC
PO Box 249
Hampden, ME 04444

Emera Maine
PO Box 932
Bangor, ME 04402-0932

Town of Hampden
106 Western Avenue
Hampden, ME 04444-1428

7013 2630 0000 8939 5341

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Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 5.335

Postmark Here: BREWER ME 04412 JUN 22 2015 USPS
11293.001

Sent To: HO Bouchard, Inc.
Street, Apt. No.; or PO Box No.: PO Box 249
City, State, ZIP+4: Hampden, ME 04444
PS Form 3800, August 2006 See Reverse for Instructions

7013 2630 0000 8939 5358

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Return Receipt Fee (Endorsement Required)	1.40
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 5.335

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11293.001

Sent To: Hickory Development LLC
Street, Apt. No.; or PO Box No.: PO Box 249
City, State, ZIP+4: Hampden, ME 04444
PS Form 3800, August 2006 See Reverse for Instructions

7013 2630 0000 8939 5389

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Return Receipt Fee (Endorsement Required)	1.40
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 5.335

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Sent To: Bouchard Sports Center, LLC
Street, Apt. No.; or PO Box No.: PO Box 249
City, State, ZIP+4: Hampden ME 04444
PS Form 3800, August 2006 See Reverse for Instructions

7013 2630 0000 8939 5396

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Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$5.335

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Sent To: Emera Maine
Street, Apt. No.; or PO Box No.: PO Box 932
City, State, ZIP+4: Bangor, ME 04402
PS Form 3800, August 2006 See Reverse for Instructions

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Return Receipt Fee (Endorsement Required)	1.40
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 5.335

Postmark Here: ME 04412 JUN 22 2015 USPS
11293.001

Sent To: Town of Hampden
Street, Apt. No.; or PO Box No.: 106 Western Ave.
City, State, ZIP+4: Hampden, ME 04444
PS Form 3800, August 2006 See Reverse for Instructions

CES INC

ATTACHMENT 7

FINANCIAL ABILITY

ATTACHMENT 7

FINANCIAL ABILITY

MRC and Fiberight as co-applicants have made shared financial commitments to ensure necessary funding is available for the Project.

Attachment 4 of this application includes a “Development Agreement” between MRC and Fiberight which outlines in detail the financial obligations for each party. In general, MRC will be responsible to 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 MRC.

Fiberight and its affiliates and/or joint partners shall own the Facility and be responsible for the design, engineering, acquisition of permits (including closure and post-closure), procurement of equipment, financing, construction, start-up, testing, commissioning, operations, and maintenance thereof.

As discussed in Attachment 1, this application focuses on a 90 +/- acre parcel for the development of a proposed 144,000 square foot processing facility. In addition to the Facility parcel, MRC has sufficient interests to acquire property to construct a 4,460 foot access road to the proposed Facility. Although the access road is discussed in this permit application to provide a complete overview of the Project, the access road will be permitted separately under 06 096 CMR Chapter 500, Stormwater Management and an MDEP Natural Resources Protection Act permit and U.S. Army Corps of Engineers permit. However, because the access road and associated utilities needed for the Facility are integral to the overall development of this Project, this attachment addresses the costs and funding mechanisms in place for both the Facility development and the access road development.

For clarity, the submission requirements associated with this permit Application are listed below and a response to each is provided in bold print. The responses are further broken down by the financial responsibility associated with MRC and Fiberight, respectively.

Submissions. *The application must include evidence that affirmatively demonstrates that the applicant has the financial ability to undertake the proposed project, including the following information, when appropriate:*

(a) Accurate cost estimates for the design, construction, operation, maintenance, closure and (if applicable) post-closure care of the solid waste facility; and

The current cost estimates for portions of the development project for which MRC has conditionally committed funding are as follows:

- **Land Acquisition: $325,000 per terms contained in an Option to Purchase agreement included in Attachment 4 of this application.**
- **Road and Stormwater facilities cost estimate: $1,110,000**
- **Water and Sewer Utilities cost estimate: $2,415,000**

- **Natural Gas utilities cost estimate: $175,000**

- **Electric and Tel-Com Utilities extension cost estimate: $205,000**

- **Total Current Cost Estimate: $4,230,000**

The current cost estimates for portions of the development project for which Fiberight will be responsible are as follows:

- **Site Development, Foundations and Concrete & Building Construction: $7,018,582**

- **Machinery & Equipment: $41,921,635**

- **Steel, Mechanical & Electrical Installation: $15,181,416**

- **Engineering, Permits & Project Management: $2,855,153**

- **Total Capital Costs: $66,976,786**

- **Annual Operation Costs: $11,200,000**

- **Annual Maintenance Costs: $1,400,000**

- **Facility Closure Cost Estimate: $100,000**

(b) Evidence that funds are or will be available to design, construct, operate, maintain, close and (if applicable) accomplish post-closure care of the solid waste facility, or to contract for the same, including the following:

(i) When a financial institution is the funding source, the application must include:

a. A letter from a financial institution, governmental agency, or other funding agency indicating a commitment to provide a specified and sufficient amount of funds and the uses for which the funds may be utilized; or

b. In cases where funding is required but there can be no commitment of money until approvals are received, a letter of "intent to fund" from the appropriate funding institution. Evidence of financing must be provided prior to project construction.

Fiberight is currently working with a national energy utility affiliate and a private equity and venture capital firm to secure financing for the Project that will be conditioned upon receiving governmental approvals. A confidential intent to fund letter from both entities has been provided during the pendency of the due diligence period associated with this project financing effort. At the termination of this due diligence period, Fiberight will supplement the Application with an updated intent to fund letter and/or additional evidence of project financing. If necessary, Fiberight will provide MDEP with sufficient evidence of financing prior to construction of the Project.

(ii) When self-financing is a funding source for the solid waste facility, the application must include:

MRC will self-finance its share of the funding for the facility proposed in this Application. The source of funds will be a Tip Fee Stabilization Fund as shown in the statement of fiduciary net position at page 14 of the included audited financial statement as of December 31, 2013. The balance in the Tip Fee Stabilization Fund as of December 31, 2013 was $21,258,689. The balance of the Tip Fee Stabilization Fund as of March 31, 2015 is $22,220,628 as evidenced by the included statement from Peoples United Bank.

a. The most recent corporate annual report indicating availability of sufficient funds to finance the proposed project, through self-financing, together with explanatory material interpreting the report;

A copy of MRC's latest available audited finance statements for year-ended December 31, 2013 is included in its entirety in this Attachment.

b. Evidence that funds are available and have been set aside for completion of the proposed project; or

The MRC Board has committed to set aside up to $5,000,000 from the Tip Fee Stabilization Fund to fund the land acquisition and infrastructure activities for which cost estimates are broken down in section a. above. This commitment is demonstrated per terms contained in Section 6 of an "Option to Purchase" agreement included in Attachment 4 of this Application. This commitment is conditioned as further described in the "Development Agreement" between MRC and Fiberight provided in Attachment 4 of this Application. To summarize, the commitment of funds is generally conditioned upon receipt of all necessary regulatory approvals for the facility, MSW delivery commitments from Joining Municipalities as described in Article 3.1 of the "Development Agreement", and the provision of the balance of financing of the facility as described in 2.2 k. of the "Development Agreement" between MRC and Fiberight provided in Attachment 4 of this Application.

c. If the applicant is a governmental entity, evidence that the entity has the bonding or other capacity to finance the proposed project.

No bonding or borrowing capacity is needed for the MRC to meet its financing commitment to this project.

People's United Wealth Management

MRC, INC. TIP FEE STABIL FD
Selected Period Performance
March 31, 2015

Sector	Market Value	3 Months	Year to Date (3 Months)	1 Year	3 Years	5 Years	Inception to Date (153 Months)
Total Fund	22,220,939	.68	.68	1.24	.80	1.34	3.13
Fixed Income	20,751,628	.71	.71	1.31	.85	1.42	3.09
Barclays Agency 1-3 Year		.54	.54	1.09	.77	1.15	2.79
Barclays US Govt Intermediate		1.25	1.25	3.15	1.54	2.81	3.87
Cash & Equivalents	1,469,311	.00	.00	-.02	.03	.02	1.62
3 Mos (91 Day) T-Bill		.00	.00	.02	.06	.07	1.43

Run Date: 04/10/15
Portfolio: [redacted]
Portfolio Inception: 07/01/2002

MUNICIPAL REVIEW COMMITTEE, INC.

FINANCIAL STATEMENTS

For the Year Ended December 31, 2013

LOISELLE, GOODWIN & HINDS

CERTIFIED PUBLIC ACCOUNTANTS

12 Stillwater Avenue Suite 5 PO Box 939 Bangor, Maine 04402-0939 *telephone* 207 990-4585 800 784-0793 *fax* 207 990-4584 *e-mail:* lghcpa@lghcpa.com

website: www.lghcpa.com

TABLE OF CONTENTS

LOISELLE, GOODWIN & HINDS
CERTIFIED PUBLIC ACCOUNTANTS

Leo M. Loiselle, CPA
Glenn D. Goodwin, CPA
Donald E. Higgins, CPA
Christopher S. Hinds, CPA
Angel R. Caron, CPA
Andrea S. White, CPA

12 Stillwater Avenue, Suite 5 PO Box 939 Bangor, Maine 04402-0939 *telephone* 207 990-4585 800 784-0793 *fax* 207 990-4584 *e-mail* lghcpa@lghcpa.com website: www.lghcpa.com

Independent Auditors' Report

To the Board of the
Municipal Review Committee, Inc.

We have audited the accompanying financial statements of the governmental activities and each major fund of Municipal Review Committee, Inc., (MRC) as of and for the year ended December 31, 2013, and the related notes to the financial statements, which collectively comprise MRC's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express opinions on these financial statements based on our audit. We did not audit the financial statements of Penobscot Energy Recovery Company (PERC), which represent 29%, 30%, and 2%, respectively, of the total assets, net position, and total additions of the fiduciary fund, Joint Venture of the Charter Municipalities of Municipal Review Committee, Inc. Those statements were audited by other auditors whose report has been furnished to us, and our opinion, insofar as it relates to the amounts included for PERC, is based solely on the report of the other auditors. We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes examining the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Opinions

In our opinion, based on our audit and the report of other auditors, the financial statements referred to above present fairly, in all material respects, the respective financial position of the governmental activities and each major fund of Municipal Review Committee, Inc., as of December 31, 2013, and the respective changes in financial position, for the year then ended in conformity with accounting principles generally accepted in the United States of America.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis on pages 3 through 11 be presented to supplement the basic financial statements. Such information, although not part of the basic financial statements, is required by the Government Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted principally of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise MRC's basic financial statements. The Schedule of Equity Charter Member Net Position is presented for purposes of additional analysis and is not a required part of the basic financial statements. The schedule has not been subjected to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on it.

Loiselle, Goodwin & Hinds

Loiselle, Goodwin & Hinds

August 6, 2014
Bangor, Maine

MUNICIPAL REVIEW COMMITTEE, INC.
MANAGEMENT'S DISCUSSION AND ANALYSIS
OF THE FINANCIAL STATEMENTS FOR CALENDAR YEAR 2013

This report provides a discussion and analysis of the financial performance of the Municipal Review Committee, Inc. (MRC) and the Joint Venture of the Charter Municipalities of the Municipal Review Committee, Inc. (Joint Venture), for the fiscal year ended December 31, 2013. Please review it in conjunction with the financial statements and associated notes that follow this section.

1.0 Financial Highlights

Municipal Review Committee, Inc.

- Received $292,977 in total revenue in 2013, compared to $319,440 in total revenue in 2012. Dues from members amounted to $225,571 in 2013, compared to $229,115 in 2012.
- Total expenses in 2013 were $650,533, compared to $461,107 in 2012.

Joint Venture

- Distributed $4.47 million to Charter Municipalities, thereby achieving the target values for per-ton waste disposal costs for the Equity Charter Municipalities of $48 per ton in the first two quarters of 2013 and $51 per ton in the last two quarters of 2013; and for the New Charter Municipalities of $54 per ton throughout the year.
- Sustained ownership interest in the PERC partnership at 25.5214 percent of the limited partnership shares.
- Maintained a balance of $21.33 million, including accrued interest, in the Tip Fee Stabilization Fund as of the end of 2013 and managed the investment of the fund balance. The MRC remains positioned to utilize the Tip Fee Stabilization Fund to stabilize tipping fees through and beyond the expiration of existing business arrangements for waste disposal in 2018.
- Maintained the balance in the MRC Operating Budget Stabilization Fund at $2.21 million, including accrued interest, as of the end of 2013 and managed the investment of the fund balance. The MRC Operating Budget Stabilization Fund provides supplemental support for MRC's budget for the administration of the Joint Venture, which budget is managed separately, and serves as a source of resources to stabilize annual dues assessments and to prepare for unforeseen events.
- Sustained a net position of $34.50 million at the close of 2013.

2.0 Overview of the Financial Statements

The basic financial statements are presented herein in a format that is consistent with the requirements of the Governmental Accounting Standards Board.

Municipal Review Committee, Inc.

The financial statements present the following two different views of MRC:

1. The Governmental Funds Balance Sheet / Statement of Net Position (Balance Sheet) identifies and presents values for the General Fund assets and liabilities of MRC as of the end of the calendar year. The Balance Sheet also identifies and presents adjustments for assets that are not currently available for application to expenditures, and identifies and presents net position after application of the adjustments.

The key General Fund assets shown on the Balance Sheet include the following:

- o Cash, which is held in a checking account at Key Bank.

- o Membership Fees Receivable, which refers to the dues members owe MRC based on tons of municipal solid waste delivered to PERC.

- o Receivables from Bangor Hydro and PERC, with which MRC has agreements with for providing various services.

The Balance Sheet presents prepaid insurance, an option to purchase land, and website design costs as assets that are not currently available for use to meet expenditures.

The General Fund fund balance is shown on the Balance Sheet as unrestricted and unassigned.

The net position presented on the Balance Sheet includes the value of prepaid insurance and capital assets, which are not currently available for use to meet expenditures, i.e., available within 60 days of year end.

2. The Statement of Governmental Fund Revenue, Expenditures and Changes in Fund Balances / Statement of Activities (Income Statement) identifies and presents revenues and expenditures/ expenses over the course of calendar year 2013. The Income Statement also identifies and presents the changes in the General Fund Balance over the course of 2013.

The General Fund revenues shown on the Income Statement include the following:

- o Membership Fees.
- o Revenue from the PERC Monitoring Agreement.
- o Reimbursements of expenses and interest income.

The Income Statement presents as adjustments to expenditures the change in prepaid insurance, acquisition and depreciation of capital assets, and change in accrued vacation for the year.

Joint Venture

1. The Statement of Fiduciary Net Position (Balance Sheet) identifies and presents values for the Fiduciary Fund assets and liabilities of the Joint Venture as of the end of the calendar year.

The Fiduciary Fund assets shown on the Balance Sheet include the following:

- o Cash and cash equivalents, which are held in a Custody Account at Bangor Savings Bank.
- o The Tip Fee Stabilization Fund and the MRC Operating Budget Stabilization Fund, which are invested in a set of bonds of varying maturities and managed by an investment advisor, Peoples United Bank.
- o Accrued interest on the Investments as of year-end.
- o The Equity Charter Municipality investment in PERC, which is accounted for using the equity investment method. Included in the value of PERC is the Charter Municipalities' share of the reserve funds held by the Trustee as part of the security for PERC's outstanding debt.

2. The Statement of Changes in Fiduciary Net Position (Income Statement) identifies and presents increases and decreases in Fiduciary Net Position over the course of calendar year 2013.

The Fiduciary Fund additions shown on the Income Statement include the following:

- Performance Credits as a result of PERC operations that were distributed to MRC on behalf of the Charter Municipalities.
- Partnership earnings as a result of a part ownership of PERC.
- Interest income and changes in investment fund values.

The Fiduciary Fund deductions shown on the Income Statement include the following:

- Quarterly distributions of cash paid to the Charter Municipalities.
- Operating transfers from the Operating Budget Stabilization Fund to MRC, to be used by MRC for administrative expenses and for expenses associated with planning for the fulfillment of the MRC mission after the existing arrangements expire in 2018. The MRC made such transfers in 2013 in the amount of $329,000.

3.0 Analysis of Overall Financial Position and Results of Operations

Municipal Review Committee, Inc.

MRC's net position decreased $28,556 or 20.93% in 2013. The following table summarizes this change.

	Governmental Activities		Total % Change
	2013	**2012**	
Cash	$ 57,411	$ 12,951	343.29%
Due from Fiduciary Fund	-	90,000	(100.00)%
Other Assets	104,456	76,116	37.23%
Total Assets	161,867	187,522	(13.68)%
Current Liabilities	54,002	51,101	5.68%
Total Net Position	$ 107,865	$ 136,421	(20.93)%

MRC's changes in net position are summarized in the following table.

	Governmental Activities		Total % Change
	2013	**2012**	
Membership Fees	$ 225,571	$ 229,115	(1.55)%
Other Revenue	67,406	90,325	(25.37)%
Total Revenues	292,977	319,440	(8.28)%
Total Expenses	(650,533)	(461,107)	41.08%
Transfers from Fiduciary Fund	329,000	160,000	105.63%
Change in Net Position	(28,556)	18,333	-
Beginning Net Position	136,421	118,088	
Ending Net Position	$ 107,865	$ 136,421	

Joint Venture

The MRC manages the assets of the Charter Municipalities in order to achieve two key objectives. First, MRC seeks to distribute sufficient cash on a quarterly basis to the Charter Municipalities in order to reduce their net cost for disposal of waste at the PERC facility to a pre-determined system-wide average per-ton net cost known as the "target value." In 2013, the target values for Equity Charter Municipalities were $48 per ton in the first two quarters and $51 per ton in the last two quarters, which represented the third increase in the target value since 1998. The target value for the New Charter Municipalities was $54 per ton throughout the year. Second, MRC seeks to position the Charter Municipalities to continue to achieve target values to be determined by the MRC Board of Directors through 2018 by (a) ensuring that the Facility maintains its performance in providing waste disposal services; (b) maintaining an appropriate ownership position in the PERC partnership; (c) setting aside sufficient funds in the Tip Fee Stabilization Fund, and (d) managing other net position.

The Joint Venture's net position decreased from $34.79 million to $34.50 million, or 0.84%, in 2013. The following table summarizes these changes.

	Fiduciary Activities		Total % Change
	2013	2012	
Cash and Investments	$25,324,817	$24,798,836	2.13%
Investment in PERC	10,200,747	11,231,493	(9.18)%
Total Assets	35,525,564	36,030,329	(1.40)%
Tipping Fee Rebates Payable	1,025,551	1,146,128	(10.52)%
Due to General Fund	-	90,000	(100.00)%
Total Net Position	$34,500,013	$34,794,201	(0.84)%

The Joint Venture's changes in net position are summarized in the following table.

	Fiduciary Activities		Total % Change
	2013	2012	
PERC Performance Credits	$ 4,322,347	$ 3,213,260	34.52%
Share of PERC's Net Income	107,072	1,176,305	(90.90)%
Investment Income	(45,278)	271,188	-
Total Additions	4,384,141	4,660,753	(5.93)%
Total Deductions	4,678,329	4,813,127	(2.80)%
Change in Net Position	(294,188)	(152,374)	(93.07)%
Beginning Net Position	34,794,201	34,946,575	
Ending Net Position	$34,500,013	$34,794,201	

MRC distributed sufficient cash in each of the four quarters of 2013 to achieve the target values as shown in the following table:

Quarter	*1*	*2*	*3*	*4*
Tip fee, prior quarter	$74.00	$76.00	$74.75	$74.75
Distribution to Equity Charter Municipalities	$26.00	$28.00	$23.75	$23.75
Net disposal cost for Equity Charter Municipalities, system weighted average	$48.00	$48.00	$51.00	$51.00
Target value for Equity Charter Municipalities	$48.00	$48.00	$51.00	$51.00
Distribution to New Charter Municipalities	$20.00	$22.00	$20.75	$20.75
Net disposal cost for New Charter Municipalities	$54.00	$54.00	$54.00	$54.00
Target value for New Charter Municipalities	$54.00	$54.00	$54.00	$54.00

All values are in dollars per ton.

By the end of 2013, the balance in the Tip Fee Stabilization Fund was $21.33 million. Based on the funds available as of the end of 2013 and the anticipated Performance Credits and PERC partnership distributions (assuming that the PERC facility will continue to perform as it has in the past few years), MRC has projected that the Charter Municipalities will have sufficient resources to continue to achieve the target values through 2018.

A key purpose of the Tip Fee Stabilization Fund is to position the Charter Municipalities to realize the benefits of affordable, long-term, environmentally sound disposal of MSW beyond 2018. Maintaining the existing target value unchanged, however, would draw down most of the balance in the Tip Fee Stabilization Fund by 2018, thereby depleting the capability to stabilize tip fees should the existing arrangements be extended beyond 2018. Moreover, MRC has projected that tipping fees in any extended arrangement would need to be significantly higher than the current target values for a variety of reasons, most particularly because of the projected decline in electricity revenues after the expiration of the existing sales agreement.

Thus, at its October 2010 meeting, the MRC Board of Directors voted to adopt a Target Value Step Increase Implementation Plan to implement an increase in target values on an annual basis through 2018. This plan established increased target values for the Equity Charter Municipalities as follows:

$46 per ton as of July 1, 2011
$48 per ton as of July 1, 2012
$51 per ton as of July 1, 2013
$55 per ton as of July 1, 2014
$59 per ton as of July 1, 2015
$63 per ton as of July 1, 2016
$67 per ton as of July 1, 2017

The target value for the New Charter Municipalities would stay at $54 per ton through July 1, 2014, and then increase in accordance with the Plan as set forth above.

The intent of these increases is to avoid a spike in disposal costs; prepare the Charter Municipalities for higher post-2018 disposal costs; and, to maintain funds in reserve for use in enhancing the negotiating position and capacity of MRC to make available the best possible post-2018 extension/purchase terms for the Charter Municipalities.

4.0 Significant Transactions

MRC managed the following transactions on a routine basis during the year:

- Receipt of Performance Credits from PERC on a monthly basis.
- Receipt of partnership distributions from PERC on a monthly basis.
- Distribution of cash to Charter Municipalities to achieve the target values on a quarterly basis.
- Transfers of funds to the Custody Account from the Tip Fee Stabilization Fund in the second quarter of 2013.
- Transfer of funds to the MRC operating account from the Operating Budget Stabilization Fund in the third quarter of 2013.

5.0 Capital Assets and Debt Administration

MRC had no outstanding debt in 2013.

MRC no longer receives payments of principal and interest on the promissory note from Bangor Hydro, as had been the case in 2008 and in prior years. Bangor Hydro made the last payment of principal and interest on the Note in May 2008.

6.0 Economic Factors and Significant Foreseeable Future Conditions

MRC notes the following significant foreseeable future conditions with the potential to affect performance in 2014 and beyond:

- Facility Maintenance Costs. The facility operator, acting for PERC, LP, is planning to incur major maintenance expenditures for the Facility to ensure that operations continue through and beyond 2018. Implementation of capital and maintenance investments in the Facility's major processing and production systems will continue to be an integral factor in maintaining economic performance in 2014 and thereafter. The total cost of the investments required to sustain economic performance has increased in recent years. There is no assurance that the level of future investment in capital and major maintenance projects at the Facility as required to maintain current levels of performance will not exceed projections in the coming years, or that performance will be maintained at current levels.

  As a facility with a nameplate generating capacity of more than 20 MW, the Facility is required to comply with new requirements for the reliability and security of the regional electric grid, as overseen by the Northeast Power Coordinating Council (NPCC), the North American Electricity Reliability Corporation (NERC) and other related organizations of applicable jurisdiction. These requirements, which can require changes to physical plant as well as development and documentation of operating procedures, continue to evolve and expand. There is no assurance regarding the nature of the full set of NPCC and NERC requirements that the Facility might be required to implement, nor is there assurance regarding the cost and impact on performance of satisfying such requirements.

- Waste Acquisition. In 2013, PERC received 306,875 tons of municipal solid waste (MSW). The MSW included 113,993 tons of MSW from commercial and spot market arrangements to supplement the 179,177 tons of MSW reported by PERC as delivered by Charter Municipalities and 13,705 tons of MSW delivered by other municipalities. MSW deliveries to PERC by Charter Municipalities declined by 1,279 tons from 2012 to 2013, a drop of 0.7 percent, and, per PERC's records, fell short by 5,075 tons of the guaranteed annual tonnage (GAT) that the Charter Municipalities, in aggregate, were obligated to deliver to PERC in 2013 to avoid shortfall penalties. Such shortfall does not account for MSW delivered to PERC that originated within the boundaries of Charter Municipalities but was credited to the accounts of commercial haulers. Whether such shortfall penalties will be assessed in 2014 for shortfalls in 2013 and 2012, and the magnitude of such penalties, had not been finalized as of this writing.

  Quantities of MSW available to the PERC facility have declined for a number of reasons, including lingering effects of the economic downturn; waste reduction or diversion through pay-as-you-throw and similar programs; and increased recycling resulting from new single-stream programs. There is no assurance that MSW from the commercial and spot market arrangements will continue to be available to PERC in the future in the same quantities as it was acquired in the past, nor is there assurance that the quantities of MSW delivered by the Charter Municipalities, which include significant amounts of MSW originating from commercial sources within their borders and delivered to the account of the municipalities, will not decline from delivery levels in prior years. Thus, there is no assurance that the Charter Municipalities will not be exposed to further delivery shortfall penalties in future years. Moreover, there is no assurance that the Charter Municipalities will not be exposed to reduced Performance Credits and distributions of cash from the PERC Partnership due to reduced economic performance at PERC as a result of declines in waste deliveries.

- Competition with other disposal facilities. PERC actively competes with other disposal facilities to acquire MSW as needed to allow the facility to operate at capacity. Competing disposal facilities at the start of 2014 include two other operating municipal waste combustion facilities in Maine;

operating landfills that are permitted to accept MSW in Maine; and facilities that are located outside of Maine. Failure of PERC to attract sufficient MSW to allow the facility to operate at capacity, or loss of significant quantities of MSW to competing disposal facilities, could have a significant adverse impact on the economic performance of PERC in 2014 and thereafter, and could adversely affect the capability for Charter Municipalities to achieve the target values through 2018.

The competitive market for disposal of MSW in Maine changed dramatically at the end of 2013 due to the following events:

1. The Maine Energy Resource Company (MERC) facility in Biddeford was shut down permanently at the end of 2012. The MERC facility had previously accepted for disposal about 120,000 tons per year of MSW generated in Maine and nearly 170,000 tons per year of MSW from other states. Such MSW must now be managed through other facilities.

2. The Juniper Ridge Landfill in Old Town applied for and received approval from the Maine DEP to amend its operating license to allow acceptance for disposal, under a number of stated conditions, of unprocessed in-state MSW that had previously been accepted at the Maine Energy Resource Company (MERC) facility in Biddeford. The license amendment was requested by a corporate affiliate of Casella Waste Systems, Inc. (Casella), which operates the Juniper Ridge Landfill, and which owned and operated the MERC facility, through corporate affiliates.

3. In light of the above, the PERC partnership, PERC's private owners, and Casella negotiated a new contract (the Casella-PERC Contract) regarding delivery of MSW to the PERC facility from in-state sources, including MSW that had previously been delivered to the MERC facility.

The new Casella-PERC contract would have Casella deliver up to 100,000 tons per year of MSW to the PERC facility, including up to 30,000 tons per year of MSW that had previously been delivered to the MERC facility from in-state sources. Thus, the new arrangements provides additional assurance that the PERC facility will be able to secure sufficient MSW to operate at or near its full capacity with maximum reliance on MSW generated within Maine and with reduced reliance on MSW imported from other states. Nonetheless, there is no certainty that the PERC facility will not face shortfalls in the availability of MSW as required to operate at full capacity. Such circumstances might have a significant adverse impact on the economic performance of PERC in 2014 and beyond.

<u>Environmental regulation</u>. Many aspects of the operation of the Facility are subject to stringent regulation of the Maine Department of Environmental Protection (the DEP) and by other federal, state, and local agencies. Thus, there is always a risk that changes in applicable, law, regulations, or regulatory policies and enforcement practices will have an adverse impact on the Facility's performance or the economics of continuing Facility operation. The Facility works diligently to comply with all applicable environmental laws, regulations, permits, and policies. In addition, MRC works jointly with PERC on an ongoing basis to monitor potential changes in applicable laws, regulations, permits, and policies in order to identify initiatives that might have an adverse impact on the Facility and to ensure that such impacts are recognized and given due consideration. Nevertheless, there is no assurance that the Facility will not be adversely affected in the future by changes in applicable law, regulation, regulatory policy, or enforcement practices. The products of combustion at the Facility that are emitted to the atmosphere include, among other things, carbon dioxide, which is considered a contributor to global warming and, pursuant to a 2009 ruling of the U.S. Environmental Protection Agency, is also considered a regulated pollutant. The contribution to global warming by the Facility's emissions of carbon dioxide is more than offset by two factors of its operation. First, the Facility combusts municipal solid waste that, had it been deposited in a landfill, might have caused emission to the atmosphere of methane and other greenhouse gases with a greater overall contribution to global warming than the carbon dioxide emitted from the Facility.

Second, the Facility generates electricity from the combustion of waste that displaces a like amount of electricity that might have been generated from combustion of fossil fuels at facilities with emissions that contribute proportionately more to global warming than the Facility. Nonetheless, both the U.S. Congress and the U.S. Environmental Protection Agency are considering new measures to control carbon dioxide emissions and global warming that might have an adverse impact on Facility operations. There is no assurance as to what the nature or magnitude of such impacts might be.

- Electric utility regulation. In 2013, approximately 58 percent of all revenue realized by PERC was in the form of payments for electricity purchased by Bangor Hydro pursuant to a Power Purchase Agreement (PPA) that was originally executed in 1984 and is expected to remain in effect through March 31, 2018. Such purchases undertaken pursuant to the PPA in 2013 were at prices generally in excess of market rates for electricity and associated products. In recognition of the PPA prices for electricity and related contract terms, in 1998 the PPA was amended to provide cost mitigation to Bangor Hydro. Such amendment was reviewed and approved by the Maine Public Utilities Commission (the Maine PUC), which has regulatory jurisdiction over Bangor Hydro and its power purchase arrangements. The Maine PUC ruled that the above-market purchases of electricity by Bangor Hydro pursuant to the PPA qualify as "stranded costs" and has set forth a procedure for recovery of such costs on an ongoing basis. Nevertheless, there is no assurance that the Facility might not be adversely affected in the future by changes in the regulatory treatment of electricity purchases pursuant to the PPA or by changes in the procedures for recovery of stranded costs.

- Emerging technologies. The MRC is aware of numerous new technologies that are being developed to process and dispose of municipal solid waste, including approaches that utilize new equipment for mixed waste processing, sorting, pelletization, gasification, pyrolysis, plasma arc destruction, anaerobic digestion, thermal de-polymerization and.for other purposes. Several reference facilities utilizing these technologies are being constructed and operated in the United States on a commercial basis. Although there are no facilities applying such technologies to solid waste management that are operating or under construction in Maine, it is possible that such a technology will be developed and emerge in the future with adverse economic consequences on the PERC Facility. MRC continues to work with the private partners in PERC to monitor and evaluate the emergence of such technologies from the perspective of (a) modifying the PERC facility to incorporate such technology; or (b) evaluating whether a facility incorporating such technology might be developed as a successor for managing MSW currently delivered to the PERC facility after the existing disposal agreements expire in 2018..

- Post-2018 planning initiative. Generally, the MRC is proceeding with a concerted initiative to evaluate alternatives that might be developed for management of MSW originating in its member municipalities after the existing disposal agreements expire in 2018. The MRC's post-2018 planning initiative involves consideration of a wide variety of alternatives that range from modification of the PERC Facility with new technology to development of new facilities using emerging technology for MSW management at new sites. To this end, the MRC is preparing an application to the Maine DEP for a public benefit determination for an integrated MSW management system that would include a new secure landfill as one component of the system. The MRC has also taken steps to secure commitments from its member municipalities to commit to consider participation in the system that is being developed.

  At this time, the MRC intends to have its member municipalities manage their MSW through delivery to the PERC Facility through and into 2018 in accordance with the existing disposal agreements. Nonetheless, the MRC recognizes that its efforts to evaluate and develop alternatives after the disposal agreements expire in 2018 might have impacts on the performance of the existing facilities and under the existing arrangements prior to their expiration in 2018. There is no assurance as to what the nature or magnitude of such impacts might be. MRC also acknowledges that there has been disagreement between the private and public sector partners in the PERC Partnership regarding the preferred course of action after 2018. There is no assurance as to what the nature or magnitude of the impacts might be of disagreements between the private and public sector partners in the PERC partnership on the performance of the PERC Facility.

7.0 Contact Information

More information on MRC and the Joint Venture may be obtained at MRC's administrative office, 395 State Street, Ellsworth, ME 04605.

MUNICIPAL REVIEW COMMITTEE, INC.
GOVERNMENTAL FUNDS BALANCE SHEET / STATEMENT OF NET POSITION
DECEMBER 31, 2013

	General Fund	Adjustments	Statement of Net Position
ASSETS			
Cash - Checking Account	$ 57,411	-	$ 57,411
Membership Fees Receivable	56,502	-	56,502
Accounts Receivable - Bangor Hydro	14,370	-	14,370
Reimbursements Receivable - PERC	2,580	-	2,580
Deferred Outflows of Resources:			
Prepaid Insurance	-	$ 9,544	9,544
Capital Assets:			
Option to Purchase Land	-	20,000	20,000
Website Design Costs	-	1,460	1,460
Total Capital Assets	-	21,460	21,460
Total Assets	$ 130,863	31,004	161,867
LIABILITIES			
Accounts Payable	$ 43,166	-	43,166
Payroll Taxes and Withholdings Payable	99	-	99
Accrued Payroll	2,467	-	2,467
Accrued Vacation	-	8,270	8,270
Total Liabilities	45,732	8,270	54,002
FUND BALANCES / NET POSITION			
Fund Balances:			
Unassigned	85,131	(85,131)	-
Total Liabilities and Fund Balances	$ 130,863		
Net Position:			
Invested in Capital Assets		21,460	21,460
Unrestricted		86,405	86,405
Total Net Position		$ 107,865	$ 107,865

MUNICIPAL REVIEW COMMITTEE, INC.
STATEMENT OF GOVERNMENTAL FUND REVENUE, EXPENDITURES, AND CHANGES IN FUND BALANCES / STATEMENT OF ACTIVITIES
FOR THE YEAR ENDED DECEMBER 31, 2013

	General Fund	Adjustments	Statement of Activities
REVENUE			
Membership Fees	$ 225,571	-	$ 225,571
PERC Monitoring Agreement	56,918	-	56,918
Reimbursements for PERC Oversight Committee Expenses	10,320	-	10,320
Interest Income	168	-	168
Total Revenue	292,977	-	292,977
EXPENDITURES / EXPENSES			
Current:			
Payroll Costs	118,495	-	118,495
Consulting - Resource Management	101,052	-	101,052
Legislative Advocacy and Communications	74,781	-	74,781
Legal Fees	61,711	-	61,711
Administrative and Miscellaneous	19,306	$ (1,265)	18,041
Audit Fee	11,000	-	11,000
Insurance	7,695	(1,284)	6,411
Occupancy	5,400	-	5,400
Post-2018 Planning:			
Consulting	123,484	-	123,484
Legal	79,668	-	79,668
Other	35,490	-	35,490
Communications	15,000	-	15,000
Capital Outlay:			
Option to Purchase Land	20,000	(20,000)	-
Total Expenditures / Expenses	673,082	(22,549)	650,533
EXCESS (DEFICIENCY) OF REVENUE OVER EXPENDITURES BEFORE OTHER FINANCING SOURCES AND USES	(380,105)	380,105	-
OTHER FINANCING SOURCES AND USES			
Transfers from the MRC Operating Budget Stabilization Fund of the Joint Venture of the Charter Municipalities of Municipal Review Committee, Inc.	329,000	(329,000)	-
EXCESS (DEFICIENCY) OF REVENUE OVER EXPENDITURES	(51,105)	51,105	-
TRANSFERS FROM FIDUCIARY FUND	-	329,000	329,000
CHANGE IN NET POSITION	-	$ (28,556)	(28,556)
FUND BALANCE / NET POSITION - January 1, 2013	136,236		136,421
FUND BALANCE / NET POSITION - December 31, 2013	$ 85,131		$ 107,865

The accompanying notes are an integral part of these financial statements.

MUNICIPAL REVIEW COMMITTEE, INC.
STATEMENT OF FIDUCIARY NET POSITION
JOINT VENTURE OF THE CHARTER MUNICIPALITIES
OF MUNICIPAL REVIEW COMMITTEE, INC.
DECEMBER 31, 2013

	Fiduciary Fund
ASSETS	
Custody Account	$ 1,787,330
Tip Fee Stabilization Fund	21,258,689
MRC Operating Budget Stabilization Fund	2,201,021
Accrued Interest Income	77,777
Investment in PERC	10,200,747
Total Assets	35,525,564
LIABILITIES	
Tipping Fee Rebates Payable	1,025,551
NET POSITION	
Held for the Benefit of the Equity Charter Municipalities of Municipal Review Committee, Inc.	$ 34,500,013

MUNICIPAL REVIEW COMMITTEE, INC
STATEMENT OF CHANGES IN FIDUCIARY NET POSITION
JOINT VENTURE OF THE CHARTER MUNICIPALITIES
OF MUNICIPAL REVIEW COMMITTEE, INC.
FOR THE YEAR ENDED DECEMBER 31, 2013

	Fiduciary Fund
ADDITIONS	
PERC Performance Credits	$ 4,322,347
Interest and Dividend Income	383,187
Net Earnings from Investment in PERC	107,072
Appreciation (Depreciation) of Investments	(428,465)
Total Additions	4,384,141
DEDUCTIONS	
Rebates of Tipping Fees	4,349,329
MRC Operating Budget Stabilization Fund Transfers to General Fund	329,000
Total Deductions	4,678,329
CHANGE IN NET POSITION	(294,188)
NET POSITION - January 1, 2013	34,794,201
NET POSITION - December 31, 2013	$ 34,500,013

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Municipal Review Committee, Inc. (MRC) was organized as a nonprofit corporation in 1991 to better ensure the continuing availability to its members of long-term, reliable, safe, and environmentally sound methods of solid waste disposal at a stable and reasonable cost. It was formed by municipalities with waste disposal agreements with Penobscot Energy Recovery Company Limited Partnership (PERC). Its members (also known as Charter Municipalities) include counties, refuse disposal districts, public waste disposal corporations, municipalities, and other quasi-municipal entities. Only municipalities within the State of Maine may be eligible for membership upon execution of a waste-disposal agreement with MRC.

MRC's Board of Directors is elected by the Charter Municipalities, and must be persons who, at the time of their election, are either elected or appointed officials, employees, or legal residents of the Charter Municipalities. As of December 31, 2013, MRC's membership was made up of 86 "Equity" Charter Municipalities and 47 "New" Charter Municipalities.

MRC's financial statements are prepared in accordance with generally accepted accounting principles (GAAP). The Governmental Accounting Standards Board (GASB) is responsible for establishing GAAP for governmental nonprofit entities through its pronouncements (Statements and Interpretations). The more significant accounting policies, established in GAAP and used by the Reporting Entity, are discussed below.

A. Financial Reporting Entity

The financial reporting entity is comprised of the following:

Primary Government	Municipal Review Committee, Inc.
Component Unit	Joint Venture of the Charter Municipalities of Municipal Review Committee, Inc.

These financial statements present the activities of MRC (the primary government) and its component unit. As defined by GASBS No. 14, component units are legally separate entities that are included in the primary government's reporting entity because of the significance of their operating or financial relationships with the primary government. However, as the relationship between MRC and its component unit is fiduciary in nature, the component unit's activities are reported in a fiduciary fund and are not blended with the activities of MRC.

Municipal Review Committee, Inc.

MRC acts as a liaison for and as a representative of its members with the PERC and Emera Maine, f.k.a. Bangor Hydro-Electric Company (Bangor Hydro). In performing this function, MRC:

- Reviews PERC's monthly and annual financial performance and operating reports.
- Reviews PERC's quarterly tipping fee adjustments.
- Reviews projected and documented utilization of the Capital Maintenance and Reserve Account (CMRA) monies.
- Oversees the CMRA.
- Reviews and verifies PERC's calculation of cash and performance credits to be provided to MRC's members and PERC.

- Reviews PERC's compliance with performance standards.
- Participates in the Oversight Committee of the PERC Partnership.
- Reviews Bangor Hydro's financial operating information and monitor its operations, as well as the process and impact of the deregulation or restructuring of the electric power industry.
- Enforces the priority lien MRC's members have on the CMRA monies in the event of termination of PERC's operations.
- Receives and/or directs the performance credits from PERC and determines the allocation, use, and application of those funds.
- For members who elected as of September 30, 1998, to become "Equity" Charter Municipalities:
  1. Purchases, sells, and otherwise deals with the members' limited partnership interest in PERC, as well as the Net Cash Flow from the ownership of PERC; and
  2. Receives, holds, exchanges, sells, exercises, or otherwise administers and deals with warrants for one million shares of common stock of Bangor Hydro.

Joint Venture of the Charter Municipalities of Municipal Review Committee, Inc.

The Joint Venture of the Charter Municipalities of Municipal Review Committee, Inc. (Joint Venture) is an organization that resulted from a contractual arrangement among certain members of MRC (known as Equity Charter Municipalities), PERC, and Bangor Hydro. It was formed to pool resources of the Equity Charter Municipalities for the long-term goal of handling the disposal of their present and projected volumes of nonhazardous municipal solid waste at a stable and reasonable cost. Those resources are administered by MRC. New members (known as New Charter Municipalities) do not have an ongoing financial interest in the Joint Venture and do not participate in the purchase of a limited partnership interest in PERC.

In 1998, the waste disposal agreements of the Equity Charter Municipalities were amended and restated, and extended to 2018, as part of a settlement that involved the refinancing of PERC's outstanding debt and the renegotiation of a power purchase agreement between PERC and Bangor Hydro, which purchases the electrical output of PERC's waste-to-energy facility ("Facility.") In exchange for certain guarantees, the Equity Charter Municipalities negotiated to receive the following:

Performance Credits from Facility operations. The Charter Municipalities are entitled to receive one-third of the Net Distributable Cash generated from the operation of the Facility, which is known as Performance Credits. Through September 2000, 15% of the Performance Credits were required to be deposited into a restricted cash account, which could only be used for acquisitions of PERC. The Performance Credits are now being directed to the Joint Venture without any requirement for deposit into a restricted account.

Warrants to purchase 1,000,000 shares of Bangor Hydro. The Equity Charter Municipalities received warrants to purchase Bangor Hydro common stock at a price of $7.00 per share. During the year ended December 31, 2001, the then remaining unexercised 700,900 warrants were exchanged for a $13,667,550 promissory note from Bangor Hydro.

Bangor Hydro $2,000,000 reserve. The Equity Charter Municipalities were entitled to receive $2,000,000 from Bangor Hydro over a four-year period. This cash was deposited into a restricted cash account, which could only be used for acquisitions of a limited partnership interest in PERC.

One-third of $10,000,000 in reserves. The Charter Municipalities are entitled to receive one-third of three reserves upon PERC's repayment of its outstanding debt. These reserves were held as collateral for the bondholders. The debt was refinanced during the year ended December 31, 2012, and the requirement for PERC to maintain $10,000,000 in the reserve accounts was reduced to $2,000,000. MRC has received one-third of the released funds.

The waste disposal agreements of the Equity Charter Municipalities provide that the interests acquired in PERC be allocated among themselves based on their respective shares of cumulative Performance Credits and other cash flows and reserves. To facilitate this allocation, MRC allocates resources among the municipalities on the basis of actual tons of acceptable waste delivered to PERC each quarter.

In an effort to stabilize the net cost of the disposal of the Charter Municipalities' solid waste, rebates of tipping fees are paid to the Charter Municipalities on a system-wide average basis to offset the difference between the tipping fee paid and the applicable target price.

B. Basis of Presentation

Government-Wide Financial Statements

The government-wide financial statements (i.e., statement of net position and the statement of activities) display information about the reporting entity as a whole. They include all funds of the reporting entity except fiduciary funds. The governmental activities are financed by administrative fees paid by members and operating transfers from the fiduciary fund's Operating Budget Stabilization Fund.

Fund Financial Statements

The fund financial statements of the reporting entity are organized into funds, each of which is considered a separate accounting entity. Each fund is accounted for with a separate set of self-balancing accounts that constitute its assets, liabilities, fund equity, revenues, and expenditures/ expenses. The funds have been organized into two categories: governmental and fiduciary.

Governmental. The General Fund is the Entity's only governmental fund. It is used to account for all activities except those legally or administratively required to be accounted for in other funds.

Fiduciary. Fiduciary funds are used to account for assets held for the benefit of other parties that generally are not used to finance the governmental entity's own operations.

C. Measurement Focus and Basis of Accounting

The government-wide financial statements are reported using the *economic resources measurement focus* and the *accrual basis of accounting.* Revenues are recorded when earned and expenses are recorded when a liability is incurred, regardless of the timing of related cash flows. The accounting objective is the determination of changes in net position and financial net position. All assets and liabilities (whether current or noncurrent) are reported.

The governmental fund financial statements are reported using the *current financial resources measurement focus* and the *modified accrual basis of accounting.* Revenues are generally recorded as soon as they are both measurable and available. Revenues are considered to be available when they are collectible within the current period or soon enough thereafter to pay liabilities of the current period. For this purpose, the Entity considers revenues to be available if they are to be collected within 60 days of the end of the current fiscal period. Expenditures are generally recorded when a liability is incurred, as under accrual accounting.

The accounting objective of governmental funds is the presentation of the sources, uses, and balances of the Entity's expendable financial resources and related liabilities. The revenues associated with the current fiscal period and susceptible to accrual are the membership fees, PERC monitoring agreement, and reimbursements. All other governmental fund revenues are considered measurable and available only when the Entity receives cash.

The fiduciary fund financial statements are reported using the *economic resources measurement focus* and the *accrual basis of accounting.* The accounting objective is the measurement of the changes in net position and financial position. All assets and liabilities (whether current or noncurrent) are reported.

D. Assets, Liabilities, and Equity

Membership Fees Receivable. Annually, the Board of Directors determines an administrative fee necessary to support the Entity's oversight duties. Each member pays its proportionate share based upon waste tonnage delivered to PERC. Membership Fees Receivable represents uncollateralized amounts due from members for the administrative fees.

Accounts Receivable – Bangor Hydro. During the year ended December 31, 1998, MRC completed negotiations to restructure the contractual relationships among MRC, its members, Bangor Hydro, and PERC through March 31, 2018. The agreement requires Bangor Hydro to pay MRC $10,000 each calendar quarter to cover costs associated with monitoring PERC's operations. This amount is adjusted once each year to reflect changes in the Consumer Price Index.

Custody Account. The Custody Account is the operating cash account of the Joint Venture. All deposits made to and held in this account are invested in Federated Government Obligations Money Market Fund. This investment is carried at fair value based on quoted market prices.

Tip Fee Stabilization Fund. In 2001, the Board of MRC voted to set aside a portion of the Performance Credits received each quarter into an investment account for future distributions to Charter Municipalities. In 2003, the Board voted to temporarily suspend additional purchases of PERC and to transfer to this Fund amounts in the Custody Account when they exceed a certain minimum balance. The investments in this account are carried at fair value based on quoted market prices.

Operating Budget Stabilization Fund. In 2004, the Board of MRC voted to establish this investment account from certain funds that the Joint Venture had received from the general partner of PERC. These investments may be used to provide MRC with funds each year through March 31, 2018, for balancing its annual operating budget in the event of contingencies. The investments in this account are carried at fair value based on quoted market prices.

Net Position. Equity in government-wide financial statements is classified as net position. Net position is further classified as invested in capital assets, restricted, and unrestricted. Capital assets are assets that are associated with governmental activities and arise from expenditures of governmental fund resources. Restricted net position consists of equity with constraints placed upon its use either by (1) external groups such as creditors or the laws and regulations of other governments, or (2) law through constitutional provisions or enabling legislation.

Equity in fiduciary fund financial statements is also classified as net position. This net position is not divided into the three categories used in government-wide financial statements. It simply reports the difference between the fund's assets and liabilities, and is shown as "Net position held for the benefit of the Equity Charter Municipalities of Municipal Review Committee, Inc."

Fund Balance. Governmental fund equity is classified as fund balance. The fund balance is further classified as restricted, committed, assigned, or unassigned. Restricted funds consist of amounts that are legally restricted by external parties or laws for a specific purpose. Committed funds consist of amounts that can only be used for a specific purpose pursuant to constraints imposed by the Board. Assigned funds represent tentative plans for future use.

2. DEPOSITS AND INVESTMENTS

a. Custodial Credit Risk—Deposits

Custodial credit risk is the risk that in the event of a bank failure, the entity's deposits may not be returned to it. The Entity does not have a deposit policy for custodial credit risk. As of December 31, 2013, $102,220 of the Entity's deposits held in banks totaling $708,707 was exposed to custodial credit risk as follows:

Uninsured and uncollateralized	$102,438

The Entity has not experienced any losses in the past. Management believes it is not exposed to any significant risk on its uninsured and uncollateralized cash deposits.

b. Credit Risk, Concentration of Credit Risk, and Interest Rate Risk—Investments

The following schedule summarizes the Fiduciary Fund's investments at December 31, 2013:

		Investment Maturities (in Years)			Weighted Average Maturity
	Market Value	Less Than 1	1-5	6-10	
U.S. Treasury Bill and Notes	$ 3,061,964	$ 499,490	$ 2,562,474	-	2.77 years
U.S. Government Agency Bonds:					
Federal Home Loan Bank	14,113,501	3,599,618	10,026,398	$ 487,485	2.21 years
Federal Farm Credit Bank	4,586,454	1,106,144	3,480,310	-	2.18 years
Federal National Mortgage Association	531,830	277,455	254,375	-	1.80 years
Total Bonds	19,231,785	4,983,217	13,761,083	487,485	2.19 years

	Market Value	Investment Maturities (in Years) Less Than 1	1-5	6-10	Weighted Average Maturity
Money Market Mutual Funds:					
Federated Government Obligations Tax-Managed Fund	$ 563,741	$ 563,741	-	-	46 days
Federated Government Obligations Fund	1,787,330	1,787,330	-	-	51 days
Total Mutual Funds					
Totals	$24,644,820	$7,833,778	$16,323,557	$ 487,485	

Maine statutes authorize the Entity to invest its municipal revenues in all obligations of the U.S. government and its instrumentalities, in U.S. agencies within the three highest ratings issued by nationally recognized statistical rating organizations, in repurchase agreements secured by U.S. obligations, and in shares of registered mutual fund companies that invest in U.S. obligations. The Entity invests only in instruments allowed under Maine Law; however, it does not invest in any subordinated debt.

Credit Risk. Credit risk exists when there is a possibility the issuer or other counterparty to an investment may be unable to fulfill its obligations. The Entity's investments in the bonds of U.S. Agencies were all rated Aaa, AAA, and AAA by Moody's Investors Service, Standard & Poor's, and Fitch Ratings, respectively. The money market mutual funds were both rated Aaa-mf and AAAm by Moody's Investors Service and Standard & Poor's, respectively.

Concentration of Credit Risk. Concentration of credit risk exists when the investments in any one issuer exceed 5% of total investments. However, no concentration of credit is deemed to exist for investments issued or explicitly guaranteed by the U.S. government and investments in mutual funds. MRC does not have a policy for managing its concentration of credit risk. The investment in bonds issued by Federal Home Loan Bank and Federal Farm Credit Bank amount to 57.27% and 18.61%, respectively, of total investments.

Interest Rate Risk. Interest rate risk exists when there is a possibility that changes in interest rates could adversely affect an investment's fair value. In accordance with its investment policy, the Entity limits the weighted average maturity of its investment portfolio to within two years of the duration of a benchmark based on blended values of the Barclay's Agency 1-3 Year Index and the Barclay's U.S. Government Intermediate Bond Index.

3. INVESTMENT IN PERC

The Entity accounts for its investment in PERC under the equity method, that is, at cost adjusted periodically by the Entity's share of PERC's earnings or losses, and increased by contributions made and decreased by the distributions received. During the year ended December 31, 2013, the Entity received a distribution of $1.138 million.

The Partnership has a limited life extending to December 31, 2018, unless further extended by a vote of all partners. Profits and losses, including gains and losses upon sale or refinancing, are allocated among the partners in accordance with their ownership percentages. The difference between the cost of the investment in the PERC partnership and the underlying equity in the partnership's capital when acquired, approximately $1,000,000, is accounted for as goodwill not subject to amortization.

The ownership interests of the partners of PERC at December 31, 2013, are as follows:

	General Partners	Limited Partners
USA Energy Group, LLC	10.0%	42.7%
Equity Charter Municipalities of MRC	-	23.0%
PERC Holdings, LLC	-	24.3%
Total	10.0%	90.0%

Summarized financial information of PERC at December 31, 2013, and for the year then ended, is as follows:

ASSETS	
Cash and cash equivalents	$ 6,763,433
Accounts receivable, prepaid expenses, and other assets	3,820,919
Restricted funds	3,043,039
Property, plant, and equipment, net of accumulated depreciation	34,451,994
Total assets	$48,079,385
LIABILITIES AND PARTNERS' CAPITAL	
Accounts payable, accrued expenses, and other liabilities	$ 4,506,784
Note payable	6,594,954
Total liabilities	11,101,738
Partners' capital	36,977,647
Total liabilities and partners' capital	$48,079,385
STATEMENT OF INCOME	
Revenues	$33,826,237
Operating expenses	33,015,535
Operating income before interest and other financing costs	810,702
Interest and other financing costs	344,551
Net income	$ 466,151

4. OPTION TO PURCHASE LAND

As part of its post-2018 planning initiative, the Entity has acquired an option to purchase a tract of land in Greenbush, Maine. The option allows the Entity to purchase the land at a predetermined amount during the initial two-year and successive terms. The option will automatically renew for three successive one-year terms, provided that additional option consideration is paid. The option price and any additional consideration may be applied toward the purchase price.

5. SCHEDULE OF EQUITY CHARTER MUNICIPALITY NET POSITION

MRC allocates most of the Joint Venture's cash inflows among the Equity Charter Municipalities on the basis of actual tons of acceptable waste delivered to PERC each quarter. Each individual acquisition of PERC has been allocated among the Equity Charter Municipalities based on the allocation for the calendar quarter the purchase was made. The distributions PERC makes to its partners are allocated among the municipalities based on each municipality's respective ownership of PERC at the time of the distributions.

Some of the Joint Venture's assets have not been allocated among its members yet, such as the undistributed profits of PERC. These assets will be allocated in the calendar quarter that they are converted to cash. However, for purposes of this schedule, the allocation of these assets has been estimated based on the cumulative allocations of the allocated assets. The actual allocations that will be made in the future may be different than that presented here, since it will generally be allocated based on the allocation for the quarter in which the cash is received.

6. INCOME TAXES

The Organization is tax exempt under Section 501(a) of the Internal Revenue Code as an organization described in Section 501(c)(3), and is classified by the Internal Revenue Service (IRS) as other than a private foundation. However, the Internal Revenue Code may subject an organization to tax on unrelated business taxable income. It is Management's opinion that the Organization had no unrelated business taxable income during the year ended December 31, 2013.

The Organization is required to file Form 990 (Return of Organization Exempt from Income Tax), which is generally subject to examination by the IRS and state authorities up to three years from the due date. Forms 990 for 2010 to 2012 were open to examination as of December 31, 2013.

7. RETIREMENT PLAN

MRC has sponsored a SIMPLE IRA plan for its employee and matches 100% of the employee's deferred compensation up to 3% of the employee's compensation. The expense for the year ended December 31, 2013, was $2,729.

8. OPERATING LEASE

During the year ended December 31, 2012, the Entity entered into a 13-month lease for office space in Ellsworth, Maine beginning December 1, 2012, at a rate of $450 per month. Rental expense under this lease for the year ended December 31, 2013, amounted to $5,400. There are no minimum lease payments remaining under this lease.

9. INSURANCE

The Entity is exposed to a variety of risks in the ordinary course of its daily activities. Some of these risks include workers' compensation, legal, and fiduciary liabilities. MRC has purchased commercial insurance policies to cover potential claims.

10. SUBSEQUENT EVENTS

During 2014 MRC acquired options to purchase two alternative tracts of land in nearby towns. These options have similar terms to the option acquired during the year ended December 31, 2013. (*See* Note 4.) The total cost for the initial terms of the two additional options was $8,000.

MUNICIPAL REVIEW COMMITTEE, INC.
SCHEDULE OF EQUITY CHARTER MUNICIPALITY NET POSITION
DECEMBER 31, 2013

Albion	$ 172,676	Mattawamkeag	$ 82,944
Alton	71,517	Midcoast SWD	1,566,422
Atkinson	23,406	Mid-Maine SWD	894,551
Baileyville	327,353	Milford	231,971
Bangor	5,839,499	Millinocket	614,818
Bar Harbor	1,144,091	Milo	264,470
Blue Hill/Surry	770,094	Monson	46,475
Boothbay RRDD	1,028,009	Mt. Desert/EMR	1,401,873
Bradley	92,920	Newburg	108,612
Brewer	1,606,126	Old Town	965,377
Brooks	53,181	Orland	84,553
Brownville	150,370	Orono	852,176
Bucksport	491,571	Otis	41,075
Burnham	115,443	Palmyra	134,013
Carmel	194,104	Parkman	37,819
Central Penobscot	365,874	Penobscot Co.	176,104
China	386,578	Pleasant River SWD	269,831
Clifton	68,199	Plymouth	101,929
Clinton	502,248	Reed Plantation	19,026
Dedham	88,359	Rockland	1,136,897
Dover-Foxcroft	417,600	Sangerville	104,496
Eddington	180,494	Searsport	246,911
Enfield	155,940	Stetson	89,805
Fairfield	599,333	Steuben	110,395
Glenburn	354,511	Stonington	192,453
Gouldsboro	173,593	Thomaston Group	764,715
Greenbush	109,955	Thorndike	60,085
Guilford	264,721	Troy	43,830
Hampden	694,457	Union River SWD	68,438
Hancock	119,767	Unity	163,008
Hermon	591,518	Vassalboro	303,216
Holden	186,225	Veazie	154,209
Jackson	23,340	Verona	59,978
Lamoine	118,859	Waldoboro Group	657,906
Lee	77,359	Waterville	2,141,038
Levant	175,674	Winslow	677,994
Lincoln	767,878	West Gardiner	245,806
Lucerne	49,863	Winthrop	613,409
Mariaville	27,752		
Mars Hill	190,927	Total	$ 34,500,013

The Equity Charter Municipality Net Position is not available for immediate withdrawal due to various restrictions, designations, and other limitations on their withdrawal, direction, and application. Please refer to Management's Discussion and Analysis and the accompanying notes for additional information.

CESINC

ATTACHMENT 8

TECHNICAL ABILITY

ATTACHMENT 8

TECHNICAL ABILITY

MRC and Fiberight have retained the services of CES, Inc. (CES) to assist in the preparation of this Processing License Application. In addition to preparing this Application, CES will continue to provide ongoing operational assistance of the Facility. CES staffs over 60 highly qualified personnel, including multiple professional engineers with experience in commercial, residential, industrial, and solid waste management projects. CES has over 30 years of experience with environmental and civil engineering projects including permitting, design, environmental monitoring, and construction oversight. CES has provided both civil and environmental services to more than 50 solid waste facilities throughout the State of Maine. Included in this Attachment are resumes of those individuals involved with the permitting, site investigation and site design of the facility.

Daily operations of the Facility are the ultimate responsibility of Fiberight who has demonstrated the ability to operate similar MSW processing facilities located in Virginia and Iowa. CES has also been retained by Fiberight to prepare this Application and will remain available to provide ongoing environmental compliance assistance when needed. Included in this Attachment are resumes of those individuals responsible for the facility design, construction, and operation. These resumes demonstrate significant experience as it pertains to the management and operation of the Hampden, Maine facility.

MRC has demonstrated they have the technical ability to manage the affairs and concerns of their 187 municipal members. The member-led MRC has successfully managed the current 30-year contract with the Penobscot Energy Recovery Corporation (PERC) waste-to-energy facility in Orrington for the current 187 Maine communities since formed in 1991. Since that time, MRC has worked with the PERC partnership to improve facility operating and economic performance and have worked with the private owners of PERC to upgrade the facility, achieve a high level of environmental performance, and keep disposal costs down. MRC has also successfully purchased, on behalf of the Equity Charter Municipalities, a 23 percent ownership interest in the PERC facility in incremental steps between 1999 and 2004. This ownership interest in PERC has been managed by the MRC from 1999 to the present time. As part of its function, MRC monitors the PERC facility's performance on an ongoing basis through review of weekly and monthly performance reports; reviews of and votes on the facility's annual operating budget; reviews of and votes on decisions to invest in capital and major maintenance projects; and oversight of actions taken, and investments made, to ensure that potential environmental impacts are avoided or mitigated appropriately.

As part of their oversight of the PERC plant, MRC has retained the services of CommonWealth Resource Management Corporation (CRMC) for assistance to plan and implement programs, facilities, systems and services for managing waste streams, for recovering value from waste, and for utilizing renewable and other energy resources in ways that are environmentally responsible and economically sound. CRMC has also been retained by MRC since 1991 to provide consulting with respect to the needs of the MRC and PERC partnership. CRMC has over 32 years of experience in management and environmental consulting focusing on issues and opportunities related to resource conservation, recovery, and utilization. CRMC is also a developer of specialized energy and environmental projects on its own and through strategic partnerships. CRMC will continue to be part of the MRC team and provide necessary services to assist MRC and Fiberight in accomplishing their goals related to design, construction, operation, and maintenance of the proposed Facility. Included in this Attachment is a biography and resume for the CRMC Principal.

MRC has also retained the services of University of Maine (UMaine) Chemical Engineering professors to perform a peer review of the processing facility. These professors have direct experience with many of the processes (e.g., pulping, enzymatic hydrolysis, anaerobic digestion) included in Fiberight's proposed facility. Included in Attachment 13 is the peer review report including names of those individuals responsible for the peer review.

GEORGE H. ARONSON
Principal

PROFESSIONAL QUALIFICATIONS

EDUCATION

Master in Public Policy, Kennedy School of Government at Harvard University (1983).

Bachelor of Science in Mechanical Engineering, Massachusetts Institute of Technology (1978).

SUMMARY OF EXPERIENCE

Nearly twenty years of progressively responsible experience supporting the development of capital projects and programs as an analyst, project manager, and senior management consultant, with a broad record of accomplishment in the fields of solid waste management, independent power production, utility regulation and energy conservation. Areas of expertise include:

Business and economic analysis in support of internal and external investments in or acquisition of environmental facilities, programs, and services, including waste–to-energy, landfill gas utilization, materials recovery, and renewable resource power generation projects and enterprises.

Procurement of solid waste management facilities and services on behalf of facility/service sponsors and users, including identifying and structuring of business ownership and financing arrangements; preparation of procurement documents; proposal evaluation; and support of vendor selection and service contract negotiations.

Development of integrated plans for resource management, including the design and implementation of waste reduction and recycling strategies and development of transportation and disposal arrangements at landfills and waste-to-energy facilities.

Acquisition of power purchase agreements, including energy market assessments, proposal preparation, contract negotiations, interconnection studies and contracts and acquisition of regulatory approvals.

SELECTED PROJECT EXPERIENCE

Independent Power Producer. Supported development of landfill gas-to-energy facilities at seven landfills in the Northeast and numerous other landfills nation-wide. Projected landfill gas quantities; analyzed data on landfill gas quality and composition; evaluated technical and economic feasibility of utilization alternatives; prepared proposals for facility development and energy recovery and sales; negotiated contracts with public and private landfill owners; acquired and negotiated electric power and thermal energy sales agreements; and supported acquisition of environmental permits and project financing. Prepared pro forma economic analyses of landfill gas utilization facilities in support of feasibility studies, investment decisions, and control technology assessments. Managed interconnection studies and implementation of interconnection efforts during construction. Coordinated local development efforts with landfill owners throughout the development and construction process.

Municipal Review Committee. Representing group of >80 Maine municipalities in successful redevelopment of $100 million refuse-derived-fuel (RDF) waste-to-energy facility facing bankruptcy. Assessed facility technical and economic condition, outlined negotiation strategy, and presented results to public officials. Negotiated interim agreement, monitored operations, and supported negotiation and compliance with long-term agreement Supported restructuring of the agreements and refinancing of the facility in order to mitigate impacts of the existing power purchase agreement on utility stranded costs while minimizing impacts on tipping fees. Review tipping fee calculations, pass-through costs and capital improvement proposals on an ongoing basis.

Major Law Firm. Prepared testimony regarding future waste disposal market conditions in Massachusetts as expert witness in support of litigation defense for a large integrated waste management services company. Collected and analyzed historical data on tip fees and available disposal capacity at regional disposal facilities. Prepared testimony based on analysis of market trends that led to negotiated settlement of outstanding issues**.**

City of Holyoke, Massachusetts. Performed market assessment to identify the available alternatives for disposal of waste at the end of a ten-year contract. Surveyed waste-to-energy facilities, landfills and transfer stations throughout southern New England and identified associated transportation requirements and potential disposal costs and contract terms. Used the survey to develop a request for proposals for waste disposals, which attracted four strong responses. Assisted in evaluating the proposals, selecting the preferred vendor, and finalizing a long-term agreement for disposal services. The procured agreement provided Holyoke with savings of more than 20 percent in disposal costs as compared to its previous arrangement.

National Waste Services Company. Supported initiatives to extend operating permits and to gain approval for horizontal and vertical expansions at existing Massachusetts landfills. Prepared documents in support of environmental impacts review process. Acquired and reviewed data on current and projected capacity at existing and proposed disposal facilities. Developed model to project waste generation and diversion rates and to compare the demand and supply of waste disposal capacity under a wide variety of market conditions. Utilized model results as the basis for developing permitting strategies and for presenting comments to the Massachusetts Department of Environmental Protection.

Prudential Management Advisors Inc. Assisted bondholders in sale of position in troubled waste-to-energy facility. Evaluated facility technical capabilities, operating costs conditions of local disposal market in order to assess potential economic performance. Identified potential purchaser and assisted in negotiation of purchase agreement and facility refinancing.

An International Facility Developer. Prepared competitive bids and participated in negotiations for the long-term sale to regulated utilities of energy output from proposed 240 TPD waste-to-energy facility. Developed energy pricing strategies and performed project pro-forma economic analyses. Analyzed regional waste generation and disposal capacity to demonstrate need for the facility to meet environmental permitting requirements.

Various public clients. Prepared requests for proposals, and evaluation manuals to procure construct, operate, and/or own waste-to-energy facilities, mixed-waste composting facilities, and business, technical, and cost proposals, as well as financing and marketing plans. Supported public selection process, vendor contract negotiations, site selection and development activities, acquisition of environmental permits, financing, construction monitoring. Involved in more than 30 projects at all phases of development.

The Chelsea Receivership. Recommended new user fee rate schedule for solid waste collection and disposal services offered by municipal solid waste department. Analyzed collection and disposal quantities and costs for various classes of waste generators. Identified and evaluated various user fee approaches and rate schedule alternatives.

Town of Marblehead, Massachusetts. Coordinated the technical and economic assessment of a proposed solid waste recycling, processing and combustion facility that would use innovative technology to convert waste to fuel. Reviewed proposed facility to determine whether claimed technical performance could be achieved and whether proposed tipping fees were reasonable and adequate. Compared proposed tipping fees to the range of alternatives available to the Town. Prepared comprehensive written report and presented results and recommendations to Town Selectmen at public meeting.

City of Concord, New Hampshire. Managed and directed preparation of Solid Waste Master Plan. Analyzed waste quantities and composition, reviewed federal and state waste reduction and recycling initiatives, evaluated residential curbside recycling alternatives, and presented commercial sector recycling program initiatives. Assessed existing disposal commitments and evaluated disposal alternatives for vehicle wastes, construction and demolition debris, yard wastes, and bulky wastes. Reviewed public works department organizational structure, productivity of collection operations, opportunities for privatization, budgeting practices, and potential for implementing user fees. Presented recommendations to City Council.

Orange County, Florida. Deputy project manager for preparation of Refuse Disposal Facilities Master Plan for large publicly-owned landfill and associated recycling and composting collection and processing programs. Analyzed waste quantities and composition, estimated remaining landfill capacity and development costs, evaluated alternatives for recycling, composting, volume reduction, and waste-to-energy, assessed the need for transfer stations, and prepared life-cycle cost analysis of alternative systems. Worked with electric utility to assess technical and economic feasibility of co-combusting refuse-derived fuel with pulverized coal in proposed electric generating station. Presented results to citizens groups and public officials.

Town of Sharon, Massachusetts. As Chair of Recycling Advisory Committee since 1992, designed and implemented town's curbside recycling program. Developed requests for proposals, evaluated bids, and recommended vendors to selectmen. Worked with vendors to deliver recycling bins and provide public education during program start-up efforts. Involved in ongoing efforts to monitor program implementation and to continue public education efforts.

Introduction Bio of George H. Aronson
Waste Conversion Technologies: Now and Coming
Speaker for 8:30 to 9:40 concurrent session on Monday

George Aronson is a principal and co-founder of CommonWealth Resource Management Corporation with more than 30 years of consulting experience in the area of solid waste management. He began working in Maine in 1989, when he assisted the towns that subsequently formed the MRC to re-negotiate their waste disposal agreements with PERC. Mr. Aronson is now leading the MRC's efforts to plan for MSW management after the PERC agreements expire in 2018. Mr. Aronson's other clients include the Town of Nantucket, which has operated a mixed-MSW composting facility since 2001, and the Town of Bourne, Massachusetts, where he led procurement and negotiation of a site lease and development agreement with Harvest Power for a large-scale AD facility for source-separated organics. Mr. Aronson's company, CRMC, recently brought into commercial operation an anaerobic digestion facility to process food waste into bio-gas for electricity generation at the Crapo Hill landfill in Dartmouth, Massachusetts.

Mr. Aronson has a bachelor's degree in mechanical engineering from MIT and a master's degree from the John F. Kennedy School of Government at Harvard University. For the last two years, he has spoken at the Environmental Protection Technology International Forum in Yenchang, Jiangshu Province, north of Shanghai, China.

Craig Stuart-Paul
Fiberight, Chief Executive Officer / President

Professional Experience

Craig Stuart-Paul has developed a variety of businesses since moving from Great Britain in 1988, starting with The Oxford Brewing Company, Maryland's first microbrewery. He then entered the recycling business with the formation of Resource Recovery of Maryland in 1994. This business focused on processing recycled glass into furnace ready material for the glass container industry. Mr. Stuart-Paul founded Fairfax Recycling, Inc. in 1996 and implemented key technologies, management systems and team building processes to create a highly successful recycling organization that was both a model in efficiency and low staff turnover.

Past Experience

Mr. Stuart-Paul was an industry pioneer in the use of optical sorting technologies for contaminant removal. In 1996 he formed Fairfax Recycling, Inc, a company focusing on recycling residential materials collected in central Maryland and Northern Virginia. He grew this business to be a large regional recycler, processing over 150,000 tons of recycled materials annually before selling the business to a fortune 50 company in 2004. Mr. Stuart-Paul then formed Atlantic Recycling Technologies, LLC and Fiberight LLC to develop advanced fiber recovery and alternative fuel technologies. In addition, he has been part of the design and build team of several large recycling plants in the United States and Europe collectively processing over 350,000 tons per year of wastes. He holds a business degree from the University of Brighton, England.

Professional

Relevant Project Listing

Fiberight Lawrenceville Demonstration Plant - 2012	Working with Mr. Iantosca and Fiberight's technical director, Nick Thompson, conceived, financed and helped design and manage construction of the nation's first integrated waste processing plant to use a bio-chemical process for organic conversion. Facility now has over 5,000 hours of operational experience.
Greenstar Aldridge MRF – 2006 (United Kingdom)	Brought in for peer review of designs for single stream recycling facility. Substantially changed design, process flow & layout and became key member of project team. Involved in project management from concept to final commissioning. Plant now handles almost 40 TPH of mixed wastes & recyclables, the largest of its kind in the U.K. Project cost >$20mm (land, building & equipment)
KIT Kat Road MRF - 2005	Working with Waste Management, Inc. conceived and managed construction of 8 acre recycling plant facility. Managed permitting, site & building construction in a project where the equipment and building were being constructed together to expedite time to operations commencement. - Project cost >$15mm (land, building & equipment)
Atlantic Recycling Technologies - 2003	Conceived, designed and implemented technology and system to handle contaminated waste fiber from Fairfax Recycling's MRF operations. Progressed operation and technology through a series of market tests and used change systems to optimize business for enzymatic conversion of biomass when enzymes became viable. Pre-cursor to Fiberight. Project cost >$3.5mm
Palymyra Fire Rebuild 2000	One of Fairfax' 3 PA locations was lost to a major fire. Rebuilt substantial portions of building, replaced over 90% of equipment, negotiated with all stakeholders and achieved new plant operations in less than 120 days. Project cost >$2mm

Craig Stuart-Paul
Fiberight, Chief Executive Officer / President

Fairfax Recycling, PA - 1999	Took knowledge from VA plant and incorporated processes into three Pennsylvania facilities and established efficient processes and systems in all three. Demonstrated ability to deploy systems in multiple locations. Project cost <$1mm
Fairfax Recycling, Process Upgrade 1998	Designed and implemented a system using novel screening methods that increased plant throughput from 18 TPH to almost 35 TPH while maintaining quality standards. Integrated new balers & rolling stock. Project cost <$1mm
Fairfax Recycling, Commingle Project 1996	Conceived and implemented container recycling & sort system that allowed waste collectors to reduce amount of curbside sorting and increase household collections over 30% per route per day. Project cost >$1mm
Resource Recovery of Maryland - 1995	Conceived and implemented integrated glass recycling process featuring novel optical sorting technology. Project included site selection & permitting, engineering & ground up equipment installation. Project cost <$1mm
Oxford Brewing Co. 1990	Designed and implemented integrated brewing operations in association with master brewer to produce consistent beer batches, control sterility, and manage a biochemical process.

Other Professional / Business Affiliations

Maryland Recyclers Coalition, President 2004 - 2005

Awards / Honors / Publications

Barclays Bank Young Businessman of the Year, 1985

Education / Training

HND Business Studies, University of Brighton (Great Britain), 1985

Alan Iantosca

Fiberight, Project Team Leader & VP of Engineering

Professional Experience

Business Development Executive with the ability to build a winning team, develop strategies, set strategic direction and develop and close the complex deal within that strategy. Consistent record of improving profits through creative and effective asset and cost management. Solid business, engineering and operating background with proficiency in analyzing commercial arrangements for upside potential. Skilled in creating positive relationships with both internal and external customers and negotiating with win-win results. Also experienced in organizational development, acquisitions and new venture start-ups.

Fiberight LLC LLC, **2011 – Present**

EMC, O'Fallon, MO 2007 – 2010

Vice President / General Manager, Energy Market Sector / Eastern Region

Worked as an independent contractor, responsible for the development and execution of the energy market sector strategy and the eastern region strategy to identify, develop and win industrial and municipal opportunities providing water and wastewater services to identified / targeted customers. Coordinated the overall management and P&L for all existing and future opportunities in the eastern region. Won and renewed multiple water and wastewater contracts in the energy market sector and in the eastern region.

- Introduced EMC to DuPont, Bayer Material Sciences, Linde, ConocoPhillips, CITGO, Sunoco, BP and Valero through previous relationships resulting in obtaining exclusive development positions with Bayer, BP, Citgo, Linde and Sunoco and participation in competitive situations with ConocoPhillips and Valero.
- Annually developed over ten projects with customers in the eastern region and energy market sector.
- Managed seven industrial facilities supplying water and wastewater services in the refining, chemicals and food industries.

THE BOC GROUP, Murray Hill, NJ 2000 – 2007

Global Vice President, Business Development / VP Major Tonnage Projects

Directed global business development activities and teams to win identified major targets mainly in the petroleum, chemicals and metals sectors, including both grass root projects and acquisitions.

- Won and executed four hydrogen supply and one air separation project from US$12M – US$130M.
- Represented BOC in successful contract development for US$255M ASU / Power Project in Mexico.
- Annually developed over 10 projects in various stages, ranging from $10M to over $750M.
- Negotiated Strategic Alliance Agreement with number 1 independent refining company in US.
- Completed successful construction and start-up of 2 $20M Air Separation Unit (ASU) Projects.
- Initiated formation of project consortiums to bid $200M / $750M ASU / Power Projects in Venezuela.
- Led change management process for implementation of new BU strategy / operating model for US.

AMERICAN REF-FUEL COMPANY, Houston, TX 1988 – 2000

General Manager, Essex County Resource Recovery Facility, Newark, NJ 1995 – 2000

Directed operations of the $350M Essex County Resource Recovery Facility, annual gross revenues of $65M. Responsible for P&L, facility staff of 100 employees, organizational and business development, asset improvement, customer, government, regulatory and media relations.

- Analyzed/restructured business deal with EBT improvement of 24%/year for five consecutive years.
- Operated facility at 8% increased throughput while maintaining maintenance costs at original level.
- Piloted safety process optimization and cost management systems which became company standard.
- Initiated sustainable cost reduction program cutting annual cost by $0.5M en-route to $1M.
- Obtained OSHA VPP Star Site certification achieving 13 months without an OSHA recordable injury.
- Recognized in company for leadership, teamwork and empowerment skills.

Alan Iantosca
Fiberight, Project Team Leader & VP of Engineering

AMERICAN REF-FUEL COMPANY, Houston, TX 1988 – 2000

Manager, Operations, Houston, TX 1994 – 1995
Key member on due diligence teams for acquisition of two Ref-Fuel facilities. Coordinated operations input and lessons learned in the design of the Niagara, NY facility $150M construction retrofit.

Head of Engineering, Birmingham, UK 1992 – 1994
Key member of ex-patriot team and Operating Committee Member starting up WTE joint venture with English power company. Directed all company engineering and environmental activities.

Manager, Operations Support, Houston, TX 1991 – 1992
Liaison between the operations Department and the Corporate Office including support of existing projects and new development activities.

Start-up Manager, Newark, NJ 1989 – 1991
Structured and executed a safe, environmentally sound, cost effective and on schedule start-up of the Essex County Resource Recovery Facility (ECRRF), the largest WTE facility in New Jersey.

Operations Project Manager, NY, NY 1988 – 1989
Lead member on design team for the ECRRF providing operating / business input and guidance to the team ensuring a design with the lowest possible evaluated capital cost while facilitating efficient operations and ease of construction and maintenance.

AIR PRODUCTS AND CHEMICALS, INC., Allentown, PA 1979 – 1988

Assistant Production Manager 1984 – 1988
Managed 5 domestic and 5 international tonnage air separation plants providing pipeline gases and bulk liquids via pipeline and bulk tanker to the steel and electronic industries and also a LNG peak shaving facility. Involved in formation / growth of international joint ventures in Korea, Thailand and Malaysia.

Design Engineer / Operations Mechanical Engineer 1979 – 1984
Designed and executed new and retrofit asset improvement projects up to $1M. Involved in the design, construction, start-up and repair of various plants and systems in the U.S. and overseas. Performed staff function in piping stress analysis, plant HVAC design / specification and design, specification and procurement of packaged process and utility systems.

EDUCATION

BS, Mechanical Engineering, Villanova University, Villanova, PA
Continuing Business Education, Columbia University, New York, NY

Steven T. Ragiel

Fiberight Board Member – Responsible for Hampden Project

Project Team Role:

Mr. Ragiel is a Fiberight board member who will take an executive position with the company to focus on the Hampden project. Mr. Ragiel will fill important project, commercial and contracting roles, as well as providing technical assistance with matters regarding waste management, recycling and the pre-sorting process for the planned Hampden plant.

Education / Training

Vanderbilt University, Nashville, Tennessee, Bachelor of Chemical Engineering, 1986

Professional Experience

Seasoned executive with proven leadership qualities, solid growth credentials, entrepreneurial orientation, and success in applying technology to business opportunities. Twenty years of world-wide experience in commodity-driven manufacturing businesses. Excellent track-record of building teams, integrating acquisitions, tailoring solutions for customers, restructuring capacity, hedging commodity risk, reducing unit costs and improving margins in order to increase shareholder value.

GREENSTAR North America, Houston, Texas / Dublin, Ireland
CEO, Director (2005 – Present)
Founded and built Greenstar North America into a $200 million/year, 20 facility, multi-material commodity processor and manufacturer. Member of and reporting into the Greenstar Board of Directors with full responsibility for the development and implementation of the initial business plan, ongoing strategic planning, annual budgets, P+L performance, hedging strategy, financial controls and human resource development.

- Growth driven through a combination of acquisitions and organic sales. Primary customer base includes major solid waste haulers, municipalities and multinational companies.
- Integrated acquisitions through a combination of; cultural workshops, a detailed communications strategy, the implementation of common metrics and common financial and operating software packages, sharing of operational best practices and peer reviews of major capital investments.
- Implemented innovative automated ballistic and optical processing at regional hubs in order to increase both out-bound quality and yield while significantly reducing labor costs.
- Implemented a commodity upgrading strategy that included the manufacture of reflective glass beads for use in highway construction, production of furnace ready cullet for use in the manufacture of new glass bottles, and the conversion of recycled HDPE bottles into food grade HDPE packaging in the UK.
- Rationalized acquired company SG+A costs through the centralization of all accounting, HR, Finance, hedging and procurement functions.
- Improved acquired company safety performance by 60% over a two year period from a starting OSHA recordable TRIR metric of over 12.0 to a current rate under 5.0.
- 2005 through first half of 2006 – Dublin Ireland based – advised Greenstar Ireland and Greenstar UK on the implementation of customer account profitability and the build out of manufacturing infrastructure.

Past Experience

RECYCLE AMERICA ALLIANCE LLC, Houston, Texas / Chicago Illinois
President
(1997 - 2005)
Initiated and built Recycle America Alliance (RAA) into the largest recycling company in North America with $750 million/year in diversified manufacturing and commodity marketing revenues. Managed all aspects of the business including: P+L, Sales and Marketing, 3,000 employees, 80 manufacturing facilities, 100 product grade offering and 20 sales offices. Member of and reported to the RAA Board of Directors.

- Increased annual EBITDA by over $35 million, in the period 2004 vs. 2003 as a result of $8 million in SG+A cost reductions, an 8% improvement in manufacturing plant labor cost per ton, and 5% volume growth.
- Built the Recycle America brand into the premiere recycle services offering in North America.

Steven T. Ragiel

Fiberight Board Member – Responsible for Hampden Project

- Generated overall compound revenue growth of more than 25% per year, 1997 through 2005.
- Significant organic growth achieved through building a customer service culture and a revitalized sales and marketing program focused on key regional and national retail and IPS accounts.
- Built strong partnerships with both domestic and international paper mill customers through long term contracts and direct mill investment in RAA plants.
- Implemented a $100 million multi-year investment program to upgrade plants using optical scanning and ballistic separation technologies, generating an average pretax ROI at the upgraded sites in excess of 25%.
- Implemented a "Manufacturing Excellence" program of key metrics, benchmarking, facility scorecards, and annual awards – decreased manufacturing cost per ton by 29% from 1999 to 2005.
- Rationalized capacity by closing and combining over 70 processing sites. The average volume per remaining plant increased by 150%.
- Negotiated and executed 25 acquisitions and successfully kept owners of acquired businesses engaged in the company. Success in this area due mainly to building an effective change management and entrepreneurial culture at RAA.
- Built a pulp and paper financial trading business in year 2000 to provide customers with price risk management tools and Hedged out 70% of overall RAA revenues. In 2004, spun-off the trading business to a strategic buyer while maintaining preferred access to markets.

WASTE MANAGEMENT INTERNATIONAL plc, London, England
Director of Resource Recovery
(1992-1997)
Brand management responsibility for $225 million per year, international resource recovery business.

- Expanded operations to meet surging customer demand for resource recovery services. New demand driven primarily by the initial round of Product Stewardship legislation in Europe and Asia.
- Grew manufacturing network from 17 facilities in five countries in 1992 to over 70 facilities in 17 countries by 1997 in Europe, Asia, and Australia. Growth was generated through a balance of 50% organic-green field start-ups and 50% acquisition activity.

WASTE MANAGEMENT OF NORTH AMERICA, Atlanta, Georgia
Region Manager
(1990 - 1992)
Responsible for manufacturing operations in a ten-state region in the southeastern US.

HDR ENGINEERING, Alexandria, Virginia
Technical Director (1987 - 1990)
Responsible for evaluating competitive bids, negotiating terms, and awarding service contracts.

Other Professional / Business Affiliations

- National Recycling Coalition, Board of Directors and Executive Committee, year 2000 to 2006
- PRI, Board of Directors, 1997-1999, Joint Venture with Stone Container
- CRA, Board of Directors, 1997–2000, Joint Venture with American National Can/Pechiney
- RAA was the National Recycling Coalition, annual "Recycle Works" award winner for 2003. Award recognizes outstanding corporate and personal contributions to recycling in the United States.
- *"Waste News"* Newsmaker of the Year runner-up in 2000 and 2003.

CES INC

NATHAN A. GUSTAFSON, PE

PROJECT ENGINEER

Nathan Gustafson holds a B.S. in Mechanical Engineering Technology from the University of Maine. Nate has nine years of civil engineering experience related to infrastructure analysis, design, and construction. Nate has worked on a wide range of projects including road and utility analysis and design, water and wastewater treatment plant upgrades, and pump station design. Nate has also assisted industrial clients with planning, preparation, procurement, supervision, and inspection during major and minor maintenance outages. Additionally, Nate has served as a Field Inspector for complex municipal sewer pump stations, sewer and water systems, and road construction work in a number of Maine municipalities.

CORE EXPERTISE

Infrastructure Analysis, Design, and Construction

Wastewater Treatment Plant Upgrades

Pump Station Design

Field Inspector

Professional History

2004 – Present | CES, Inc. | Project Engineer
2002 – 2004 | Old Town Water District | Engineering Technician

Education

2003 | B.S. Mechanical Engineering Technology, University of Maine

Registrations

State of Maine Licensed Professional Engineer (#13589)

Certifications

Maine Class I & II Water Treatment System License
Maine Class I & II Water Distribution System License
Troxler Nuclear Surface Moisture/Density Gauge Operator
Standard First Aid and CPR

Project Experience

Municipal Building | Town of Lowell, Maine

Nate designed the plumbing and HVAC systems for the Town of Lowell Municipal Building, which contains the Town Hall and Fire Station. The heating system was designed with radiant floor heating for the Fire Station and Adjacent Town Hall.

Fire Stations | Towns of Roque Bluffs and Cranberry Isle, Maine

Nate designed the HVAC systems for the Fire Stations serving the communities of Roque Bluffs and Cranberry Isle. Both Fire Stations use radiant floor heating in the buildings.

Well Field Water Main Design: Old Town Water District | Old Town, Maine

Nate designed and acted as the Construction Representative for the water main replacement in the well field at the Old Town Water District. This project replaced the existing main connecting three of the district's wells and incorporated a cleanout assembly for the district to clean the main due to Iron and Manganese buildup.

Landfill Leachate Pump Station | Hartland, Maine
Nate designed pump systems for the Landfill Leachate Pump Station for the Town of Hartland to transfer leachate from the landfill to the waste water treatment facility. The pump systems include the main conveyance pump system and the leak detection pump system.

Lincoln Paper & Tissue | Lincoln, Maine
Nate provided construction and maintenance oversight assistance with scheduling lock out/tag out, as well as procurement on several major and minor mill maintenance outages and projects.

SSL Mill Expansion, Louisiana Pacific | New Limerick, Maine
Nate served as the safety coordinator for Louisiana Pacific's SSL Mill Expansion.

Sewer Line Design for Bridge Project | Milford, Maine
Nate was the Construction Representative for the installation of a new main intercept line across the new bridge between Milford and Old Town, Maine. The project was incorporated into an MDOT Bridge Construction Project.

Otter Creek Pump Station and Force Main Project | Mount Desert, Maine
As Construction Representative, Nate oversaw the construction of a new pump station and the installation of approximately three miles of 8" diameter force main. The project required a pump station to match current park architecture building features.

Water Storage Tank for Fire Suppression and Distribution Line, Pleasant River Lumber | Dover-Foxcroft, Maine
Nate acted as Construction Representative and assistant engineer for the design and installation of a new water storage tank for the purpose of providing water for fire suppression. The project also incorporated a building to cover the tank. This was a design/build project using Community Development Block Grant Funds (CDBG).

Capital Improvement Plan: Richmond Utilities District | Richmond, Maine
Nate acted as Project Engineer for the Capital Improvement Plan. The project included GPS location of all available water system components, development of a System Map, development and calibration of a WaterCAD water system distribution model, analysis of the system to identify deficiencies, a prioritized listing of recommended improvements for the District, and a report summarizing our findings along with cost estimates for each recommendation. The Plan outlined Short Term and Long Term recommendations.

Master Plan: Washburn Water and Sewer District and the Town of Washburn | Washburn, Maine
Nate acted as Project Engineer for the Master Plan developed for the Washburn Water and Sewer District and the Town of Washburn. Work included a cursory level infiltration and inflow study to identify areas within the wastewater collection system where extraneous flows were an issue. It included the collection of hydrants and manholes with GPS equipment to assist with flow estimates and water model creation. Nate assisted in creating a WaterCAD water distribution system model and performed analysis to identify deficiencies within the system. Additionally, Nate evaluated the condition of the existing drainage system components and performed a HydroCAD analysis for each major drainage area. The work included

several recommendations for improvements to each of the three systems throughout the community. The recommendations were prioritized and costs for implementing each were developed in current dollars.

Solids Handling: Orono-Veazie Water District | Orono and Veazie, Maine

In 2010, CES was hired by the Orono-Veazie Water District to evaluate options for solids handling related to a change in their treatment process. The District was in the middle of an upgrade project which included changing filter media. As Assistant Engineer Nate's analysis yielded an approach that was agreed upon by the District and CES was then retained to provide design services to implement the solids handling solution. The solution was to design a drying/dewatering pond for sludge removed from the backwash process. The project is still under design and will be implemented in the spring of 2011.

Marina and Public Waterfront Improvement Project | Mount Desert, Maine

Nate assisted with the design and acted as Construction Representative for the Marina and Public Waterfront Improvements for the Town of Mount Desert. As Construction Representative, Nate oversaw the replacement of the Town's Harbor Master's and Yachtsmen's buildings and the construction of a new Visitor's Center building. The project included improvements to the parking areas and sidewalks along with improvements to the storm drain and water systems.

Castine Village Infrastructure Improvements | Town of Castine, Maine

Nate designed and acted as the Construction Representative for Infrastructure Improvements on several roads in the Town of Castine. This project rebuilt several roads throughout the Town and included the replacement of storm, sewer, and water mains.

Sewer Pump Stations Replacement | Town of Milford, Maine

Nate was the Construction Representative for the replacement of four of the Town's existing below-grade sanitary sewer pump stations with aboveground pump stations, designed by CES. The project was funded by Rural Development.

Davenport Street Area Roadway and Utility Improvements | Town of Milford, Maine

Nate acted as Project Engineer for the roadway and utility improvements to several roads in the Town of Milford. Six roads in the center of the Town were rebuilt and the water, sanitary sewer, and storm drain systems were also replaced. The project was funded by Rural Development and the Drinking Water Program.

Treatment Plant Upgrade: Old Town Water District | Old Town, Maine

In 2009, CES was hired by the Old Town Water District to assist them with the design of their treatment plant upgrade. The facility was in the process of changing filter media from Greensand to Greensand Plus. CES assisted with the design of the project which included the replacement of filter media, repair of pressure vessel components, and replacement of existing transmission main within their existing well field. Nate acted as Assistant Engineer and Construction Representative for this project.

Bennoch Road Culvert Rehabilitation | Town of Orono, Maine

Nate acted as Project Engineer for the culvert rehabilitation on the Bennoch Road in the Town of Orono. This project included the replacement of a culvert which was approximately 35 feet below the road surface and the reconstruction of 400 feet of roadway. The project was a Locally Administered Project (LAP) through the MDOT. Nate completed the LAP design and construction requirements for the Town.

CES INC

ALFRED "CHIP" HASKELL, III, PE

PROJECT ENGINEER

Chip Haskell received his B.S. in Civil Engineering from the University of Maine in 2008. Since then, Chip has worked as an Engineer on a variety of projects including road and site design and layout, storm drain and sanitary sewer systems, permitting, and pre and post hydrology studies. In 2013 Chip became a licensed professional engineer in the State of Maine. Chip is also a certified concrete field testing technician, Grade 1 and a Certified Troxler nuclear surface moisture-density gauge operator.

CORE EXPERTISE

Site Design

Hydrology

Site Permitting

Road Design

Professional History

2013 – Present | CES, Inc. | Project Engineer
2008 – 2013 | CES, Inc. | Engineering Technician
2004 – 2013 | Haskell Water Wells, Driller's Helper | Water Systems Division Operator

Education

2008 | B.S. Civil Engineering, University of Maine
Civil Engineering Graphics
Transportation Engineering
Materials/Materials Lab

Registrations

Licensed Professional Engineer: State of Maine #13314

Certifications

Certified Concrete Testing Technician – Grade 1
Certified Troxler Nuclear Surface Moisture-Density Gauge Operator
Standard First Aid & CPR

Affiliations

American Society of Civil Engineers

Civic

Boy Scouts of America; 1997 to Present

Project Experience

Castine Road Rehabilitation Project | Castine, Maine

Chip was responsible for the design of multiple roads and associated storm water utilities for this project. The proposed design needed to optimize the drainage conditions while minimizing conflicts with existing structures and other features in close proximity to the roadway.

Presque Isle Landfill Closure Application | Presque Isle, Maine
Chip was responsible for the surface water control plan and design portion of the landfill closure application. The surface water control plan included developing pre and post development hydrology drawings and analysis as well as the development of an erosion and sediment control drawing.

Haskell Road Widening | Bangor, Maine
Chip acted as the Project Engineer for the widening of the Haskell Road in Bangor from two lanes to three lanes. During this process he worked closely with the contractor, city officials, landowners and local utilities to coordinate the work in as smooth a manner as possible. The project included a full depth reconstruction along with new granite curbing and storm water collection and conveyance system improvements.

Windfarm Project | Jonesport, Maine
Chip was responsible for the design of approximately 1.5 miles of access road servicing three wind turbines. Chip worked closely with the transport company and erector company to provide a design to meet their strict requirements related to road geometry and lay down areas. The work also included coordinating with permitting agencies to develop a plan set that would impact the least amount of sensitive natural resources as possible.

Woodland Commercial Park | Baileyville/Baring, Maine
Chip was responsible for the design and permitting of approximately 3,000 feet of roadway for an industrial park. The work also included the design of associated sewer and water utilities, as well as drainage systems. The proposed design accommodated drainage improvements in a very difficult site.

Design and Permitting | Campground Facility, Maine
Chip was responsible for the design and permitting of a 100 site campground, approximately 100 acres in size which included approximately eight miles of bike paths throughout a larger portion of property. This project included the design of roadways, campsites, storm water treatment areas, and campground facilities to meet drainage and geometric requirements while still satisfying DEP and Army Corps regulatory requirements for the permitting of the site.

Veazie Dam Removal | Veazie, Maine
Chip acted as the owner's onsite representative for the removal of the Veazie hydro power dam. During the demolition he worked closely with the contractor, owner, federal and state officials, and landowners to ensure that the dam was removed in a safe and environmentally friendly manner. Chip was involved in everyday decisions regarding construction strategy and methods and provided daily construction reports to keep all parties informed of the progress.

JEFFREY R. STRANG
PROJECT ENGINEER

Jeff Strang has over 15 years of experience in environmental engineering. He is well versed in regulatory compliance and is able to provide training services and construction inspection services. Jeff has a working knowledge of State and Federal environmental regulations, including permitting and reporting requirements. His focus has included air emissions, storm and waste water, response planning, solid waste, and hazardous and universal waste management. He is experienced with preparation of Storm Water Pollution Prevention Plans (SWPPP), Spill Prevention Control and Countermeasure (SPCC) Plans, Integrated Contingency Plans (ICPs), and Waste Discharge License Applications. Jeff is also experienced in Air Emission Permitting and Reporting, and is currently assisting numerous clients with Air Emission Permitting and Reporting as required by the various regulatory agencies. In addition, Jeff has provided engineering services to numerous clients ranging from permitting Solid Waste activities, preparing annual Solid Waste Reports to the Maine Department of Environmental Protection (MDEP), conducting annual Solid Waste compliance inspections, and designing and preparing landfill waste cell development plans.

CORE EXPERTISE

Environmental Monitoring Programs

State of Maine Industrial Multi-Sector General Permit

Data Management

Maine Electronic Data

Professional History
2010 – Present | CES, Inc. | Project Engineer
2001 – 2010 | CES, Inc. | Assistant Engineer

Education
B.S. Bio-Resource Engineering, Minor–Environmental Engineering, University of Maine, Orono, Maine

Certifications
Standard First Aid and Adult CPR

Project Experience
Solid and Hazardous Waste

CES is currently retained by a number of municipalities, corporations, and associations to assist with solid and hazardous waste issues. Jeff provides facility specific engineering services to each of these entities as needed. The work performed by Jeff for these entities includes: conducting annual compliance inspections; preparing engineering plans for waste cell development for the landfills; calculating landfill volume utilized to date and estimating remaining landfill life; updating landfill closure and post closure cost estimates; and assisting with storage, management and handling of Solid Waste, Hazardous and Universal Waste. Other work performed by Jeff includes permitting assistance, under various regulations, and updating facility specific O&M Manuals. Recently, Jeff has assisted a number of biomass facilities regulated under 06096 CRM Chapter 418 with permitting, engineering, fuel quality analysis, fuel handling, ash characterization, and other aspects associated with proper handling and management of fuel used and wastes generated by these facilities in accordance with applicable regulations.

Environmental Site Assessments
CES was retained by the Appalachian Trail Conference (ATC) to provide a professional opinion as to the extent of waste contamination and other environmental risks associated with a piece of property they intended to acquire. The work performed by Jeff included a site visit to provide a professional opinion as to the extent of waste contamination and other environmental risks associated with the contamination at the site and to provide a report detailing the results of the site visit with a recommendation to dispose the material in accordance with applicable regulations.

Air Emissions Permitting & Reporting
CES was retained by Merrill Blueberry Farms, Inc. to permit emissions associated with the Installation of four diesel generators to be utilized as prime power units that would meet and provide the electrical demand of the company's blueberry processing facility. Jeff evaluated the electrical demands at the facility, evaluated and assisted with the selection of the most cost effective generation units and emission control alternatives, assisted with the preparation of a Best Available Control Technology (BACT) analysis, and prepared the necessary documentation required to be submitted to the MDEP to obtain the facility's minor source Air Emission License.

CES was retained by Cold Brook Energy, Inc. to renew an existing minor source air emission license for emissions associated with bulk storage of petroleum products. The renewal included a modification to license a volatile organic compound (VOC) Vapor Destruction Unit (VDU) as an emission source at the facility. Jeff performed an evaluation of the maximum potential to emit (PTE) pollutants associated with the operation of the VDU, evaluating emissions associated with bulk storage tanks, loading rack operations, miscellaneous equipment leaks and preparation of the required documentation required to be submitted to the M DEP to obtain the facility's air emission license. In addition, he prepares Cold Brook's Criteria Pollutant Emission Statements, Hazardous Air Pollutant Emission Statements and Greenhouse Gas Emission Statements in accordance with 06-096 CMR Chapter 137 of MDEP's rules. This work includes evaluating total annual emissions of pollutants that result from the operation of the bulk storage facility and preparation and submittal of the necessary reports required to be submitted the MDEP.

EPCRA Reporting
CES is currently retained by Irving Oil Terminals, Inc. to prepare annual EPCRA Section 313 Reports (Form A's and Form R's) for its Searsport Maine and Portsmouth New Hampshire Terminals. Jeff evaluated total annual emissions and other releases of toxic pollutants that result from the operations at both bulk storage facilities, and the preparation and submittal of these reports to each State's and local emergency management agencies. Jeff also prepares annual chemical inventory reports (Section 312) for several Irving Bulk Plants.

Stormwater Pollution Prevention Plans (SWPPP) & Waste Discharge Licenses (WDL)
CES was retained by Irving Oil Terminals, Inc. to prepare a renewal combination WDL and Maine Pollutant Discharge Elimination System (MEPDES) permit application for their bulk petroleum storage facility located in Searsport, Maine. Jeff assisted Irving by combining all discharges under one permit which simplified management of its discharges under one license. The renewal application included a modification to include stormwater discharges associated with industrial activities along with several other modifications related to sampling and clarification of allowable stormwater discharges. Jeff also assisted with the preparation of a SWPPP which was a condition to the facility's combination WDL and MEPDES permit. The SWPPP included measures to prevent or control the discharge of pollutants in storm water runoff at the facility.

Landfill Design

During early 2007, Jeff designed and prepared waste cell development engineering plans for 10 solid waste facilities as part of their solid waste annual report required to be submitted to MDEP. The Solid Waste Management Regulations requires, as part of the Annual Report for solid waste facilitates, to update their cell development plans to account for the next two years of waste placement. These plans take into account proper waste cell sizing based on annual utilization rates, surface water runoff, side slope construction, access road development, compaction, timing and placement of cover material, seeding and mulching, construction of diversion berms, and other landfill specific items that may be necessary. Jeff has been preparing these plans for various solid waste clients for the past seven years. Each year the Cell Development Plans are submitted and approved by MDEP with the facilities' Annual Reports.

Jeff has assisted numerous clients with other landfill design aspects including landfill base preparation design, leachate management design, storm water and surface water control plan design, and the design of other waste storage areas located at solid waste facilities. In addition, Jeff has prepared Quality Assurance Plans to ensure that all design specifications and performance requirements are met during construction. Jeff has also assisted various clients in preparing construction contract bid documents including drawings, technical specifications, and contract administrative documents.

Jeff assisted the Town of Dover-Foxcroft in the design, permitting and construction of Phase II of their CDD landfill. The design included leachate management provisions, stormwater runon and runoff provisions, access roads, base material and other items required by MDEP and the Solid Waste Management Regulations. The Phase II design was submitted to MDEP and approved in early 2007. Construction of the Phase II was completed at the end of the summer and waste placement is scheduled to begin later this year. All quality control and quality assurance as well as construction inspection services were overseen by Jeff.

Landfill Compliance Evaluations and Licensing

Jeff currently conducts Annual Landfill Evaluation Compliance Inspections for 12 landfills and transfer stations within the State of Maine and prepares these facilities Annual Reports for submission to MDEP. The Annual Reports and Compliance Inspections are conducted in accordance with the Solid Waste Management Regulations. Jeff is experienced in working with Solid Waste facility personnel as well as MDEP officials to address ongoing issues that arise and has provided numerous cost effective and environmental friendly solutions to these issues. Recently, during an Annual Landfill Evaluation at the Dover-Foxcroft Construction and Demolition Debris landfill and Transfer Station, it was observed that the Town was collecting Universal and House Hold Hazardous Waste at the transfer station for which the facility was not permitted to accept. Jeff worked with the Town, DEP officials as well as the State Planning Office to obtain a funding grant to construct a new Universal and House Hold Hazardous Waste storage building. Revisions to the O&M Manual were made to address the collection and management of these materials and Jeff provided assistance to the Town to obtain the necessary Universal Waste generator I.D. number.

Jeff has prepared a wide array of landfill license applications for submittal to DEP. Jeff is intimately familiar with the Solid Waste Regulations and has worked closely with numerous clients and DEP to accurately prepare the necessary licensing documents. Jeff has experience in the preparation of full facility license, reduced procedure, permit by rule, amendments, and minor revision documents. Jeff has also worked with clients and DEP to prepare transfer station license applications, processing facility license applications, beneficial use license applications, and agronomic utilization license applications.

Water Quality Monitoring and Corrective Action

Jeff has a working knowledge of 06 096 CMR Chapter 405 of the Solid Waste Regulations as they relate to Water Quality Monitoring Programs at solid waste facilities and has prepared and revised several Environmental Monitoring Plans (EMP). Jeff is also well versed in analyzing water quality data and has prepared evaluations for clients for submittal to DEP with water quality monitoring reports. These evaluations have also formed the basis for corrective action plans for which Jeff has prepared and submitted to DEP.

Integrated Contingency Plan (ICP), Spill Prevention Control and Countermeasure (SPCC) & Facility Response Plan (FRP)

CES was retained by Cold Brook Energy, Inc. to assist in preparing an ICP that consolidated multiple response plans, required by EPA, the U.S. Coast Guard, MDEP, and OSHA, into "one plan" for ease of maintenance and use. The ICP was prepared following the guidelines of the National Response Team (NRT) as published in Federal Register. The ICP was reviewed by the Coast Guard and EPA and both agencies were substantially satisfied with the content of the plan.

Air Emissions Permitting & Reporting

Jeff also specializes in air emission permitting and reporting. He has performed air emission evaluations for various clients and, when necessary, has prepared the application documents for air emission licensing of these facilities. Jeff also prepares the State and Federal air emission reports required under 06 096 CMR Chapter 137 and the Emergency Planning and Community Right-to-Know Act (EPCRA), respectively.

Jeff recently worked with the City of Presque Isle and DEP to address concerns that DEP's Air Bureau had related to the potential need that the City's MSW landfill may need to obtain an Air Emission License. Jeff conducted an evaluation of nonmethane organic carbon emissions from the landfill and determined that NMOC emissions released from the landfill were below the threshold required for an air emission license. Jeff submitted the evaluation to DEP's Air Bureau for review. DEP agreed with the evaluation and as a result an air emission license was not required for the City of Presque Isle's MSW landfill.

Landfill Operations Consultant Services

Waste Placement and Cell Development

During early 2007, Jeff designed and prepared waste cell development engineering plans for 10 solid waste facilities as part of their solid waste annual report required to be submitted to DEP. The Solid Waste regulations requires as part of the Annual Report for solid waste facility to update their cell development plans to account for the next two years of waste placement. These plans take into account proper waste cell sizing based on annual utilization rates, surface water runoff, side slope construction, access road development, compaction, timing and placement of cover material, seeding an mulching, construction of diversion berms, and other landfill specific items that may be necessary. Jeff has been preparing these plans for various solid waste clients for the past 7 years. Each year the Cell Development Plans are submitted and approved by DEP with the facilities Annual Report.

Leachate Management and Placement of Intermediate Cover

Jeff is currently working with the Town of Greenville to address impacts to the site's ground water monitoring wells. Excessive leachate generation within the landfill was identified to be the main cause of contaminate impacts observed in the site's water monitoring wells. Improper cover material and placement of the material, better waste and cover compaction, failure to remove old cover prior to constructing new lifts, lack of grass growth in areas of the landfill that were not operational, and general deficient operational issues were identified as the key contributors to the buildup of leachate within the landfill. Through working with the Town and DEP officials, Jeff prepared a Corrective Action Plan, which was approved by DEP, to address these issues. As part of the Corrective Action Plan, a 200 ft. x 200 ft. geomembrane intermediate cover system was proposed to reduce the amount of rain water infiltrating into the landfill. The geomembrane liner is planned to be installed during the spring of 2008. Ground water will continued to be monitored and an evaluation of corrective actions is planned to be conducted in 2010. Jeff is currently working on a regular basis with the Town officials and landfill operators to ensure that proper operation of the landfill is carried out on a day to day basis.

Annual Reports and Annual Landfill Compliance Evaluations

Jeff currently conducts Annual Landfill Evaluation Compliance Inspections for 12 landfills and transfer stations within the State of Maine and prepares these facilities Annual Reports for submission to DEP. The annual reports and Compliance Inspections are conducted in accordance with the Solid Waste Management Regulations. Jeff is experienced in working with Solid Waste facility personnel as well as DEP officials to address ongoing issues that arise and has provided numerous cost effective and environmental friendly solutions to these issues. Recently, during an Annual Landfill Evaluation at the Dover-Foxcroft Construction and Demolition Debris landfill and Transfer Station, it was observed that the Town was collecting Universal and House Hold Hazardous Waste at the transfer station for which the facility was not permitted to accept. Jeff worked with the Town, DEP officials as well as the State Planning Office to obtain a funding grant to construct a new Universal and House Hold Hazardous Waste storage building. Revisions to the O&M Manual were made to address the collection and management of these materials and Jeff provided assistance to the Town to obtain the necessary Universal Waste generator I.D. number.

Operational Issues Identified by DEP or Facility Owner

During the past 7 years, Jeff has worked closely with landfill personnel to address a number of operational issues. One of the more significant issues was related to the lack of a local landfill operator training course in the State of Maine. As part of the Solid Waste Management Regulations, landfill operators are required to attend annual refresher training and each year many solid waste facilities did not report that their operators were receiving the necessary training. As a result, CES Inc. prepared a training course that addressed the appropriate requirements for CDD and MSW landfill operators. Jeff participated in developing the course and worked with DEP to design a course that would not only meet the requirements of the Solid Waste Regulations, but would be informative and interesting to landfill operators. The course was approved by DEP and the first course was conducted during the summer of 2005. CES continues to provide the annual landfill refresher training course. Jeff is the current acting instructor of this course.

Landfill Gas and Stability of Working Slopes

Jeff recently worked with the City of Presque Isle and DEP to address concerns that DEP's Air Bureau had related to the potential need that the City's MSW landfill may need to obtain an Air Emission License. Jeff conducted an evaluation of nonmethane organic carbon emissions from the landfill and determined that NMOC emissions released from the landfill were below the threshold required for an air emission license. Jeff submitted the evaluation to DEP's Air Bureau for review. DEP agreed with the evaluation and as a result an air emission license was not required for the City of Presque Isle's MSW landfill.

Jeff also works with landfill clients during the preparation of Cell Development Plans to ensure proper side slopes, typically 3:1, are achieved. In order to maintain side slope stability, it's essential for landfill operators to ensure they are meeting the required side slopes. When necessary, Jeff will visit the site and provide recommendations and guidance to operators to ensure that the required side slopes are being maintained. Typically side slopes are evaluated after topographic volume control surveys of the landfill are conducted. Any deficiencies are pointed out to operators and corrected as soon as practically possible.

Updating Operations and Maintenance Manuals

Through Jeff's work with numerous landfill clients, operational changes affecting the facilities O&M Manual are an ongoing event. During the course of a year Jeff updates 3 to 4 manuals to address facility specific changes. Updates to each of the O&M Manuals are prepared, submitted to the client for review, and then to DEP for approval.

Engineering Consultant Services

Design of Current Landfills and Appurtenant Structures

Jeff has provided engineering services to a number of landfill clients related to the landfill design in accordance with the Solid Waste Regulations. Recently Jeff assisted the Town of Dover-Foxcroft in the design, permitting and construction of Phase II of their CDD landfill. The design included leachate management provisions, storm water runon and runoff provisions, access roads, base material and other items required by DEP and the Solid Waste Regulations. The Phase II design was submitted to DEP and approved in early 2007. Construction of the Phase II was completed at the end of the summer and waste placement is scheduled to begin later this year. All quality control and quality assurance as well as construction inspection services were overseen by Jeff.

MDEP Licensing Services

Jeff has prepared a wide array of landfill license applications for submittal to MDEP. Jeff is intimately familiar with the Solid Waste Regulations and has worked closely with numerous clients and MDEP to accurately prepare the necessary licensing documents. Jeff has experience in the preparation of full facility license, reduced procedure, permit by rule, amendments, and minor revision documents. Jeff has also worked with clients and MDEP to prepare transfer station license applications, processing facility license applications, beneficial use license applications, and agronomic utilization license applications.

Water Quality Monitoring and Corrective Action

Jeff has a working knowledge of 06 096 CMR Chapter 405 of the Solid Waste Regulations as they relate to Water Quality Monitoring Programs at solid waste facilities and has prepared and revised several Environmental Monitoring Plans (EMP). Jeff is also well versed in analyzing water quality data and has prepared evaluations for clients for submittal to MDEP with water quality monitoring reports. These evaluations have also formed the basis for corrective action plans for which Jeff has prepared and submitted to MDEP.

JOHANNA E. SZILLERY, C.S.S.

PROJECT SCIENTIST

Johanna Szillery has over 10 years of experience in the soil science, and natural resources field, which includes positions in academic research, Federal government, and as an environmental consultant. She is a wetland scientist and a Maine Certified Soil Scientist (ME CSS 494). Johanna specializes in wetland and natural resource delineation, planning, and permitting; and soil surveys and suitability assessments. She has completed wetland delineation and natural resource identification for residential, commercial, industrial and government clients on land in Maine and New Hampshire. She has experience in wetland, stream, vernal pool, and wildlife habitat identification. Johanna has worked with a variety of clients and with State and Federal regulators to meet the goals of each through the permitting process. As a soil scientist, Johanna has performed soil surveys throughout Maine, from general, planning level soil surveys to high-intensity soil surveys specific to the proposed development.

CORE EXPERTISE

Wetland and Natural Resource Investigation

Soil Science

Natural Resource Planning and Permitting

Phase I Environmental Site Assessments

Professional History

2013 – Present | CES, Inc., Environmental Scientist
2006 – 2013 | S.W. Cole Engineering, Inc., Soil and Wetland Scientist
2003 – 2006 | University of Maine, Research Assistant in Forest Soils
2000 – 2003 | Graduate School
2000 – 2000 | Photo Science, Inc., Photogrammetrist
1998 – 1999 | Natural Resources Conservation Service USDA, Soil Conservation Aide
1997 – 1997 | Shenandoah National Park; Biological Science Technician

Education

M.S. Plant, Soil, and Environmental Sciences, University of Maine
B.A. Biology and Environmental Sciences, Drew University, New Jersey

Registrations

Maine Certified Soil Scientist #494

Affiliations

State Board of Certifications for Geologists and Soil Scientists
Maine Association of Wetlands Scientists
Maine Association of Professional Soil Scientists, 2011-2013 President

Certifications

40 Hour OSHA Hazwoper
Maine Basic Erosion and Sediment Control BMP
Standard First Aid & CPR

Project Experience

US Navy Sites | Great Pond, Maine and Rangeley, Maine

Johanna was lead field scientist for natural resource delineation and documentation for several U.S. Navy sites in Maine. Her duties included managing and scheduling field work, performing wetland and natural resource delineations, and documentation to the client's specifications. She was responsible for quality assurance/quality control of the final deliverables, including reporting, documentation, and GIS deliverables.

Blueberry Processing Facilities | Cherryfield, Maine and Franklin, Maine

Johanna was the lead field scientist for the determination of soil/land capacity for spray irrigation of waste water for several clients in the blueberry processing industry in Maine. An incremental approach was used to identify areas for more detailed soil characterization. Based on the detailed soil survey information, Johanna provided recommendations to the design team and client regarding soil capacity for spray irrigation and management practices to improve system performance.

Town of Milford, Maine and R. F. Jordan and Sons, Ellsworth, Maine

Johanna completed soils surveys and suitability assessments for proposed wood storage pads at several locations. Natural resource surveys were completed so that siting would meet simplified MDEP permitting processes.

Town of Oakland | Oakland, Maine

Johanna completed soils assessments for proposed waste processing storage pads to ensure compliance of these areas with MDEP solid waste regulations.

Maine Tidal Power Initiative | University of Maine

Johanna was part of an interdisciplinary research, engineering, and policy team to evaluate and better understand the benefits and potential impacts of tidal energy in Maine. This project worked with a local community, State and Federal resource biologists and regulators, and engineers, to determine the feasibility of a community-scale tidal project. The project team worked with State and Federal regulators in an effort to streamline regulatory review while protecting resources. The lessons learned from the process were developed into a framework to assist other communities.

USDA- Natural Resources Conservation Service | Allagash, Maine and Millinocket, Maine

Johanna was responsible for completion of a medium intensity soil survey on 40,000 acres of forest land in northern Maine, through two Federal contracts. She performed soil mapping and associated quality assurance/quality control documentation, and coordinated field work. Johanna coordinated periodic progress and budget reporting to the client, as well as reporting of the final deliverables.

Proposed Eco Development | Winter Harbor, Maine

Johanna was the lead field scientist for natural resource assessments on a 3,000-acre parcel on the coast of Maine. Her duties included managing and coordinating all aspects of field work, and wetland and natural resource delineations, and vernal pool survey. She also coordinated preliminary soil surveys of the parcel. Once field work was complete Johanna was responsible for compilation of natural resource documentation and reporting, and compilation of soils data and reporting for the project. She worked with a diverse planning and engineering team to design and present the proposed devolvement to State and Federal regulators and the local community.

ROGER ST.AMAND, CSS, SE, IF

SENIOR PROJECT SCIENTIST

Roger St. Amand holds a B.S. in Forestry and Forest Engineering from the University of Maine and has over13 years of environmental consulting experience. Roger oversees all Natural Resource projects and has been employed with CES since 2004. He is a Maine licensed Site Evaluator, Maine Certified Soil Scientist, a Certified Wetland Delineator and a CPESC. He specializes in wetland and natural resource investigations, permitting and soil science. Roger also has a comprehensive background in forest soils, onsite wastewater disposal engineering design and Geographical Information Systems (GIS).

Roger has extensive project experience with all aspects of wetland and natural resource surveys, wetland mitigation design and monitoring and all aspects of development projects ranging from identification of protected resources to permitting and construction. As a wetland scientist he has worked on residential, commercial and municipal projects assessing natural resources, wetlands, vernal pools and significant wildlife habitat. He also possesses a strong background in assessing wetland functions and values and wetland mitigation. His thorough understanding of State and Federal environmental regulations that affect development allow him to successfully design solutions that meet both client goals and environmental regulations.

As a soil scientist Roger has completed over 250,000 acres of detailed soil surveys for large and small scale developments and forest land in a variety of geographical locations and ecosystems. His GIS experience includes designing and implementing a conversion from manual mapmaking to a GIS environment for detailed soil survey information. Roger has extensive experience with aerial photo analysis and remote sensing, managing GIS and database systems. As Project Manager, Roger produced training and instruction sets for company employees in GIS, analyzed watershed survey results and cartographic map creation. He has also assisted in a water sampling program for the EPA's Healthy Beaches program, and oversight of quality control in GIS systems data.

CORE EXPERTISE

- Environmental Management
- Wetland and Natural Resource Investigations
- Wastewater Disposal Engineering Design
- Geographical Information Systems

Professional History

2008 – Present | CES, Inc. | Project Manager, Senior Project Scientist
2004 – 2008 | CES, Inc. | Wetland & Soil Scientist
2000 – 2004 | Soil Services, Inc. | Project Manager
2000 | Soil Services, Inc. | Forestry Consultant
1997 – 2000 | Soil Services, Inc. | Forest Soil Scientist

Education

B.S. Forestry/Forest Engineering, University of Ma
Associates in Engineering Technology, Wentworth Institute of Technology, Boston

Registrations

Maine Licensed Site Evaluator #360
CPESC #5829
Maine State Certified Soil Scientist #471
Maine Licensed Intern Forester

Certifications

Certified Professional Erosion and Sediment Control BMP Practices
MDEP Certified Advanced
Erosion and Sediment Control BMP Practices
Region IV Certified Wetland Delineator
Standard First Aid & CPR
Wilderness First Responder

Project Experience

Kennebec Shores Subdivision

Roger conducted medium high intensity soil surveys, onsite wastewater designs and wetland delineations for a large residential subdivision in Downeast Maine. The challenging conditions imposed by steep topography and shallow soils were overcome using innovative system designs and the project was successfully designed and permitted through the Maine Department of Environmental Protection.

Kenduskeag Stream Meadows Subdivision Habitat Buffer

As Assistant Engineer, Roger was responsible for DEP and Army Corps of Engineers permitting for development of a residential subdivision along an environmentally sensitive waterway. The project included design of riparian buffers and setbacks for Atlantic Salmon Habitat. Buffers were designed using GIS to identify soil and site characteristics to optimize buffer value in conjunction with development.

Timbavati Subdivision| Mount Desert Island, Maine

As assistant engineer, Roger conducted wetland delineation and soils analysis, assisted in lot and road layout, and obtained DEP permitting for a 6 lot subdivision on Mount Desert Island. The site design was located in a watershed protection area.

Reef Point Subdivision | Addison, Maine

In this 14 lot oceanfront subdivision in Addison, Maine, Roger was responsible for wetland delineation and preliminary soil tests. He also assisted with the road and lot layout, designing them to minimize wetlands impact and obtained NRPA permitting for coastal wetlands.

KB Inc.| Greenbush, Maine

Roger completed a high-intensity soils survey for a proposed bark mulch storage pad. Roger performed wetland delineations and functional assessments for MDEP NRPA permitting and restoration of impacted wetlands.

Jasper Wyman and Sons, Inc. Blueberry Processing Facility | Deblois, Maine

Roger completed a medium-high intensity soils survey and assisted in the permitting with DEP for an expanded spray irrigation wastewater disposal system for an expansion of a commercial blueberry processing facility in Deblois.

Brewer-Orrington Industrial Park |Brewer, Maine

CES, Inc. was tasked with identifying and assessing potential vernal pools and soil conditions on a large scale proposed industrial park in Brewer and Orrington. Roger completed soils analysis for proposed roads and utility construction within the development. The soils data and vernal pool information were incorporated into an assessment of the parcel for development potential and cost analysis.

Various Residential Subdivisions, Maine

Roger has served as a site evaluator, soil scientist, and assistant engineer on multiple residential subdivision developments throughout the State of Maine. Work has included soil tests and analysis, soil surveys, phosphorous studies, buffer design, and wetland delineations, as well as wastewater disposal systems. Roger has also designed lot and road layout to minimize wetlands impact and obtain NRPA permitting for coastal wetland sites. Subdivisions include the Yoho Head Subdivision in Machiasport, Timbavati Subdivision on Mount Desert Island, Bayside Woods Subdivision in Trenton, Reef Point Subdivision in Addison, Subdivision on Great Wass Island, North Bend Estates in Ellsworth, and the Kenduskeag Stream Meadows Subdivision in Bangor.

Great Wass Island, Maine

Roger performed wetlands delineation and preliminary soils analysis for this 80 acre residential subdivision located on a difficult island site.

North Bend Estates | Ellsworth, Maine

Roger was responsible for completing preliminary soil investigations and designed wastewater disposal systems for a 6 lot residential subdivision in Ellsworth, Maine. He also completed wetland delineations for the subdivision.

Yoho Head Subdivision | Machiasport, Maine

As site evaluator and soil scientist, Roger completed soil tests, wetland delineations and soil survey work for a 65 acre oceanfront subdivision in an environmentally sensitive area in Machiasport, Maine.

SEAN M. THIES, PE

SENIOR PROJECT MANAGER

Sean Thies has over 15 years of civil engineering experience, which includes site design, roadway design, and permitting. Sean's experience includes working with private developers, municipalities, housing authorities, and universities. As a Senior Project Manager, Sean manages a wide variety of projects including road construction/reconstruction projects for municipalities, site development projects for medical facilities, retail facilities, banks, restaurants, offices, and ports to name a few. Additionally, he has managed several projects for affordable senior and family housing. Sean has also managed and designed commercial and residential subdivisions. Sean is experienced in permitting with the Maine Department of Environmental Protection, Land Use Planning Commission, Army Corps of Engineers, and many municipalities throughout the State of Maine. Sean's areas of permitting expertise are in site development, storm water, and natural resources.

CORE EXPERTISE

Site Development

Storm Water Design

MDEP Permitting

Road and Infrastructure Design

Professional History

2014 – Present | CES Inc. | Senior Project Manager
2007 – 2014 | CES Inc. | Project Manager
2002 – 2007 | CES Inc. | Project Engineer
1999 – 2002 | CES Inc. | Assistant Project Engineer
1997 – 1999 | Squa Bay Inc. | Assistant Project Engineer
1996 – 1997 | Maine Emergency Management Agency | Dam Inspector
1994 – 1995 | Frank Woodworth Inc. Construction | Assistant Project Manager

Education

1996 | B.S. in Civil Engineering, University of Maine

Training

Cold Regions Engineering
Better Roads and Parking: Design Construction and Maintenance
MDEP Storm Water Best Management Practices Design and Effectiveness
MDEP Chapter 500 Storm Water Management Rules
MDEP Low Impact Development Storm Water Best Management Practices

Registrations

Professional Engineer: State of Maine (#10139)

Certifications

MaineDOT Local Project Administrator, Level II
Standard First Aid and CPR

Project Experience

Leonard Lake Senior Housing | Ellsworth, Maine

As the Project Manager/Senior Project Engineer, Sean provided site design and permitting for a 26 unit senior housing facility located in Ellsworth, Maine. The proposed project was developed by Penquis Housing for low income senior citizens. The project included one 12,000 square foot two story building with associated parking and access. CES provided site design including parking, vehicle and pedestrian access, utilities, storm water, and retaining wall design. The project required Site Plan and Subdivision review by the City of Ellsworth along with a Maine Department of Environmental Protection Storm Water Permit-by-Rule application. The project is currently under construction and scheduled for completion this summer.

Brewer Housing Authority Community Center | Brewer, Maine

As the Project Manager/Senior Project Engineer, Sean provided site design and permitting for a proposed 12,000 square foot community center building for the Brewer Housing Authority in Brewer, Maine. The proposed building included adult education classrooms as well as daycare facilities. CES provided site design including: parking, pedestrian access, utilities, and storm water management design services. The proposed project required Site Development permitting through the City of Brewer along with an amendment to the Housing Authority's existing Maine Department of Environmental Protection Site Location of Development Permit. The site design was required to meet all MDEP requirements pertaining to storm water management. The project was successfully completed in the fall of 2013.

Eastern Maine Healthcare | Brewer, Maine

As project engineer, Sean provided the site design and SLODA and NRPA permitting for a 500,000 square foot professional office complex on a 126 acre lot in Brewer, Maine. This work involved the design of a new intersection onto Wilson Street (U.S. Route 1A), a 1,000 foot access road complete with all utilities, and approximately 24 acres of parking lot. This project also involved interior roadway design, sanitary sewer, water, surface and subsurface drainage, underground electric and fiber-optic telephone utilities, and a storm water detention/treatment system.

Husson University | Soccer Field | Bangor, Maine

Sean assisted with the site design and permitting for the soccer field for Husson University in Bangor. The project involved extensive grading to fit the proposed field within the area selected by Husson. Sean was involved in the site design, City permitting, state permitting, and overall project management through the construction of the field.

Miscellaneous Projects for Husson University | Bangor, Maine

Sean was involved in preparing an after-the-fact Site Location of Development Application (SLODA) for Husson University to permit completed and planned projects at that time. Since this was completed, Sean has been involved in the design and permitting of additional parking lots for Husson as well as the design and permitting for a new entrance road to the University.

University of Maine Bike Paths | Orono, Maine

CES was hired by the University of Maine (UMaine) to provide design and permitting services for the construction of a 0.5 mile extension of the existing bike path system as well as the reconstruction of the existing bike paths that were constructed in the 1970's. Sean served as the Project Manager for both of these projects. Tasks included: survey, MDEP permitting, Army Corps of Engineers Permitting, design, and assisting UMaine with the MDOT LPA process. Both of these projects were funded by the MDOT and locally administered by UMaine.

Due to limited funds, the existing bike paths were evaluated to determine what level of reconstruction should be done on each section depending on the conditions of those sections. We were able to work well with UMaine and the contractors to complete two very successful projects that the owner is very happy with.

Veteran's Park | Milo, Maine

Sean served as the project manager for the design of Veteran's Park for the Town of Milo. The Town hired CES to design a park area along the shores of the Sebec River. The project included improvements to an existing boat ramp facility, parking area improvements, and walkways connecting the existing park gazebo area to the Main Street sidewalks. CES provided survey, design services, and construction administration and inspection. Since the project included improvements to the Main Street sidewalk, coordination with MaineDOT was also required. The project was funded with CDBG money and CES provided the grant administration.

Dirigo Drive | Brewer, Maine

Sean served as Project Engineer and assisted the task of designing 7,700 feet of new roadway to alleviate traffic congestion on Wilson Street in Brewer, Maine. This road, known during construction as the Parallel Road, runs alongside Wilson Street on the north and Interstate 395 on the south. Sean was involved with the right-of-way, roadway design, storm and sanitary sewer design, permitting, and construction monitoring for the entire project.

The Pines Neighborhood Infrastructure Project | Millinocket, Maine

CES, Inc. worked with the Town and Aqua Maine (the Town's water service provider) on a neighborhood scale infrastructure improvement project in the "Pines" neighborhood. As Project Manager, Sean was directly involved with the replacement of sanitary sewer lines, water lines, storm drain, and the reconstruction and repaving of all affected roadways.

Brewer Economic Development Corporation (BEDC), Dirigo Drive Subdivision and Shapero Lot Subdivision | Brewer, Maine

Sean designed and permitted two commercial subdivisions on Dirigo Drive in the City of Brewer. The two subdivisions created 12 lots for development in the newly created Professional Business District in the City. Work included City and State permitting as well as lot layout. Lots were generally accessed from Dirigo Drive, which was also designed and built as a separate project.

Miscellaneous Permitting for the University of Maine

Sean was involved in preparing an after-the-fact Site Location of Development Application (SLODA) for the University of Maine (UMaine) to permit completed and planned projects at that time. Since this permit was issued by MDEP, Sean has helped prepare more than 35 minor modifications, minor amendments, and amendments to the original permit. Projects have included parking lots, building additions, new building construction, sidewalk construction, and many other miscellaneous projects. Through these permitting projects, CES, Inc. has completed storm water management plans to control the runoff from the campus. All new projects done on campus that create impervious surface are required to modify the original SLODA permit. Sean worked on a storm water management plan for the entire UMaine campus to address drainage issues that are a concern to both UMaine and MDEP.

DENIS ST. PETER, PE

President/CEO

Denis St. Peter is the President/CEO of CES, Inc. and divides his time between management of the company and project related duties. Denis has been employed at CES for 14 years and acts as Project Manager and Principle-in-Charge of environmental projects. As a principal, Denis provides technical supervision for environmental projects and ensures appropriate resources are available to meet project goals and objectives. Denis earned a B.S. in Civil Engineering from the University of Maine and has over 24 years of experience as a licensed Professional Engineer. In addition to his years of experience as a licensed Professional Engineer, Denis also has 24 years of engineering experience with State and Federal environmental compliance (CERCLA, CAA, CWA, EPCRA, NEPA, RCRA, TSCA); storm water and waste water management, oil and hazardous substance pollution prevention and contingency planning, air emissions, environmental site assessments, remediation, and solid and hazardous waste management. More recently, Denis has been able to focus his expertise on environmental assessments, feasibility studies, remedial design and remediation of contaminated property as well as assist clients with solid and hazardous waste management.

CORE EXPERTISE

Solid and Hazardous Waste Management

Environmental Due Diligence

Remediation of Contaminated Sites

Professional History

2009 – Present | President | CES, Inc.
2008 – 2009 | Executive Vice President | CES, Inc.
2006 – Present | Principal | CES, Inc.
2000 – 2006 | Project Manager | CES, Inc.
1990 – 2000 | Project Engineer | US Air Force at a Maine Air Force Base
1986 – 1988 | Pasquini Construction, Inc. | Heavy Equipment Operator
1983 – 1986 | University of Maine | Wildlife Biology Research Assistant

Education

1990 | B.S. Civil Engineering | University of Maine

Training

Remediation of Chlorinated and Recalcitrant Chemicals
Natural Attenuation of Chlorinated Organics in Groundwater
Intrinsic Remediation of Chlorinated Solvents
Bioremediation in Saturated Subsurface
Remedial Action Cost Engineering and Requirements System
Environmental Management, AFIT
Risk and Health Assessment and Communication, ASTDR
Environmental Law in Maine, Pierce Atwood
Regulatory Requirements - ME Hazardous Waste Generators, Nelson & Gramn
Maine Hazardous Waste Management Regulations for Universal Wastes, MDEP
EPA/MDEP Storm Water Requirements for Industrial Activities, MDEP
A/E Principal Bootcamp, PSMJ Resources, Inc.
Legal Issues for ME Design Professionals, Half Moon, LLC

Registrations
Professional Engineer - State of Maine (#9173)

Affiliations
National Society of Professional Engineers, 300178084

Certifications
Standard First Aid and CPR
HAZWOPER 40 Hour

Project Experience
Petroleum Contamination Investigations and Remediation
Denis was the Project Manager for several investigation and remediation petroleum contaminated sites for the Maine Department of Environmental Protection (MDEP). These activities were funded by the State's Groundwater Fund. The CES team has been Pre-Qualified by MDEP as an environmental consultant qualified to perform monitoring and remediation of petroleum contaminated sites managed by MDEP. Denis oversees all vapor mitigation projects conducted by the company including review of work plans and remedial designs, such as the Dean Residence and Former JJ Nissen location.

Brownfields Assessments and Remediation
Denis was the Project Manager for several Brownfields funded projects that involved Phase I ESAs, Phase II ESAs, and remediation of contaminated sites. These sites include: former service stations, former Bomarc missile site, junk yard, and the Howland Tannery. The Howland site included four ($200,000) remediation grants for the four separate properties. The remediation included waste characterization of sludge and off-site disposal, waste consolidation on-site, a cover system, shoreland zone restoration, and building demolition. Denis manages the current Brownfields Contract with the MDEP.

Phase I Environmental Site Assessments (ESAs)
Denis was the Project Manager for more than 100 Phase I ESAs for various clients including R.H. Foster, the National Park Service, the University of Maine Foundation, Bar Harbor Bank, Bangor Savings Bank, and Union Trust. Denis has reviewed and certified Phase I Reports for numerous commercial and industrial facilities including retail gasoline stations, chemical production facilities, and automobile salvage yards.

Phase II ESAs, Remediation & VRAP
Denis was the Project Manager for several Phase II ESAs and remedial activities at various sites in Central and Northern Maine. In 2004, a Phase II ESA at Rowantrees Pottery in Blue Hill identified lead contamination in on-site soils that required treatment as a hazardous waste. Denis and his team provided oversight for the clean-up of the site, soil segregation, and removal efforts. Denis was the Project Manager and technical lead for vapor mitigation systems at Jim's Dry Cleaning and Former Jiffy Print, highlighted within this proposal.

Phase II ESAs & Remediation
Denis was the Project Manager for several Phase II ESAs and remedial activities at various sites in Central and Northern Maine. In 2004, a Phase II ESA at Rowantrees Pottery in Blue Hill identified lead contamination in on-site soils that required treatment as a hazardous waste. Denis managed the clean-up of the site, soil segregation, and removal efforts. A "no action assurance" letter from the DEP VRAP program was obtained for the client to minimize liability.

Solid and Hazardous Waste Management
CES is currently retained by a number of municipalities, corporations, and associations to assist with solid and hazardous waste issues. Denis provides facility specific engineering services to each of these entities as needed. The work performed by Denis for these entities includes: conducting annual

compliance inspections; preparing engineering plans for waste cell development for the landfills; calculating landfill volume utilized to date and estimating remaining landfill life; updating landfill closure and post closure cost estimates; and assisting with storage, management and handling of Solid Waste, as well as Hazardous and Universal Waste. Other work performed by Denis included permitting assistance, as required by various regulations, and updating facility specific O&M Manuals. Recently, Denis has assisted a number of biomass facilities regulated under 06 096 CMR Chapter 418 with permitting, engineering, fuel quality analysis, fuel handling, ash characterization, and other aspects associated with proper handling and management of fuel used and wastes generated by these facilities in accordance with applicable regulations.

CERCLA Investigation and Remediation

Denis St. Peter has managed environmental investigation and remediation projects for various contaminated sites at Loring Air Force Base from 1990 to 2000. During this timeframe, Denis worked closely with the MDEP, EPA, and Development Authority. Denis was involved in all phases of the CERCLA process including Preliminary Assessments, Site Inspections, Remedial Investigations, Feasibility Studies, Remedial Designs, and Remedial Actions. Denis was responsible for organizing and leading project meetings with EPA, MDEP, USGS, USFW, consultants, and other technical personnel. Denis performed technical reviews of reports and participated in all technical discussions involving Work Plans, contamination assessments, risk assessments, applicable or relevant and appropriate requirements (ARARs), etc. Contaminated media included soil, sediment, surface water and groundwater. Contamination included both organic and inorganic parameters. The type of sites included landfills, ash disposal, drum disposal areas, quarry, tank farm, vehicle and aircraft maintenance areas, dry cleaner, fire training area, PCB transformers, and radioactive waste disposal. Denis was involved in the identification and evaluation of innovative techniques to investigate and remediate the sites.

Integrated Contingency Plan (ICP), Spill Prevention Control and Countermeasure (SPCC) & Facility Response Plan (FRP)

Denis was the Principal-in-Charge/Project Manager for more than 50 ICPs, SPCC Plans, and FRPs. The ICPs that consolidated multiple response plans, required by EPA, the U.S. Coast Guard, MDEP, and OSHA, into "one plan" for ease of maintenance and use. The ICP was prepared following the guidelines of the National Response Team (NRT) as published in Federal Register. The ICP was reviewed by the Coast Guard and EPA and both agencies were substantially satisfied with the content of the plan. SPCC Plans and FRPs are prepared in accordance with 40 CFR Part 112. Clients include Webber, Cold Brook, PERC, Indeck, Boralex, Cities of Bangor and Presque Isle, and Towns of Orono, Mount Desert, and Bar Harbor.

Air Emissions Permitting & Report

Denis was the Project Manager for several air emissions and reporting projects. Denis oversaw the evaluation of emission sources at facilities, evaluated and assisted with the selection of the most cost effective emission control alternatives, assisted with the preparation of a Best Available Control Technology (BACT) analysis, and prepared the necessary documentation required to be submitted to the MDEP to obtain the facility's minor source Air Emission License. Under Denis' supervision, an evaluation of the maximum potential to emit (PTE) pollutants associated with the operations was performed, which included evaluating emissions associated with bulk storage tanks, loading rack operations, miscellaneous equipment leaks and preparation of the required documentation required to be submitted to the MDEP to obtain the facility's air emission license. In addition, Denis' team prepares Criteria Pollutant Emission Statements, Hazardous Air Pollutant Emission Statements, and Greenhouse Gas Emission Statements in accordance with 06-096 CMR Chapter 137 of MDEP's rules.

EPCRA Reporting

Denis is the Project Manager for several EPCRA Reporting Projects. CES is currently retained by Irving Oil Terminals, Inc. to prepare annual EPCRA Section 313 Reports (Form A's and Form R's) for its Searsport, Maine and Portsmouth, New Hampshire terminals. Under Denis' supervision, total annual emissions and other releases of toxic pollutants that result from the operations at both bulk storage facilities were evaluated, and the preparation and submittal of these reports was given to each State's and local emergency management agencies. Denis also oversees the preparation of the annual chemical inventory reports (Section 312) for several Irving Bulk Plants.

Pollution Prevention Plans

Denis has worked with several private clients to prepare a P2 Plan for their facilities to address toxics use, release, and reduction. Denis and his team have also assisted the facilities in preparing biennial progress reports that are required by the P2 Plan and by the TURA, § 2305-A.

Storm Water Program-Municipal Separate Storm Sewer Systems (MS4)

Denis is the Principal-in-Charge for all MS4 projects. Denis' team was retained by several municipalities in the development and implementation of their Storm Water Management Plan to comply with the MDEP General Permit for the Discharge of Storm Water from State or Federally Owned MS4s. Denis developed multiple databases to manage all aspects of the Storm Water Management Plan, as well as the preparation of the annual reports that must be submitted to the MDEP. Denis has assisted the following seven out of ten regulated MS4s in the Bangor area to comply with the requirement of the MS4 program: City of Brewer, City of Old Town, City of Bangor, Town of Veazie, Town of Orono, Town of Milford, and University College of Bangor.

Ground Water Fund Investigations and Remediation

Denis was the Project Manager for three investigation and remediation petroleum contaminated sites for MDEP. These activities were funded by the State's Ground Water Fund. The CES team has been pre-qualified by MDEP as an environmental consultant qualified to perform monitoring and remediation of petroleum contaminated sites managed by MDEP.

NEPA Evaluations

Denis has completed NEPA Environmental reviews for the National Park Service, Town of Mount Desert, USDA Rural Development, City of Presque Isle, and MDEP Revolving Loan Fund. The Environmental Reviews evaluated proposed projects in accordance with NEPA requirements and the individual agencies' regulations.

Landfill Operations Consultant Services

Waste Placement and Cell Development

Denis provides expertise on waste cell development engineering plans for 13 solid waste landfill facilities as part of their solid waste annual report required to be submitted to MDEP. These plans take into account proper waste cell sizing based on annual utilization rates, surface water runoff, side slope construction, access road development, compaction, timing and placement of cover material, seeding and mulching, construction of diversion berms, and other landfill specific items that may be necessary. Denis has been involved with these plans for various solid waste clients for the past 14 years. Each year the Cell Development Plans are submitted and approved by MDEP with the facilities Annual Report.

Leachate Management and Placement of Intermediate Cover

Denis is involved in providing expertise on leachate management and intermediate cover approaches at 13 landfill facilities. During the past 14 years, Denis has been the Project Manager and responsible engineer for the leachate collection system improvements at the Presque Isle Landfill. The improvements involved two leachate storage lagoons consisting of 80 mill HDPE liner, a leak detection system, and a pump station. This past year, a redundant leachate collection system was designed and constructed on the east and north sides under the Phased Final Cover System.

Annual Reports and Annual Landfill Compliance Evaluations
Denis is involved in the Annual Landfill Evaluation Compliance Inspections for 13 landfills and transfer stations within the State of Maine and provides input on these facilities' Annual Reports for submission to MDEP. The annual reports and Compliance Inspections are conducted in accordance with the Solid Waste Management Regulations.

Operational Issues Identified by DEP or Facility Owner
Denis works closely with landfill personnel to address a number of operational issues. One of the more significant issues was related to the lack of a local landfill operator training course in the State of Maine. As part of the Solid Waste Management Regulations, landfill operators are required to attend annual refresher training and each year many solid waste facilities did not report that their operators were receiving the necessary training. As a result a training course that addressed the appropriate requirements for CDD and MSW landfill operators was prepared. Denis participated in developing the course and worked with MDEP to design a course that would not only meet the requirements of the Solid Waste Regulations, but would be informative and interesting to landfill operators. The course was approved by MDEP and the first course was conducted during the summer of 2005. CES continues to provide the annual landfill refresher training course.

Landfill Gas and Stability of Working Slopes
As a component of a Phased Final Cover System for the Presque Isle Landfill, a LFG collection and venting system was designed through a collaborative effort between CES and SCS Engineers. The system was designed to be expandable to a potential active collection system. In consideration of the Solid Waste Regulations and Regional Greenhouse Gas Initiative (RGGI), an active collection and treatment system is currently being evaluated

CES performed a LFG investigation for the Tri-Community Landfill in 2005/2006 to determine the magnitude and extent of LFG migration in the subsurface. CES used the company owned Geoprobe® to install temporary and permanent LFG probes. The investigation approach allowed the fieldwork to take only one week.

Another component of the Phased Final Cover System was an evaluation of the slope stability. CES performed slope stability calculations, and direct sheer testing to support the design.

Denis recently worked with the City of Presque Isle and MDEP to address concerns that MDEP's Air Bureau had related to the potential need that the City's MSW landfill may need to obtain an Air Emission License. Denis conducted an evaluation of non-methane organic carbon emissions from the landfill and determined that NMOC emissions released from the landfill were below the threshold required for an air emission license. MDEP agreed with the evaluation and as a result an air emission license was not required for the City of Presque Isle's MSW landfill.

Updating Operations and Maintenance Manuals
Denis provides input on several updates to O&M Manuals to address facility specific changes. Updates to each of the O&M Manuals are prepared, submitted to the client for review, and then to MDEP for approval.

Engineering Consultant Services

Design of Current Landfills and Appurtenant Structures
Denis provides engineering services to a number of landfill clients related to the landfill design in accordance with the Solid Waste Regulations.

MDEP Licensing Services

Denis has prepared a wide array of landfill license applications for submittal to MDEP. Denis is intimately familiar with the Solid Waste Regulations and has worked closely with numerous clients and MDEP staff to accurately prepare the necessary licensing documents. Denis has experience in the preparation of full facility license, reduced procedure, permit by rule, amendments, and minor revision documents. Denis has also worked with clients and MDEP staff to prepare landfill applications, transfer station license applications, processing facility license applications, beneficial use license applications, and agronomic utilization license applications.

Water Quality Monitoring and Corrective Action

Denis has a working knowledge of 06 096 CMR Chapter 405 of the Solid Waste Regulations as they relate to Water Quality Monitoring Programs at solid waste facilities and has prepared and revised several Environmental Monitoring Plans (EMPs). Denis is also well versed in analyzing water quality data and has prepared evaluations for clients for submittal to MDEP with water quality monitoring reports. These evaluations have also formed the basis for corrective action plans for which Denis has prepared and submitted to MDEP.

The designs for the Presque Isle Landfill have included leachate collection, storage and transmission systems, Phased Final Cover System; storm water detention/sedimentation basin, and an access road to the upper lift. A proposed expansion design is currently underway which includes a composite liner, leachate collection and transmission, LFG collection and treatment, and storm water management.

Landfill Design & CQA

Denis has managed and served as the responsible engineer for several solid waste design projects during the past eight years at CES, Inc. Design projects have included soil and geosynthetic cover/liner systems, leachate collection, transmission and storage systems, landfill gas (LFG) management systems, storm water management systems, corrective action plans, and other related solid waste appurtenances. Clients have included the City of Presque Isle, City of Brewer, Town of Greenville, and Boralex. Prior to employment at CES, Inc., Denis managed the closure designs of three municipal solid/industrial waste landfills at Loring AFB. Due to their status as National Priority List (NPL) sites, the closure need to address both MDEP and EPA design standards. Denis' most recent design project was for the City of Presque Isle Solid Waste facility. This design included a four acre phased final cover system consisting of a LFG collection layer, barrier soil layer, 60 mil geomembrane, bi-planer geocomposite, and cover soils. The design also included storm water terraces and rip rap down spouts; redundant leachate collection system and tie-ins to the existing leachate system; and LFG venting system that will allow for an active collection and treatment system if necessary. Denis is serving as the Construction Quality Assurance (CQA) Project Manager for this construction project. The designs for the Presque Isle Landfill have also included leachate collection, storage and transmission system upgrades; new storm water detention/sedimentation basin; and an access road on the West slope to upper lift of the landfill. A proposed expansion design is currently underway which includes a composite liner system with leak detection; leachate collection and transmission system; LFG collection and treatment; and storm water management.

Compliance and Licensing Issues

Denis currently manages compliance consultation and licensing modifications for more than a dozen landfills within the State of Maine. Denis provides ongoing compliance advice to clients and is experienced in working with MDEP Solid Waste facility personnel to address ongoing issues that arise. Denis has experience in the preparation of new facility license, reduced procedure, permit by rule, amendments, and minor revision documents. Denis has also managed public benefit determination applications, transfer station license applications, processing facility license applications, beneficial use license applications, and agronomic utilization license applications. Denis is the project manager and responsible engineer for the City of Presque Isle license modification and public benefit determination to expand the facility.

Applicable State and Federal Regulations
Denis manages the environmental engineering department at CES. The following provide a listing of other regulations that potentially may apply to solid waste facilities.

Storm Water & Waste Discharge Licenses
Denis assisted the City of Presque Isle obtain a Waste Discharge License (WDL) for leachate and Maine Pollutant Discharge Elimination System (MEPDES) Multi-Sector General Permit for storm water discharges. Denis also assisted with the preparation of an SWPPP which was a condition to the facility's MEPDES permit. The SWPPP included measures to prevent or control the discharge of pollutants in storm water runoff at the facility.

Integrated Contingency Plan (ICP), Spill Prevention Control and Countermeasure (SPCC) & Facility Response Plan (FRP)
Denis has been Principal-in-charge/Project Manager for more than 50 ICPs, SPCC Plans, and FRPs. The ICPs that consolidated multiple response plans, required by EPA, the U.S. Coast Guard, MDEP, and OSHA, into "one plan" for ease of maintenance and use. The ICP was prepared following the guidelines of the National Response Team (NRT) as published in Federal Register. The ICP was reviewed by the Coast Guard and EPA and both agencies were substantially satisfied with the content of the plan. SPCC Plans and FRPs are prepared in accordance with 40 CFR Part 112. Clients include Webber, Cold Brook, PERC, Indeck, Boralex, Cities of Bangor and Presque Isle, and Towns of Orono, Mount Desert, and Bar Harbor.

Air Emissions Permitting & Reporting
Denis was the Project Manager and responsible engineer for the permitting and reporting required to address emissions from our industrial clients. Denis oversees and supervises CES staff that evaluated and assisted with the selection of the most cost effective emission control alternatives, assisted with the preparation of a Best Available Control Technology (BACT) analysis, and prepared the necessary documentation required to be submitted to the State of Maine's Department of Environmental Protection (MDEP) to obtain the facility's minor source Air Emission License.

Callahan Mine Superfund Site, OU 1 Remediation | Baileyville Maine
Denis was the Project Manager for the Callahan Mine OU 1 remediation project from 2010 and 2013 which involved the Residential Use Area, Mine Operations Area, Ore Pad, and Tailings Impoundment. Denis was the primary point of contact with the MDEP and was responsible for establishing the scope of work and budget, assigning resources, preparing project documents, managing the Construction Quality Assurance (CQA) program, and contract administration, and providing technical reviews and advice to the Department. The project documentation prepared by CES included CQA Plan, QAPP Addendum, Bid Documents, Technical Specifications, and a Waste Characterization Report.

Loring AFB Superfund Site | Loring, Maine
Prior to employment with CES, Denis managed environmental investigation and remediation projects for various contaminated sites at Loring Air Force Base from 1990 to 2000. During this timeframe, he worked closely with the MDEP, EPA, and Development Authority. Denis was involved in all phases of the CERCLA process including Preliminary Assessments, Site Inspections, Remedial Investigations, Feasibility Studies, Remedial Designs, and Remedial Actions. He was responsible for organizing and leading project meetings with USEPA, MDEP, USGS, USFW, consultants, and other technical personnel. Denis performed technical reviews of reports and participated in all technical discussions involving Work Plans, contamination assessments, risk assessments, applicable or relevant and appropriate requirements (ARARs), etc. Contaminated media included soil, sediment, surface water, and ground water. Contamination included both organic and inorganic parameters. The type of sites included landfills, ash disposal, drum disposal areas, quarry, tank farm, vehicle and aircraft maintenance areas, dry cleaner, fire training area, PCB transformers, and radioactive waste disposal. Denis was involved in the identification and evaluation of innovative techniques to investigate and remediate the sites.

CES INC

ATTACHMENT 9

DISCLOSURE STATEMENT

ATTACHMENT 9

DISCLOSURE STATEMENT

Provided in this Attachment is a Disclosure Statement from the owners and others that may have a legal interest in the proposed project as described in Chapter 400, Section 12.A of the Maine Solid Waste Regulations.

This Disclosure Statement has been prepared to address each of the Subsections listed in 06-096 CMR Chapter 400, Section 12.A. Where applicable, each section provides the information for both MRC and Fiberight.

Criminal or Civil Record. *The Department may refuse to grant, or approve the transfer of, a license for a solid waste facility or activity if it finds that the owner or the operator or any person having a legal interest in the applicant or the facility has been convicted of any criminal law or adjudicated or otherwise found to have committed any civil violation of environmental laws or rules of the State, other states, the United States, or another country. Such an adjudication or finding can be by means of a court order or consent decree, or by means of an administrative order or agreement.*

A. Full Disclosure

(1) ***Persons****. All applicants for a new or amended license, or transfer of a solid waste license, shall submit, at the time of application, a disclosure statement with the Department containing information about the following persons:*

(a) The individual applicant; or

(b) If the applicant is a business entity:

(i) Any officers, directors, and partners;

Municipal Review Committee (MRC)

The applicant is Municipal Review Committee, Inc., (MRC) a non-profit corporation formed, pursuant to state law, in 1991 to ensure the continuing availability to its members of long term, reliable, safe, and environmentally sound methods of solid waste disposal at a stable and reasonable cost. A listing of officers and directors is included in this Attachment.

Fiberight, LLC

Fiberight, LLC is a Delaware limited liability company with a main office in Baltimore Maryland. A listing of officers and directors is included in this Attachment.

(ii) All other persons or business concerns, having managerial or executive authority and holding more than 5 percent of the equity in or debt of that business unless the debt is held by a chartered lending institution;

<u>MRC</u>

Managerial and executive authority rests with the MRC officers and directors. The MRC is a nonprofit entity. No officer or director holds any equity or debt in the business entity.

<u>Fiberight, LLC</u>

Managerial and executive authority rests with the Fiberight officers and directors. No officer or director holds any equity or debt in the business entity.

(iii) All other persons or business concerns other than a chartered lending institution having a 25 percent or greater financial interest in the applicant; and

No person or business concern holds a financial interest in the MRC or Fiberight, LLC.

(iv) The managerial person with operational responsibility for the facility or activity; or

Craig Stuart-Paul, President and CEO of Fiberight, LLC will have the overall operational responsibility of the proposed Hampden, Maine Facility.

(c) If the applicant is a public entity, all persons having managerial or executive authority over the solid waste facility or activity.

<u>Municipal Review Committee (MRC)</u>

The MRC will not have managerial or executive authority over the solid waste facility. The MRC will own the land upon which the project will be constructed. That land will be leased to Fiberight which will construct and operate the project.

(2) ***Applicant Information****. The full name, business address, home address, date of birth, social security number (if requested) and Federal Employer Identification number of the persons required to disclose under this section;*

The full name, business address, home address, date of birth of those required to disclose is included in this Attachment.

Municipal Review Committee, Inc. **395 State Street** **Ellsworth, ME 04605**	**Fiberight, LLC** **1450 South Rolling Road** **Baltimore, MD 21227**
EIN Number: 01-0468832	**EIN Number: 77-0700865**

(3) ***Related Companies****. The full name and business address of any company that collects, transports, treats, stores, or disposes of solid waste or hazardous waste in which any of the persons required to disclose under this section holds at least a 5% equity interest;*

NONE

(4) ***Criminal Convictions***. *A listing and explanation of any criminal convictions of the State, other states, the United States, or another country of the persons required to disclose under this section;*

Municipal Review Committee (MRC)

Below is a description of the conviction that turned up via SBI background check:

Charles P. Reeves; misdemeanor conviction for unlawful trafficking in scheduled drugs (charge class D); date of disposition: 1991-10-07; Hancock County Superior Court.

(5) ***Civil Violations***. *A listing and explanation of any adjudicated civil violations of environmental laws or rules administered by the State, other states, the United States, or another country by any of the persons required to disclose under this section in the 5 years immediately preceding the filing of the application;*

NONE

(6) ***Consent Decrees and Administrative Orders or Agreements***. *A listing and explanation of administrative agreements or consent decrees entered into by, or administrative orders directed at, any of the persons required to disclose under this section for violations of environmental laws administered by the Department, the State, other states, the United States or another country in the 5 years immediately preceding the filing of the application;*

NONE

(7) ***Other Proceedings***. *A listing and explanation of any ongoing court proceeding, administrative consent agreement negotiation, or similar ongoing administrative enforcement action not already provided in which the applicant or any of the persons required to disclose under this section is a party and which concerns environmental laws administered by the Department or the State; and*

NONE

(8) ***Other Information***. *A listing of any agencies outside of Maine that have regulatory responsibilities over the applicant in connection with its collection, transportation, treatment, storage or disposal of solid or hazardous wastes and any other information required by the Department or the Office of the Attorney General that relates to the enforcement history or character of the applicant.*

Fiberight, LLC

The Virginia Department of Environmental Quality has regulatory responsibility over the Fiberight, LLC processing facility located in Lawrenceville, Virginia.

Municipal Review Committee, Inc. 2015

Board of Directors & Officers

January 2013 to December 2015		
Catherine Conlow City Manager City of Bangor 73 Harlow Street Bangor, Maine 04401 Voice: 992-4200 FAX: 945-4449 cathy.conlow@bangormaine.gov	**Karen Fussell** Finance Director City of Brewer 80 North Main Street Brewer, Maine 04412 Voice: 989-8440 FAX: 989-8435 kfussell@brewermaine.gov	**Tony Smith** Director of Public Works Town of Mount Desert PO Box 248 Northeast Harbor, Maine 04662-0248 Voice: 276-5743 FAX: 276-5742 director@mtdesert.org
January 2014 to December 2016		
Elery Keene Executive Director, KVCOG (retired) 3 Pat Street Winslow, Maine 04901 Voice: 872-5231 [no fax] wekeene@me.acadia.net	**Jim Guerra** Manager Mid Coast Solid Waste Corp 90 Union Street P.O. Box 1016 Rockport, Maine 04856 Voice: 236-2467 FAX: mcswc@roadrunner.com	**Chip Reeves - President** Director of Public Works 50 Public Works Way Bar Harbor, Maine 04609 Voice: 288-1026 FAX: 288-0961 chip@barharbormaine.gov
January 2015 to December 2017		
Ken Fletcher Town Councilor Town of Winslow 382 Garland Road Winslow, Maine 04901 Voice:872-6760 [no FAX] fletcher2@roadrunner.com	**Joshua Reny – Vice President** Town Manager Town of Fairfield 19 Lawrence Ave PO Box 149 Fairfield, Maine 04937-0149 Voice: 453-7911 FAX: 453-4280 jreny@fairfieldme.com	**Sophia Wilson - Treasurer** Town Manager Town of Orono 59 Main Street Orono, Maine 04473 Voice: 889-6905 FAX: 866-5053 sophiew@orono.org

Municipal Review Committee
Board of Directors (except as otherwise noted)

Name	**Address**	**DOB**
Cathy Conlow	85 Heather Road Bangor, ME 04401	04/09/1965
Ken Fletcher	382 Garland Road Winslow, ME 04901	10/28/1945
Karen Fussell	362 Dow Road Orrington, ME 04474	09/25/1967
Jim Guerra	591 Camden Road Hope, ME 04847	09/10/1957
Elery Keene	3 Pat Street Winslow, ME 0491	10/03/1933
Greg Lounder (Executive Director)	57 Toashuh Way Ellsworth, ME 04605	09/04/1965
Charles “Chip” Reeves	162 Crooked Road Bar Harbor, ME 04653	05/20/1963
Josh Reny	42 Military Avenue Fairfield, ME 04937	05/12/1981
Tony Smith	182 Oak Hill Road Mount Desert, ME 04660	02/18/1956
Sophie Wilson	33 College Heights Orono, ME 04473	05/21/1971

Fiberight, LLC
Board of Directors (except as otherwise noted)

Name	**Home Address**	**Business Address**	**DOB**
Richard J. Golden	3 Drumlin Road Weston, MA 02493	Golden Opportunity Consulting, LLC 3 Drumlin Road Weston, MA 02493	3/17/1953
James N. Reddish	1927 Poole Lane McLean, Virginia 22101	James N Reddish Managing Director VentureCross Partners, LLC P.O. Box 972 Great Falls, Virginia 22066	11/24/1951
Philip B. Sheibley	281 Turtle Back Road New Canaan, CT 06840	NA-Retired	11/5/1958
Craig Stuart-Paul (CEO, Fiberight, LLC)	107 Forest Drive Catonsville, MD 21228	Fiberight, LLC 1450 South Rolling Road Baltimore, MD 21227	04/14/1965

CES INC

ATTACHMENT 10

OTHER AUTHORIZATIONS

ATTACHMENT 10

OTHER AUTHORIZATIONS

In addition to a Solid Waste Processing License, MRC and Fiberight will be required to obtain a building and plumbing permit from the Town of Hampden to construct the proposed processing facility. These permits are expected to be obtained by the end of 2015 after the completion of the Town's Site Plan Review and approval.

A Highway Entrance permit has been issued by the Maine Department of Transportation (MDOT). A copy of the Entrance Permit has been included in Attachment 15 of this Application.

A MDEP Air Emission License will be necessary to operate the boilers utilized in support of the processing facility. An application in this respect has been prepared and submitted to MDEP.

A MDEP Stormwater Management License pursuant to 06-096 CMR Chapter 500 will need to be issued prior to construction of the access road leading to the proposed processing facility. An application in this respect has been submitted to MDEP.

Natural resource work at the site has been completed. Impacts to protected natural resources are anticipated from the development of the access road, infrastructure, and processing facility, and will be addressed by obtaining all necessary approvals pursuant to *38 M.R.S.A. section 480-A et seq*. An MDEP Natural Resource Protection Act permit application has been submitted to MDEP and U.S. Army Corps of Engineers. Refer to Attachments 11 and 19 for more information related to Natural Resources.

ATTACHMENT 11

FITTING HARMONIOUSLY INTO THE NATURAL ENVIRONMENT

ATTACHMENT 11

FITTING HARMONIOUSLY INTO THE NATURAL ENVIRONMENT

Identify all unusual natural areas on or adjacent to the facility site and include evidence that affirmatively demonstrates that the proposed facility will not unreasonably adversely affect protected natural resources. Also, submit information confirming that the waste handling area at the proposed facility will not be:

(a) Closer than 100 feet to the solid waste boundary of an active, inactive or closed solid waste landfill;

There are no active, inactive or closed landfills within 100 feet of the proposed facility. See Site Design Information in Attachment 12.

(b) Within a 100 year flood plain;

The processing facility is not located within a 100 year flood plain. See Flood Plain Map in Attachment 21.

(c) Within 100 feet of a protected natural resource;

The facility has been designed and sited to avoid and minimize impacts to protected natural resources. See Site Design Information in Attachment 12.

There are no coastal sand dune systems, coastal wetlands, fragile mountain areas, or great ponds within the property boundary.

Copies of consultation letters from the Maine Department of Inland Fisheries and Wildlife and the Maine Natural Areas Program have been included in Attachment 16.

CES has also completed all natural resource work during the appropriate 2015 season. Impacts to protected natural resources will be addressed by obtaining a permit pursuant to 38 M.R.S.A. section 480-A et seq, as required. An MDEP Natural Resources Protection Act permit application(s) has be submitted concurrently with this Application to the MDEP and the U.S. Army Corps of Engineers.

(d) In, on or over a protected natural resource, or on land adjacent to the following areas, without first obtaining a permit pursuant to 38 M.R.S.A. section 480-A et seq.:

(i) A coastal wetland, great pond, river, stream or brook, or significant wildlife habitat contained within a freshwater wetland; or

(ii) Freshwater wetlands consisting of or containing:
-under normal circumstances, at least 20,000 square feet of aquatic vegetation, emergent marsh vegetation or open water, except for artificial ponds or impoundments or
-peatlands dominated by shrubs, sedges and sphagnum moss;

Impacts in, on, over, or adjacent to a coastal wetland or great pond are not proposed.

Impacts in, on, over or adjacent to resources listed in (ii) are not proposed.

Natural resource work has been completed at the Site. The development of the access roads, infrastructure, and processing facility will require alterations to freshwater wetlands, significant wildlife habitat and other protected natural resources. These will be addressed by obtaining a permit pursuant to 38 M.R.S.A. section 480-A et seq. See information presented in Section (c) above.

(e) Closer than 300 feet to off-site water supply wells or water supply springs;

There are no active water supply wells or springs located within 300 feet of the facility. See Site Design Information in Attachment 12.

(f) Closer than 100 feet to public roads and property boundaries;

The facility is not located within 100 feet of any property boundary or public road. See Site Design Information in Attachment 12.

(g) Closer than 10,000 feet to any airport runway used by turbojet aircraft, or within 5,000 feet of any airport runway used by only piston-type aircraft, when putrescible waste is to be handled outdoors in an uncovered or exposed condition; and

The facility is located greater than 10,000 feet from the Bangor International Airport. Putrescible wastes are not proposed to be handled or stored outdoors.

(h) Closer than 500 feet to residences in existence at the time the application is filed, other than residences owned by the facility owner or operator.

The facility is not located closer than 500 feet to any abutting residents. See Site Design Information in Attachment 12.

CES INC

ATTACHMENT 12

SITE DESIGN INFORMATION

ATTACHMENT 12

SITE DESIGN INFORMATION

SITE PLAN

Refer to the attached *Overall Site Plan* showing the area within 500 feet of the solid waste handling areas showing all structures; protected natural resources; roads; property boundaries; receiving, processing, curing (NA) and storage areas; residences; erosion and sedimentation control features; odor control structures (NA); water supply wells and springs; water quality monitoring points (SW monitoring point); and barriers or fencing and gates to prevent unauthorized persons access to the site.

PLAN VIEWS

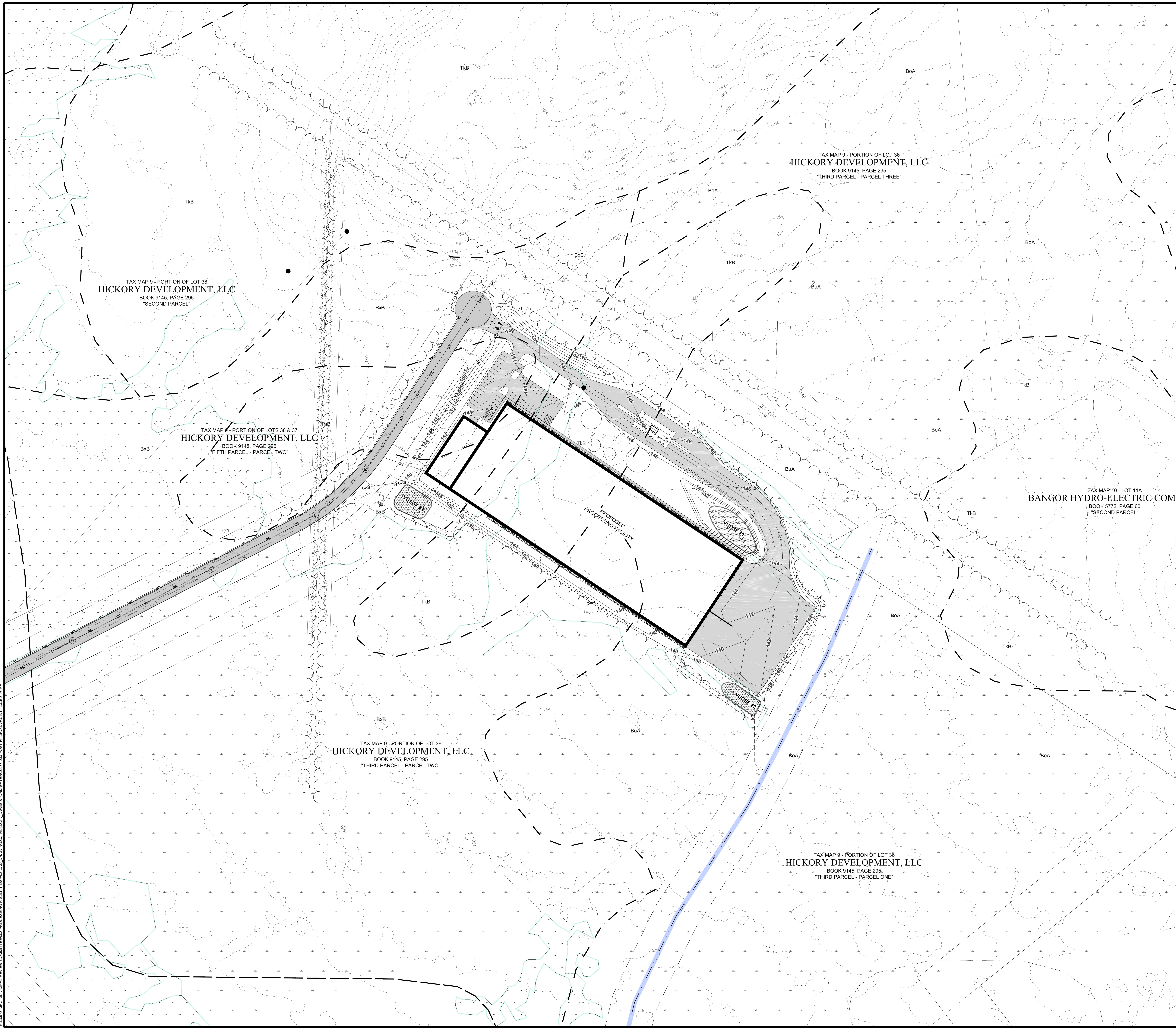
Refer to the attached *Proposed Site Plan* depicting the buildings; processing unit(s); utilities; and storm water and erosion and sedimentation control structures.

SUBSURFACE INVESTIGATION INFORMATION

A subsurface investigation has been completed by SW Cole, Inc. (SW Cole) as part of this project to evaluate that soil bearing capacity is sufficient to support the proposed processing facility. Included in this Attachment is a letter from SW Cole which provides the results of the soil borings and the preliminary findings. A final report from SW Cole is anticipated in June 2015.

AQUIFER MAP

Attached is a copy of the most recent Maine Geological Survey *Significant Sand and Gravel Aquifer Map* with the facility site and the waste handling area clearly delineated.



LEGEND:

UTILITY POLE	
OVERHEAD UTILITY	OHU
SANITARY SEWER	SS
WATER LINE	WL
EDGE OF GRAVEL	
EDGE OF PAVEMENT	
PROPERTY LINE	
1 FOOT CONTOUR	397
5 FOOT CONTOUR	395
SOILS BOUNDARY	
GAS LINE	GAS
APPROXIMATE WETLAND BOUNDARY	
APPROXIMATE STREAM LOCATION	
TREELINE	
GRAVEL SURFACE	
PAVED SURFACE	
WETLAND	
SOILS TYPE	BoA

OVERALL SITE PLAN
FOR
SOLID WASTE PROCESSING FACILITY
HAMPDEN, MAINE

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

CES INC
Engineers • Environmental Scientists • Surveyors

Brewer
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PO Box 639
Brewer, ME
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F.207-989-4881

Presque Isle
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F.207-680-2204

Machias
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T.207-255-3270
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Bar Harbor
1366 State Hwy 102
Bar Harbor, ME
T.207-288-0587
F.207-288-0588

Lewiston
640 Main Street
Lewiston, ME
T.207-795-6009
F.207-795-6128

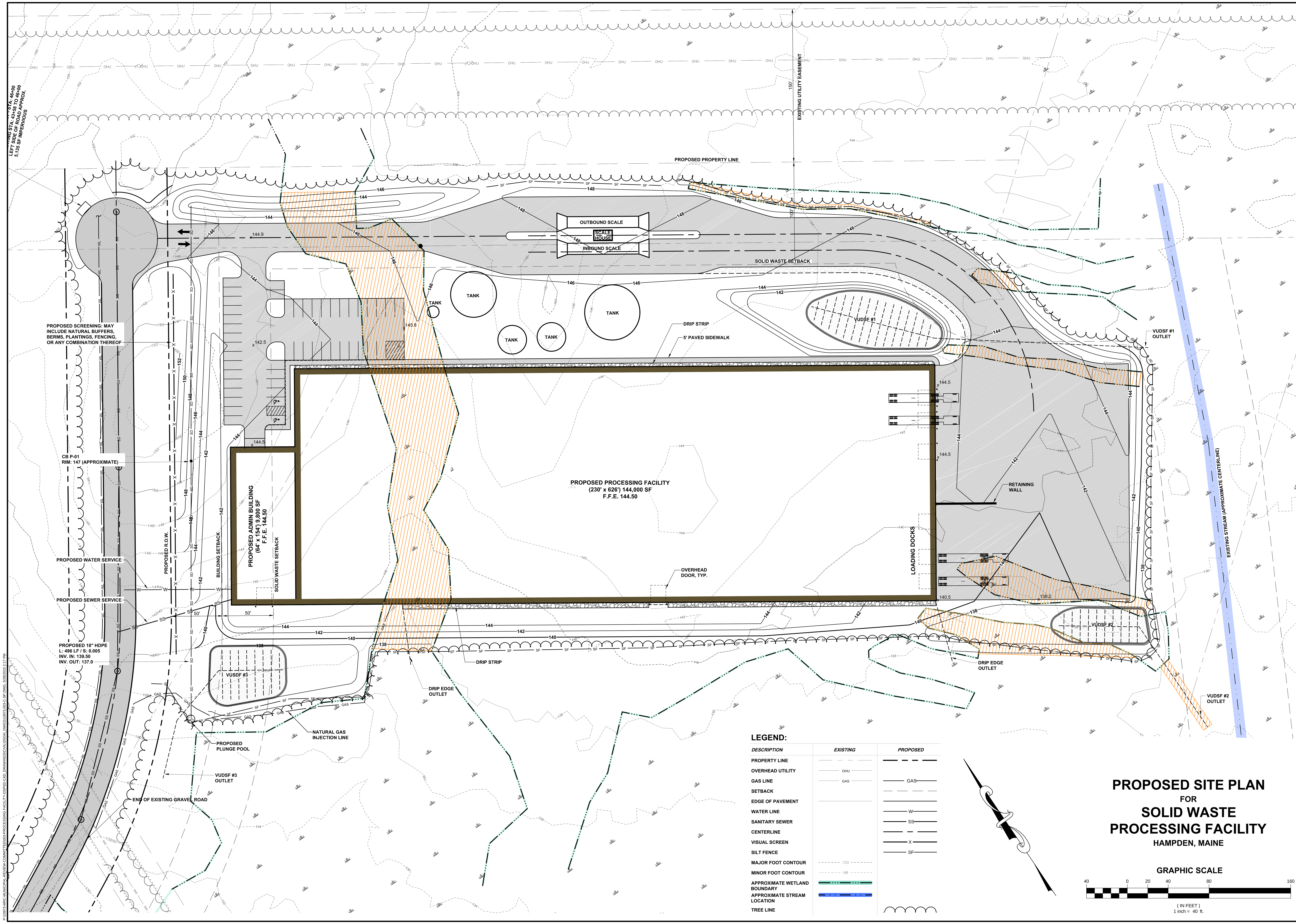
PROJECT TITLE
MRC / FIBERIGHT SOLID WASTE PROCESSING FACILITY
HAMPDEN, MAINE

SHEET TITLE
OVERALL SITE PLAN

REV.	DESCRIPTION	DATE	DRAWN BY	CHECKED BY
R1				
R2				
R3				
R4				
R5				
R6				
R7				

STATE OF MAINE
SEAN M. THIES
No. 10139
5-13-2015
LICENSED
PROFESSIONAL ENGINEER
ISSUED FOR PERMITTING

SCALE	1"=100'
DATE	2015-05-11
DRAWN BY: BLQ	CHECKED BY: ACH/SMT
DESIGNED BY: CTM	APPROVED BY: SMT
JOB NUMBER	10973.003
DRAWING NUMBER	C102



LEGEND:

DESCRIPTION	EXISTING	PROPOSED
PROPERTY LINE		
OVERHEAD UTILITY	OHU	
GAS LINE	GAS	GAS
SETBACK		
EDGE OF PAVEMENT		
WATER LINE		W
SANITARY SEWER		SS
CENTERLINE		
VISUAL SCREEN		X
SILT FENCE		SF
MAJOR FOOT CONTOUR	100	
MINOR FOOT CONTOUR	98	
APPROXIMATE WETLAND BOUNDARY		
APPROXIMATE STREAM LOCATION		
TREE LINE		

PROPOSED SITE PLAN

FOR

SOLID WASTE PROCESSING FACILITY

HAMPDEN, MAINE

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

CES INC
Engineers • Environmental Scientists • Surveyors

Brewer
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T.207-288-0587
F.207-288-0588

Lewiston
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Lewiston, ME
T.207-795-6009
F.207-795-6128

PROJECT TITLE
MRC / FIBERIGHT SOLID WASTE PROCESSING FACILITY
HAMPDEN, MAINE

SHEET TITLE
PROPOSED SITE PLAN

REV.	DESCRIPTION	DATE	DRAWN BY	CHECKED BY
R1				
R2				
R3				
R4				
R5				
R6				
R7				

STATE OF MAINE
SEAN M. THIES
No. 10139
5-13-2015
LICENSED
PROFESSIONAL ENGINEER

ISSUED FOR PERMITTING

SCALE	1"=40'
DATE	2015-05-12
DRAWN BY BLQ	CHECKED BY SMT
DESIGNED BY BLQ/SMT	APPROVED BY SMT
JOB NUMBER	10973.003
DRAWING NUMBER	C101

15-0024 S

May 12, 2015

CES, Inc.
Attention: Mr. Sean Thies, P.E.
465 South Main Street
P.O. Box 639
Brewer, ME 04412

Subject: Preliminary Report of Findings
Explorations and Geotechnical Engineering Services
Proposed MRC Facility
Hampden, Maine

Dear Sean,

As requested, we are providing this Preliminary Report of Findings relative to our explorations and geotechnical engineering services work that is underway for the Proposed MRC Facility in Hampden.

Explorations

Twenty-seven test borings and forty-six auger probes were made on the site during the period April 28, 2015 through May 1, 2015. The explorations were made by S.W.COLE Explorations, LLC (a division of S. W. Cole Engineering, Inc.). Test Borings B-1 through B-26 were made at the building site and the auger probes were made along the entrance drive at approximately 100-foot intervals. Test Boring B-27 was made at the proposed pump station located adjacent to the entrance drive (Station 25+00, 25' right). The test boring locations were selected by S. W. Cole Engineering Inc. (S.W.COLE) and located at the site by CES, Inc. The entrance drive stationing was marked in the field by CES, Inc. prior to the auger probe work. Draft test boring logs and a table providing auger probe data are attached. Ground surface elevations noted on the test boring logs were provided by CES, Inc.

Site and Subsurface Conditions

The proposed building site is wooded. The ground surface elevation ranges from about 138 to 148 feet within the proposed building area. The ground surface elevation within the majority of the building area ranges from about 142 to 144 feet. Numerous boulders were observed on the ground surface within the central portion of the building area and north of the building where the exterior tanks and truck scale are planned.

The test borings made in the area of the proposed building encountered either medium dense and dense glacial till soil or silty clay soil overlying medium dense and dense glacial till soil. The silty clay soils are mostly hard to very stiff consistency. The clays become soft and compressible with depth in the easterly portion of the site. Soft clay was encountered at the northeasterly building corner (Test Boring B-19) at a depth of 8.5 to 10.9 feet below the existing ground surface. The test borings encountered refusal (probable bedrock) at elevations ranging from about 121.5 feet in the southerly portion of the site to 142 feet in the northerly portion of the site.

Groundwater was observed in the majority of the test borings. The average groundwater elevation observed during drilling was approximately 136 feet. Groundwater levels will fluctuate seasonally and may become perched at shallower depths during seasonally wet periods.

Auger probes were made at approximately 100-foot intervals along the proposed entrance drive to explore bedrock conditions for a new sanitary sewer line. The explorations were advanced below proposed excavation depths. Auger Probes P-39, P-41, and P-46 encountered refusal (probable bedrock) at depths of 7.5, 4.0, and 5.5 feet, respectively. The remaining auger probes did not encounter refusal.

Preliminary Recommendations

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. The principle geotechnical considerations are as follows:

- Perimeter frost walls, spread footing foundations and a slab-on-grade floor bearing on properly prepared subgrades appear suitable for the proposed building.
- Footings should bear on at least 12 inches of compacted Crushed Stone wrapped in geotextile fabric overlying undisturbed native soils.
- The on-grade floor slab should bear on at least 12 inches of properly compacted Structural Fill overlying properly prepared subgrades.

- Bedrock was encountered near anticipated foundation grade in the proposed exterior tank area and along a relatively short section of the northerly building wall. Bedrock was also encountered near anticipated excavation depths along the proposed sanitary sewer line below the northerly portion of the entrance drive. We recommend that a contingency be made for bedrock removal by drilling and blasting.
- Project design should incorporate underdrains near the perimeter footing grade as well as underdrains adjacent to paved areas.

Closure

Additional auger probes are scheduled to be completed along the proposed utility corridor to Ammo Industrial Park. We will continue our evaluation and prepare the final report in the coming weeks. Let us know if you have any questions in the meantime.

Sincerely,

S. W. Cole Engineering, Inc.

Kevin J. Hanscom
Geotechnical Engineer

Robert E. Chaput Jr., P.E.
Senior Geotechnical Engineer

KJH:rec

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.:	B-1
SHEET:	1 OF 1
PROJECT NO.:	15-0024 S
DATE START:	4/28/2015
DATE FINISH:	4/28/2015
ELEVATION:	141.2' +/-
SWC REP.:	KJH

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: BOB MARCOUX

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									1.0'	TOPSOIL
	1D	24"	12"	2.0'	2	2	6	7		BROWN GRAVELLY SILTY SAND (GLACIAL TILL)
	2D	8"	8"	2.7'	13	50/2"			2.6'	
									3.9'	WEATHERED BEDROCK
										AUGER REFUSAL @ 3.9' (PROBABLE BEDROCK)

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

2

BORING NO.: B-1

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-2**
SHEET: 1 OF 1
PROJECT NO.: 15-0024 S
DATE START: 4/28/2015
DATE FINISH: 4/28/2015
ELEVATION: 140.7' +/-
SWC REP.: KJH

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC
DRILLER: BOB MARCOUX

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER @ 7.0' AT COMPLETION OF BORING

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									0.8'	TOPSOIL
	1D	24"	18"	2.0'	1	1	2	3		BROWN SANDY SILT
									2.8'	~ LOOSE ~
	2D	24"	24"	4.0'	6	9	10	10		q_p = 8.5-9+ ksf
										BROWN SILTY CLAY
										~ HARD CONSISTENCY BECOMING VERY STIFF WITH DEPTH ~
	3D	24"	24"	7.0'	4	6	7	9	7.2'	q_p = 5 ksf
										BROWN GRAVELLY SILTY SAND (GLACIAL TILL)
	4D	16"	14"	11.3'	10	12	50/4"		11.3'	~ MEDIUM DENSE ~
										SPLIT SPOON AND AUGER REFUSAL @ 11.3'
										(PROBABLE BEDROCK)

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

3

BORING NO.: **B-2**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.:	**B-3**
SHEET:	1 OF 1
PROJECT NO.:	15-0024 S
DATE START:	4/28/2015
DATE FINISH:	4/28/2015
ELEVATION:	142.6' +/-
SWC REP.:	KJH

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: BOB MARCOUX

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER @ 4.5' AT COMPLETION OF BORING

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									0.8'	TOPSOIL
	1D	24"	21"	2.0'	1	2	5	6		q_p = 9+ ksf
										BROWN SILTY CLAY
	2D	24"	24"	7.0'	4	7	7	18		q_p = 8.5-9 ksf
										~ HARD CONSISTENCY BECOMING VERY STIFF WITH DEPTH ~
										q_p = 6.5-7 ksf
	3D	24"	24"	11.5'	4	7	7	18	11.2'	
										BROWN GRAVELLY SILTY SAND WITH COBBLES (GLACIAL TILL)
	4D	24"	10"	16.0'	7	16	31	33		~ DENSE ~
									17.7'	
										AUGER REFUSAL @ 17.7' (PROBABLE BEDROCK)

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

4

BORING NO.: **B-3**

BORING LOG

S.W.COLE ENGINEERING, INC.

BORING NO.:	B-4
SHEET:	1 OF 1
PROJECT NO.:	15-0024 S
DATE START:	4/28/2015
DATE FINISH:	4/28/2015
ELEVATION:	141.9' +/-
SWC REP.:	KJH

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: BOB MARCOUX

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									1.0'	TOPSOIL
	1D	24"	3"	2.0'	1	1	2	4		
	2D	24"	20"	4.0'	8	13	16	15		BROWN GRAVELLY SILTY SAND WITH COBBLES (GLACIAL TILL)
										~ MEDIUM DENSE ~
	3D	24"	19"	7.0'	9	10	9	10		
									7.8'	
										AUGER REFUSAL @ 7.8' (PROBABLE BEDROCK)

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

5

BORING NO.: B-4

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.:	B-5
SHEET:	1 OF 1
PROJECT NO.:	15-0024 S
DATE START:	4/28/2015
DATE FINISH:	4/28/2015
ELEVATION:	147.7' +/-
SWC REP.:	KJH

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC   DRILLER: BOB MARCOUX

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									0.7'	TOPSOIL
	1D	24"	14"	2.0'	1	4	3	3		BROWN GRAVELLY SILT AND SAND (GLACIAL TILL) ~ MEDIUM DENSE ~
	2D	24"	23"	4.0'	8	14	8	8	5.0'	
	3D	24"	15"	7.0'	5	9	13	13		BROWN GRAVELLY SILTY SAND WITH COBBLES (GLACIAL TILL) ~ MEDIUM DENSE ~
	4D	23"	14"	10.9'	4	13	18	50/5"	10.9'	
										SPLIT SPOON AND AUGER REFUSAL @ 10.9' (PROBABLE BEDROCK)

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

6

BORING NO.: B-5

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.:	**B-6**
SHEET:	1 OF 1
PROJECT NO.:	15-0024 S
DATE START:	4/28/2015
DATE FINISH:	4/28/2015
ELEVATION:	146.6' +/-
SWC REP.:	KJH

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC   DRILLER: BOB MARCOUX

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER @ 9.5' AT COMPLETION OF BORING

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									0.8'	TOPSOIL
	1D	24"	24"	2.0'	2	5	7	8		BROWN SILTY CLAY
									2.6'	~ VERY STIFF CONSISTENCY ~ q_p = 5-6 ksf
	2D	24"	19"	4.0'	5	32	35	42		
										~ DENSE ~
	3D	24"	12"	7.0'	13	23	20	25		BROWN GRAVELLY SILTY SAND WITH COBBLES (GLACIAL TILL)
										~ MEDIUM DENSE ~
	4D	24"	16"	12.0'	6	13	12	15		
									13.9'	
										AUGER REFUSAL @ 13.9'
										(PROBABLE BEDROCK)

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

7

BORING NO.: **B-6**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.:	B-7
SHEET:	1 OF 1
PROJECT NO.:	15-0024 S
DATE START:	4/28/2015
DATE FINISH:	4/28/2015
ELEVATION:	148.0' +/-
SWC REP.:	KJH

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: BOB MARCOUX

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER @ 3.0' AT COMPLETION OF BORING

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									0.9'	TOPSOIL
	1D	24"	21"	2.0'	1	2	4	7		BROWN SILTY CLAY
									3.4'	~ VERY STIFF CONSISTENCY ~ q_p = 7-8 ksf
	2D	24"	24"	4.0'	7	9	15	21		
	3D	24"	21"	6.0'	8	18	18	20		
										BROWN GRAVELLY SILTY SAND WITH COBBLES (GLACIAL TILL)
										~ DENSE ~
									10.7'	
	4D	24"	19"	11.0'	8	20	32	37	11.0'	WEATHERED BEDROCK
										BOTTOM OF EXPLORATION @ 11.0'

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

8

BORING NO.: B-7

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-8**
SHEET: 1 OF 1
PROJECT NO.: 15-0024 S

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC   DRILLER: BOB MARCOUX

DATE START: 4/28/2015
DATE FINISH: 4/28/2015
ELEVATION: 147.6' +/-
SWC REP.: KJH

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									0.9'	TOPSOIL
	1D	24"	24"	2.0'	4	6	8	10		BROWN SILTY CLAY
									3.6'	~ HARD CONSISTENCY ~ q_p = 9+ ksf
	2D	23"	13"	4.0'	3	3	4	50/5"		
										BROWN GRAVELLY SILTY SAND WITH COBBLES (GLACIAL TILL)
	3D	24"	23"	7.0'	9	24	26	36		
										~ DENSE ~
	4D	8"	1"	10.2'	13	50/2"			10.2'	
										SPLIT SPOON REFUSAL @ 10.2' (PROBABLE BEDROCK)

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

9

BORING NO.: **B-8**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-9**
SHEET: 1 OF 1
PROJECT NO.: 15-0024 S
DATE START: 4/29/2015
DATE FINISH: 4/29/2015
ELEVATION: 144.7' +/-
SWC REP.: KJH

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: BOB MARCOUX

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									1.1'	TOPSOIL
										BROWN GRAVELLY SILTY SAND WITH COBBLES (GLACIAL TILL)
	1D	24"	17"	4.0'	8	11	15	20		
										~ MEDIUM DENSE ~
	2D	12"	6"	6.0'	10	14	50/0"		6.0'	
										SPLIT SPOON AND AUGER REFUSAL @ 6.0' (PROBABLE BEDROCK)

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

10

BORING NO.: **B-9**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-10**
SHEET: 1 OF 1
PROJECT NO.: 15-0024 S

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: BOB MARCOUX

DATE START: 4/29/2015
DATE FINISH: 4/29/2015
ELEVATION: 144.5' +/-
SWC REP.: KJH

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER @ 4.0' AFTER COMPLETION OF BORING

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									1.0'	TOPSOIL
	1D	24"	16"	3.0'	2	7	14	10		
										BROWN GRAVELLY SILTY SAND WITH COBBLES (GLACIAL TILL)
	2D	24"	20"	6.0'	8	13	48	35		~ DENSE ~
										~ MEDIUM DENSE ~
	3D	24"	22"	11.0'	7	10	13	12		
									12.0'	
										AUGER REFUSAL @ 12.0' (PROBABLE BEDROCK)

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

11

BORING NO.: **B-10**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-11**
SHEET: 1 OF 1
PROJECT NO.: 15-0024 S

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC
DRILLER: BOB MARCOUX

DATE START: 4/29/2015
DATE FINISH: 4/29/2015
ELEVATION: 144.6' +/-
SWC REP.: KJH

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER @ 12.4' IN AUGERS

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									0.8'	TOPSOIL
	1D	24"	5"	2.0'	1	3	4	5		
	2D	24"	18"	4.0'	6	12	11	10		BROWN GRAVELLY SILTY SAND WITH COBBLES (GLACIAL TILL)
	3D	24"	14"	6.0'	5	9	11	12		~ MEDIUM DENSE ~
	4D	24"	13"	11.0'	15	12	16	17		
	5D	5"	3"	14.2'	50/5"				14.2'	
										SPLIT SPOON AND AUGER REFUSAL @ 14.2' (PROBABLE BEDROCK)

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

12

BORING NO.: **B-11**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.:	**B-12**
SHEET:	1 OF 1
PROJECT NO.:	15-0024 S
DATE START:	5/1/2015
DATE FINISH:	5/1/2015
ELEVATION:	145.1 +/-
SWC REP.:	KJH

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.

LOCATION: HAMPDEN, MAINE

DRILLING CO. : S.W.COLE EXPLORATIONS, LLC   DRILLER: BOB MARCOUX

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION

WATER @ 9.2' IN AUGERS

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									0.8'	TOPSOIL
	1D	24"	14"	4.0'	5	17	33	34		BROWN GRAVELLY SILTY SAND WITH COBBLES (GLACIAL TILL)
	2D	24"	13"	6.0'	17	29	19	27		~ DENSE ~
	3D	24"	12"	11.0'	10	22	18	17	12.5'	
										AUGER REFUSAL @ 12.5' (PROBABLE BEDROCK)

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

13

BORING NO.: **B-12**

BORING LOG

S.W.COLE ENGINEERING, INC.

BORING NO.:	**B-13**
SHEET:	1 OF 1
PROJECT NO.:	15-0024 S
DATE START:	4/29/2015
DATE FINISH:	4/29/2015
ELEVATION:	146.7' +/-
SWC REP.:	KJH

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: BOB MARCOUX

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA & TEST DATA
	NO.	PEN.	REC.	DEPTH @ BOT	0-6	6-12	12-18	18-24		
									0.9'	TOPSOIL
										BROWN GRAVELLY SILTY SAND WITH COBBLES (GLACIAL TILL)
	1D	24"	17"	4.0'	12	26	20	22		
	2D	10"	5"	5.0'	13	50/4"			5.0'	~ DENSE ~
										SPLIT SPOON AND AUGER REFUSAL @ 5.0' (PROBABLE BEDROCK)

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:

	DRILLER - VISUALLY
X	SOIL TECH. - VISUALLY
	LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

14

BORING NO.: **B-13**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-14**
SHEET: 1 OF 1
PROJECT NO.: 15-0024 S

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC   DRILLER: BOB MARCOUX

DATE START: 4/29/2015
DATE FINISH: 4/29/2015
ELEVATION: 144.4' +/-
SWC REP.: KJH

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									1.0'	TOPSOIL
	1D	24"	22"	4.0'	4	6	8	8		BROWN SILTY CLAY q_p = 9+ ksf
										~ HARD CONSISTENCY BECOMING VERY STIFF WITH DEPTH ~
	2D	24"	24"	7.0'	3	6	6	16	6.8'	q_p = 4.5-5.5 ksf
										BROWN GRAVELLY SILTY SAND WITH COBBLES (GLACIAL TILL)
										~ MEDIUM DENSE ~
	3D	24"	15"	12.0'	10	10	12	13	12.5'	
										AUGER REFUSAL @ 12.5' (PROBABLE BEDROCK)

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

15

BORING NO.: **B-14**

BORING LOG

S.W.COLE ENGINEERING, INC.

BORING NO.: **B-15**
SHEET: 1 OF 1
PROJECT NO.: 15-0024 S
DATE START: 4/28/2015
DATE FINISH: 4/28/2015
ELEVATION:
SWC REP.: KJH

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC
DRILLER: BOB MARCOUX

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA & TEST DATA
	NO.	PEN.	REC.	DEPTH @ BOT	0-6	6-12	12-18	18-24		
									0.9'	TOPSOIL
	1D	12"	7"	3.0'	4	11	25/0"			BROWN GRAVELLY SILTY SAND WITH COBBLES (GLACIAL TILL)
	2D	14"	12"	5.2'	28	15	50/2"		5.2'	~ MEDIUM DENSE ~
										SPLIT SPOON AND AUGER REFUSAL @ 5.2' (PROBABLE BEDROCK)

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
- [ ] DRILLER - VISUALLY
- [x] SOIL TECH. - VISUALLY
- [ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

16

BORING NO.: **B-15**

BORING LOG

S.W.COLE ENGINEERING, INC.

BORING NO.:	B-16
SHEET:	1 OF 1
PROJECT NO.:	15-0024 S
DATE START:	4/29/2015
DATE FINISH:	4/29/2015
ELEVATION:	142.8' +/-
SWC REP.:	KJH

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC   DRILLER: BOB MARCOUX

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER @ 5.0' AFTER COMPLETION OF BORING

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									0.9'	TOPSOIL
	1D	24"	16"	4.0'	19	20	19	20		~ DENSE ~
										BROWN GRAVELLY SILTY SAND WITH COBBLES (GLACIAL TILL)
	2D	24"	15"	7.0'	7	19	26	28		
										~ MEDIUM DENSE ~
	3D	24"	12"	12.0'	9	24	16	30		
	4D	20"	13"	16.2'	9	20	32	50/2"	16.2'	
										SPLIT SPOON REFUSAL @ 16.2' (PROBABLE BEDROCK)

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: B-16

BORING LOG

S.W.COLE ENGINEERING, INC.

BORING NO.:	B-17		
SHEET:	1 OF 1		
PROJECT NO.:	15-0024 S		
PROJECT / CLIENT:	PROPOSED MRC FACILITY / CES, INC.	DATE START:	4/30/2015
LOCATION:	HAMPDEN, MAINE	DATE FINISH:	4/30/2015
DRILLING CO. :	S.W.COLE EXPLORATIONS, LLC	DRILLER:	BOB MARCOUX
ELEVATION:	144.2' +/-		
SWC REP.:	KJH		

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION

WATER @ 7.5'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									0.8'	TOPSOIL
	1D	10"	4"	2.8'	14	50/4"				BROWN GRAVELLY SILTY SAND WITH COBBLES (GLACIAL TILL)
	2D	24"	14"	6.5'	10	26	28	27		~ DENSE ~
	3D	20"	12"	10.7'	27	29	33	50/2"	10.7'	
										SPLIT SPOON AND AUGER REFUSAL @ 10.7' (PROBABLE BEDROCK)

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

18

BORING NO.: B-17

BORING LOG

S.W.COLE ENGINEERING, INC.

BORING NO.:	B-18
SHEET:	1 OF 1
PROJECT NO.:	15-0024 S
DATE START:	4/29/2015
DATE FINISH:	4/29/2015
ELEVATION:	142.9' +/-
SWC REP.:	KJH

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: BOB MARCOUX

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER @ 3.0' AFTER COMPLETION OF BORING

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									1.0'	TOPSOIL
	1D	24"	20"	4.0'	5	5	6	5		BROWN SANDY SILT
	2D	24"	24"	7.0'	3	3	4	4		~ MEDIUM DENSE ~
									8.5'	
	3D	24"	24"	12.0'	1 FOR 12"		1	2		GRAY SILTY CLAY
										~ SOFT CONSISTENCY ~
	4D	24"	14"	17.0'	WOH	WOH	WOH	WOH		
									18.4'	
										GRAY GRAVELLY SILTY SAND (GLACIAL TILL)
	5D	23"	16"	21.4'	4	10	15	50/5"	21.4'	~ MEDIUM DENSE ~
										SPLIT SPOON REFUSAL @ 21.4' (PROBABLE BEDROCK)

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

19

BORING NO.: B-18

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.:	B-19
SHEET:	1 OF 1
PROJECT NO.:	15-0024 S
DATE START:	4/30/2015
DATE FINISH:	4/30/2015
ELEVATION:	142.2' +/-
SWC REP.:	KJH

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC   DRILLER: BOB MARCOUX

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER @ 5.0' AFTER COMPLETION OF BORING

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									0.8'	TOPSOIL
	1D	24"	24"	4.0'	4	5	7	8		BROWN MOTTLED SILTY CLAY q_p = 7-7.5 ksf
	2D	24"	24"	7.0'	4	6	9	11		~ VERY STIFF CONSISTENCY ~ q_p = 6-6.5 ksf
									8.5'	
										GRAY SILTY CLAY q_p = 0.5-1 ksf
	3D	24"	24"	11.3'	1	1	1	11	10.9'	~ SOFT CONSISTENCY ~
										GRAY GRAVELLY SILTY SAND WITH COBBLES (GLACIAL TILL)
	4D	24"	15"	16.0'	13	15	22	11		
										~ MEDIUM DENSE ~
	5D	10"	4"	20.3'	11	50/4"			20.3'	
										SPLIT SPOON REFUSAL @ 20.3' (PROBABLE BEDROCK)

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

20

BORING NO.: B-19

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-20**
SHEET: 1 OF 1
PROJECT NO.: 15-0024 S

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC   DRILLER: BOB MARCOUX

DATE START: 4/30/2015
DATE FINISH: 4/30/2015
ELEVATION: 140.2' +/-
SWC REP.: KJH

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER @ 8.0' AFTER COMPLETION OF BORING

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									1.0'	TOPSOIL
	1D	24"	24"	4.0'	3	5	5	5		GRAY-BROWN CLAYEY SILT q_p = 4-5 ksf
	2D	24"	24"	7.0'	2	2	3	5		~ STIFF CONSISTENCY ~ q_p = 3.5-4 ksf
									9.0'	
										GRAY SILTY CLAY
										~ SOFT CONSISTENCY ~
	3D	24"	24"	12.0'	1	1	1	2	12.0'	
										BOTTOM OF EXPLORATION @ 12.0'

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-20**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.:	B-21
SHEET:	1 OF 1
PROJECT NO.:	15-0024 S
DATE START:	4/30/2015
DATE FINISH:	4/30/2015
ELEVATION:	140.9' +/-
SWC REP.:	KJH

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: BOB MARCOUX

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER @ 5.5' AFTER COMPLETION OF BORING

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									1.1'	TOPSOIL
	1D	24"	24"	4.0'	3	6	8	10		BROWN MOTTLED SILTY CLAY q_p = 6.5-7.5 ksf
	2D	24"	24"	6.0'	2	6	7	9		~ VERY STIFF CONSISTENCY ~ q_p = 5-5.5 ksf
									8.0'	
	3D	24"	2"	11.0'	2	5	8	9		BROWN GRAVELLY SILTY SAND WITH COBBLES (GLACIAL TILL)
										~ MEDIUM DENSE ~
	4D	4"	3"	14.3'	50/4"				14.3'	
										AUGER REFUSAL @ 14.3' (PROBABLE BEDROCK)

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

22

BORING NO.: B-21

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-22**
SHEET: 1 OF 1
PROJECT NO.: 15-0024 S

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC   DRILLER: BOB MARCOUX

DATE START: 4/30/2015
DATE FINISH: 4/30/2015
ELEVATION: 138.5' +/-
SWC REP.: KJH

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER @ 6' AFTER COMPLETION OF BORING

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									1.0'	TOPSOIL
	1D	24"	6"	4.0'	5	7	8	9		BROWN MOTTLED SILTY CLAY
	2D	24"	24"	6.0'	3	4	7	9		~ VERY STIFF CONSISTENCY ~ q_p = 6-6.5 ksf
									8.5'	
	3D	24"	16"	11.0'	10	13	14	12		BROWN GRAVELLY SILTY SAND WITH COBBLES (GLACIAL TILL) ~ MEDIUM DENSE ~
	4D	14"	5"	15.2'	8	11	50/2"		15.2'	
										SPLIT SPOON REFUSAL @ 15.2' (PROBABLE BEDROCK)

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

23

BORING NO.: **B-22**

BORING LOG

S.W.COLE ENGINEERING, INC.

BORING NO.:	B-23
SHEET:	1 OF 1
PROJECT NO.:	15-0024 S
DATE START:	4/30/2015
DATE FINISH:	4/30/2015
ELEVATION:	138.6' +/-
SWC REP.:	KJH

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC   DRILLER: BOB MARCOUX

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER @ 7.0' AFTER COMPLETION OF BORING

CASING BLOWS PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA & TEST DATA
	NO.	PEN.	REC.	DEPTH @ BOT	0-6	6-12	12-18	18-24		
									1.0'	TOPSOIL
										BROWN SILT AND FINE SAND
	1D	24"	17"	4.0'	5	6	5	4		~ MEDIUM DENSE ~
									4.8'	
	2D	24"	24"	6.0'	3	3	3	3		
										BROWN SILTY CLAY q_p = 3.5-4.5 ksf
										~ STIFF CONSISTENCY ~
									9.7'	
	3D	24"	24"	11.0'	2	1	2	2	11.0'	GRAY SILTY CLAY ~ SOFT CONSISTENCY ~
										BOTTOM OF EXPLORATION @ 11.0'

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

24

BORING NO.: B-23

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.:	**B-24**
SHEET:	1 OF 1
PROJECT NO.:	15-0024 S
DATE START:	4/30/2015
DATE FINISH:	4/30/2015
ELEVATION:	141.7' +/-
SWC REP.:	KJH

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC — DRILLER: BOB MARCOUX

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER @ 6' AFTER COMPLETION OF BORING

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									1.2'	TOPSOIL
										BROWN MOTTLED SILTY CLAY
	1D	24"	24"	4.0'	8	10	9	26	3.6'	~ HARD CONSISTENCY ~ q_p = 9+ ksf
										BROWN GRAVELLY SILTY SAND (GLACIAL TILL)
	2D	23"	19"	5.9'	10	21	28	50/5"	5.9'	~ DENSE ~
										FRACTURED BEDROCK
									8.0'	
										AUGER REFUSAL @ 8.0' (BEDROCK)

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

25

BORING NO.: **B-24**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-25**
SHEET: 1 OF 1
PROJECT NO.: 15-0024 S
DATE START: 5/1/2015
DATE FINISH: 5/1/2015
ELEVATION: 141.1 +/-
SWC REP.: KJH

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC   DRILLER: BOB MARCOUX

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA & TEST DATA
	NO.	PEN.	REC.	DEPTH @ BOT	0-6	6-12	12-18	18-24		
									1.0'	TOPSOIL
	1D	10"	6"	2.8'	10	50/4"				BROWN GRAVELLY SILTY SAND WITH COBBLES (GLACIAL TILL)
										~ DENSE ~
	2D	24"	15"	6.0'	9	21	20	20	6.5'	
										SPLIT SPOON AND AUGER REFUSAL @ 6.5' (PROBABLE BEDROCK)

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

26

BORING NO.: **B-25**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.:	B-26
SHEET:	1 OF 1
PROJECT NO.:	15-0024 S
DATE START:	5/1/2015
DATE FINISH:	5/1/2015
ELEVATION:	139.7' +/-
SWC REP.:	KJH

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: BOB MARCOUX

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER @ 4.0' AFTER COMPLETION OF BORING

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	BLOWS 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									0.9'	TOPSOIL
	1D	24"	24"	4.0'	12	20	17	19		BROWN GRAVELLY SILTY SAND WITH COBBLES (GLACIAL TILL)
	2D	24"	17"	7.0'	12	19	22	38		~ DENSE ~
	3D	8"	5"	10.7'	30	50/2"			10.7'	
										SPLIT SPOON REFUSAL @ 10.7' (PROBABLE BEDROCK)

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

27

BORING NO.: B-26

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-27**
SHEET: 1 OF 1
PROJECT NO.: 15-0024 S
DATE START: 5/1/2015
DATE FINISH: 5/1/2015
ELEVATION:
SWC REP.: KJH

PROJECT / CLIENT: PROPOSED MRC FACILITY / CES, INC.
LOCATION: HAMPDEN, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: BOB MARCOUX

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER @ 8.0' AFTER COMPLETION OF BORING

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									0.8'	TOPSOIL
										BROWN SANDY SILT WITH TRACE OF CLAY
	1D	24"	24"	4.0'	4	6	8	9	4.5'	~ MEDIUM DENSE ~
										BROWN SILTY FINE SAND
	2D	24"	24"	7.0'	4	6	5	5		~ MEDIUM DENSE ~
									8.0'	
	3D	24"	24"	12.0'	1	1	2	2		GRAY CLAYEY SILT q_p = 1 ksf
	2"x7" VANE			13.0'						
	4D	24"	24"	17.0'	WOH	WOH	1 FOR 12"			~ SOFT CONSISTENCY ~
	5D	24"	24"	22.0'	2	2	3	[illegible]	22.[illegible]'	
									22.5'	BROWN GRAVELLY SILTY SAND (GLACIAL TILL)
										BOTTOM OF EXPLORATION @ 22.5'

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

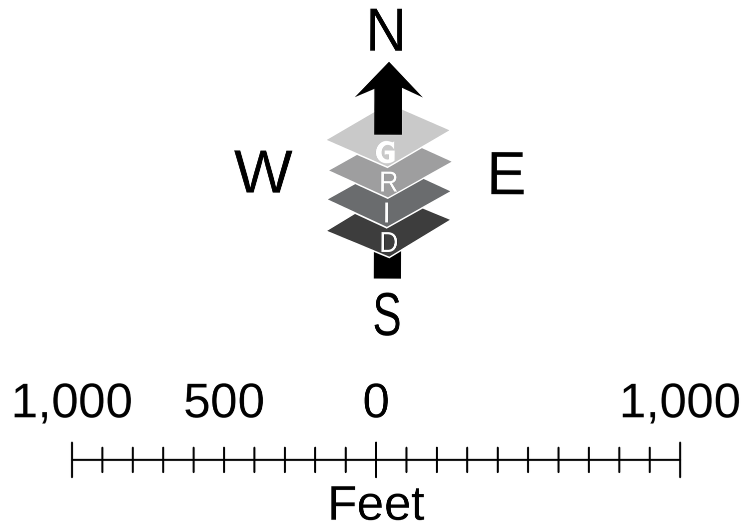
28

BORING NO.: **B-27**

RESULTS OF AUGER PROBES

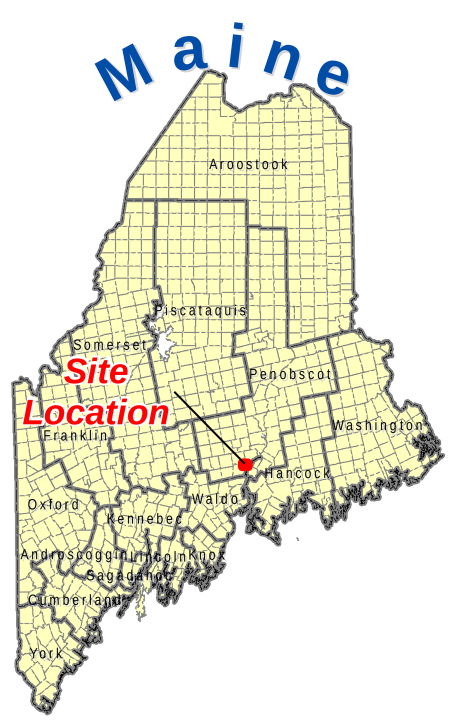
PROBE	STATION	COMPLETION DEPTH	NOTES
P-1	0+25, Centerline	10'	No Refusal
P-2	1+25, Centerline	10'	No Refusal
P-3	2+00, Centerline	10'	No Refusal
P-4	2+82, Centerline	10'	No Refusal
P-5	4+00, Centerline	15'	No Refusal
P-6	5+00, Centerline	15'	No Refusal
P-7	6+00, Centerline	15'	No Refusal
P-8	6+97, Centerline	15'	No Refusal
P-9	8+00, Centerline	15'	No Refusal
P-10	9+00, Centerline	15'	No Refusal
P-11	10+00, Centerline	15'	No Refusal
P-12	11+00, Centerline	15'	No Refusal
P-13	12+00, Centerline	20'	No Refusal
P-14	13+00, Centerline	20'	No Refusal
P-15	14+00, Centerline	20'	No Refusal
P-16	15+00, Centerline	20'	No Refusal
P-17	16+00, Centerline	20'	No Refusal
P-18	17+00, Centerline	20'	No Refusal
P-19	18+00, Centerline	20'	No Refusal
P-20	19+00, Centerline	20'	No Refusal
P-21	20+00, Centerline	20'	No Refusal
P-22	21+00, Centerline	20'	No Refusal
P-23	22+00, Centerline	20'	No Refusal
P-24	23+00, Centerline	20'	No Refusal
P-25	24+00, 22' Right	20'	No Refusal
P-26	26+00, 10' Right	10'	No Refusal
P-27	27+00, 10' Left	15'	No Refusal
P-28	28+00, 12' Left	15'	No Refusal
P-29	29+00, 9' Left	15'	No Refusal
P-30	30+00, 13' Left	15'	No Refusal
P-31	31+00, 14' Left	15'	No Refusal
P-32	32+00, 7' Left	15'	No Refusal
P-33	33+00, 5' Left	15'	No Refusal
P-34	34+00, Centerline	10'	No Refusal
P-35	35+00, Centerline	10'	No Refusal
P-36	36+00, Centerline	10'	No Refusal
P-37	37+00, Centerline	10'	No Refusal
P-38	38+00, Centerline	10'	No Refusal
P-39	39+00, Centerline	7.5'	Refusal
P-40	39+80, Centerline	10'	No Refusal
P-41	41+00, Centerline	4.0'	Refusal
P-42	42+00, Centerline	10'	No Refusal
P-43	43+00, Centerline	10'	No Refusal
P-44	44+00, Centerline	10'	No Refusal
P-45	45+00, Centerline	10'	No Refusal
P-46	46+00, Centerline	5.5'	Refusal

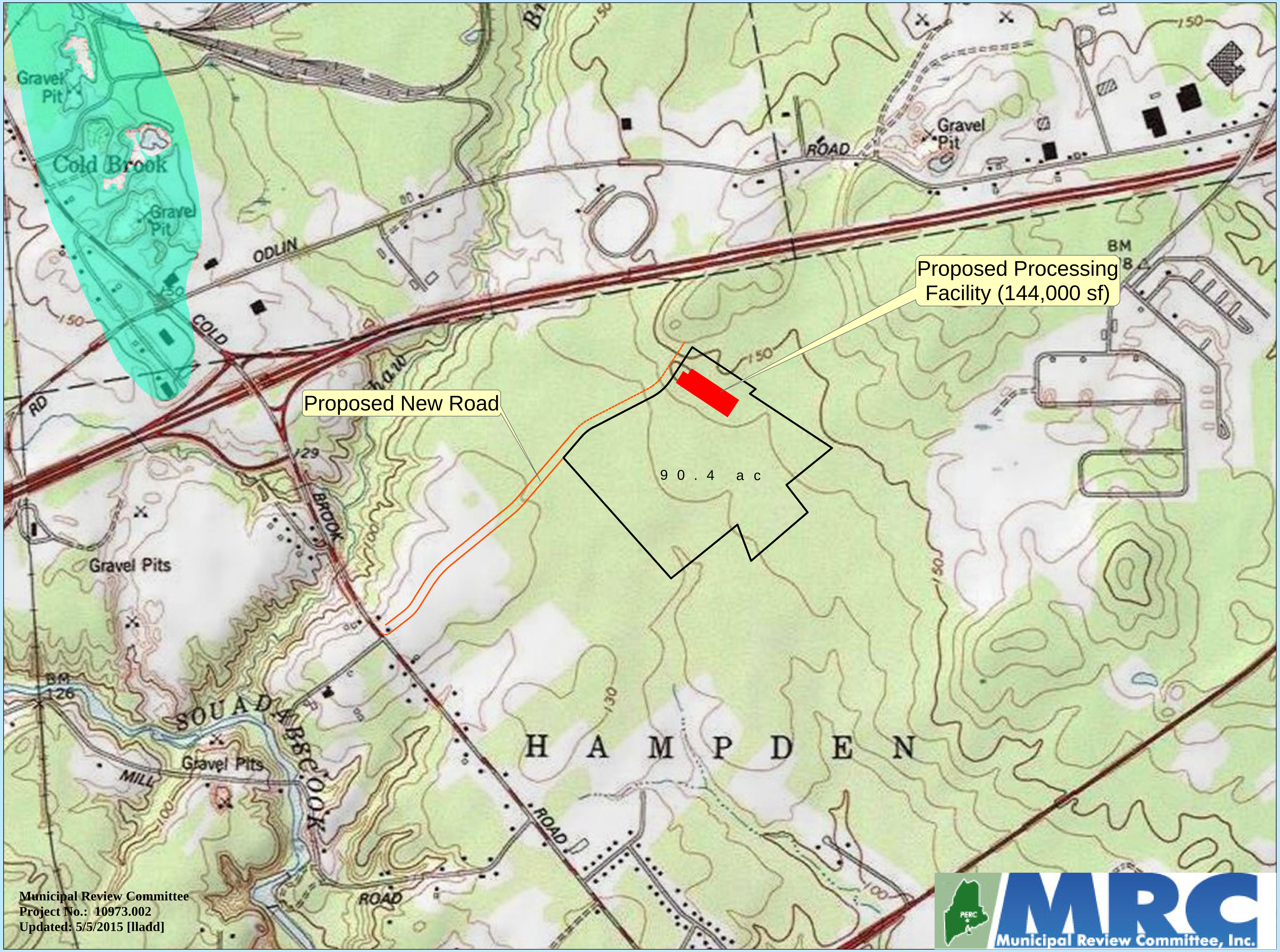
Significant Sand & Gravel Aquifers



Legend

- Town/Owner Preferred Location
- Proposed Road Location
- Proposed Building Location
- Significant Aquifer yielding 10-50 gal/min.
- Significant Aquifer yielding > 50 gal/min





MAP NOTES:

1: SITE DATA DEVELOPED BY CES, INC., DECEMBER, 2015.

2: AQUIFER BOUNDARIES DELINEATED AND DIGITIZED BY THE MAINE GEOLOGICAL SURVEY FROM DATA COMPILED ON USGS 7.5' QUADRANGLE BASES. AQUIFER POLYGONS CODED BY YIELD EXPECTED FROM A PROPERLY CONSTRUCTED WELL. DATA ACQUIRED FROM THE MAINE OFFICE OF GIS, 2013.

3. PARCEL AND ZONING DATA COURTESY OF THE TOWN OF HAMPDEN.

4. BASE MAPPING LAYERS ARE SERVER-BASED IMAGERY, TOPOGRAPHIC IMAGES, OR TERRAIN DEPICTIONS COURTESY OF ESRI. ACQUIRED OCT., 2014.

5: MAP IS PROJECTED USING THE UNIVERSAL TRANSVERSE MERCATOR (UTM) PROJECTION, ZONE 19 NORTH, METERS AND REFERENCES THE NORTH AMERICAN DATUM OF 1983 (NAD83).

6: NORTH ARROW IS REFERENCED TO GRID NORTH.

7: INTENDED FOR REFERENCE PURPOSES ONLY. THE MRC & CES, INC. AND THEIR AFFILIATES ARE NOT RESPONSIBLE FOR THE MISUSE OF THIS MAP OR DATA DEPICTED HEREIN.

CES INC
Engineers • Environmental Scientists • Surveyors

Municipal Review Committee
Project No.: 10973.002
Updated: 5/5/2015 [lladd]

MRC Municipal Review Committee, Inc.

MXD: P:\10973-MRC-Municipal-Review-Committee\003-Processing Facility-DSP07-GIS_Data\MXD\SSGAquifer_24x36_050515.mxd

CES INC

ATTACHMENT 13

PROCESS DESIGN INFORMATION

ATTACHMENT 13

PROCESS DESIGN INFORMATION

The following information describes the Facility's waste processing system in accordance with 06 096 CMR Chapter 409.3.C (Process Design Characteristics).

Process Flow Diagram

Included in this Attachment is an overall process flow diagram outlining the general procedures for handling and processing MSW at the Fiberight facility.

Source and Volume of MSW

The proposed Fiberight facility is expected to receive an average of 410 to 550 tons of MSW per day. To account for seasonal fluctuations in waste deliveries, the Facility will be designed to accept up to 950 tons and process up to 650 tons of MSW per day. MSW accepted at the Facility will originate from within MRC communities, other communities that have relied on PERC for MSW disposal and any other communities interested in utilizing the Fiberight Facility for disposal services.

Characteristics of Waste to be Received

In general, MSW that is accepted at the Facility includes solid waste emanating from household and normal commercial sources. Municipal solid waste includes front end process residue from the processing of municipal solid waste. MSW generally includes but is not limited to food waste and other types of organic waste, plastics, construction and demolition debris, metals, glass, household hazardous waste, and other types of miscellaneous waste disposed with normal household and commercial refuse.

Products and Waste Generated

As shown on the attached process flow diagram, Fiberight will process MSW received into the Facility into several different categories. The resultant products generated at the facility will include recyclables which will be sold on the open commodities market; post hydrolysis solids (PHS) which will be used to fuel the on-site biomass boilers; bio-methane which will be piped to the adjacent Bangor Natural Gas Loring Pipeline; and biomass fuel (sugar) which will be sold on the open commodities market.

The resultant residue waste products generated at the Facility will be removed via screens in the first sort of the production process. This waste is typically 2 inches or less in size and once removed, will be loaded out on walking floor semis and transferred for disposal at a licensed landfill facility. A breakdown of the residues to be landfilled is included in this Attachment.

Methods Utilized to Mix Waste

Refer to the *Maine Process Description* document provided by Fiberight and included in this Attachment.

Methods Utilized to Process Waste

Refer to the *Maine Process Description* document provided by Fiberight and included in this Attachment.

Methods Utilized to Store Waste

MSW will enter the facility and be unloaded on a tipping floor located inside the building. The tipping floor is designed with capacity for approximately two days of MSW receipts and two days of primary processed material. The MSW is moved from the tipping floor to the processing line as quickly as possible. The efficiency of the processing operation is partially reliant on the facility continuously processing the organics for entry into the wash stage of the process prior to decomposition. Fiberight will utilize the principle of First-In-First-Out operation to the maximum extent possible to minimize the residence time of waste on the tipping floor.

<u>Residue Storage:</u> Residues generated from sorting through normal operations which results in material needing to be landfilled will be temporarily stored in roll-off containers or trailers. Residues will not be stored on site for any longer than 24 hours. Once a container or trailer is filled it will be transferred within 24 hours to a licensed solid waste facility for landfilling.

<u>Biomass Boiler Ash:</u> Fiberight estimates that the facility may generate 3,000 to 4,000 tons of ash per year. The ash generated on-site will be the result of utilizing post hydrolysis solids (PHS) to fuel two biomass boilers on-site. The boilers will be used to supply power for facility operations. Ash generated will be stored in 40 cubic yard ash bins inside the building. When bins become full, ash will then be loaded into 100 cubic yard transport trailers and transported off-site to a licensed secure landfill for final disposal.

Methods Utilized to Store Products

<u>Recyclable Storage:</u> Recyclables removed from the waste that can be baled on-site will be temporarily stored in 100 cubic yard transport trailers. Larger metal recyclables that cannot be bailed will be stored in 40 cubic yard dump trailers. Recyclables will only be stored on-site long enough to fill transport trailers and then will be shipped and sold as commodities on the open market.

<u>Post Hydrolysis Solids (PHS):</u> The filtered Post Hydrolysis Solids (PHS) are discharged from the Filter Press and sent to two biomass boilers which will provide energy for the process. PHS will be continuously fed from the filter press to the biomass boilers and therefore long term storage of this material is not anticipated. In the unlikely event that PHS cannot be continuously fed to the boiler, PHS will be temporarily stockpiled on the floor adjacent to the boiler feed conveyor hopper. After the boiler is back on line and able to accept PHS, PHS will then be loaded onto the boiler feed conveyors using a Bobcat loader.

<u>Bio-methane:</u> Bio-methane generated at the Facility will be injected into the adjacent Bangor Natural Gas pipeline. No on-site storage of bio-methane is proposed for this project.

<u>Biomass fuel (Industrial Sugar):</u> Industrial Sugars produced at the facility will be stored Sugar Storage Tanks to be shipped and sold as industrial sugar or the filtered hydrolysate is fed to the anaerobic digestion plant for conversion to biogas. The exact disposition of the filtered hydrolysate is dependent on current contractual, market and operational conditions.

Processing Equipment Used On-site

Refer to the *Maine Process Description* document provided by Fiberight and included in this Attachment.

Provisions for Characterization

In accordance with 06 096 CMR Chapter 405.6.C. solid wastes proposed to be disposed at a solid waste disposal facility must be characterized in conformance with the requirements listed in 06 096 CMR Chapter 405.6.C. Fiberight will be producing non-organic residues and ash requiring disposal at a licensed solid waste facility. Non-organic residues which may be classified as “Miscellaneous Wastes” listed in 06 096 CMR Chapter 405.6.C.(2). The analytical requirements listed include the following:

- Complete Toxicity Characteristic Leaching Procedure (TCLP) (per US EPA Method 1311, Federal Register/Volume 55, No. 126, 1992);
- Totals for Aluminum, Arsenic, Barium, Boron, Cadmium, Chromium, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium, Silver, and Zinc (per Methods in US EPA SW-846);
- Chloride, percent carbon, percent moisture, pH, phosphorus;
- Reactivity Characteristics;
- Ignitability Characteristics; and
- Additional parameters as identified by the applicant or the Department. These additional parameters must be based upon the raw material, the proposed activity, or the facility.

Fiberight anticipates generating between 3,000 and 4,000 tons of ash per year in the facility’s biomass boiler. Ash will be disposed of in a landfill licensed to accept it and will be characterized in accordance with 06 096 CMR Chapter 405.6.C(4) and sampled for those parameters listed for biomass and fossil fuel boiler ash. Prior to initial acceptance at a solid waste facility, a sufficient number of samples to meet the requirements for statistical analysis as required by US EPA SW-846 must be analyzed as follows:

- TCLP Metals (Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver) per US EPA Method 1311, Federal Register/Volume 55, No. 126, 1992;
- Chloride, percent carbon, percent moisture, pH, phosphorus.

After initial characterization is complete, ash must be analyzed for the parameters listed above at a frequency of one representative sample quarterly.

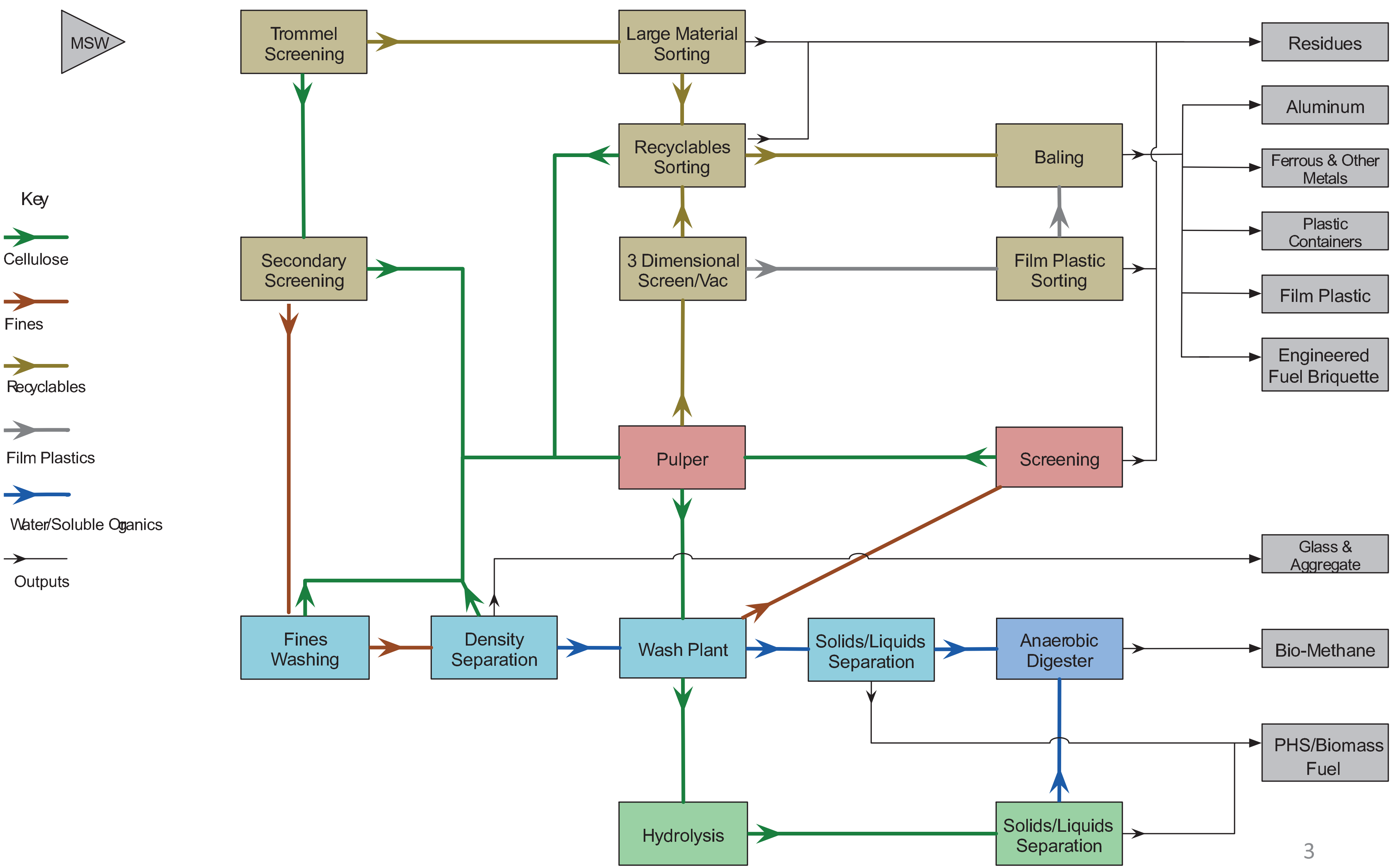
Waste Derived Product Standards

Waste derived products include PHS and ash. None of these products are proposed to be used such that they will require the Applicant to meet the standards of 06 096 CMR Chapter 418: Beneficial Use of Solid Waste or 419: Agronomic Utilization of Residuals. PHS will be utilized on-site to fuel the biomass boilers and is exempt from the requirements of 06 096 CMR Chapter 418. Ash generated on-site will be disposed in a secure landfill licensed to accept it.

Technology Review Fiberight Process for MSW

MRC contracted with the University of Maine's Forest Bioproducts Research Institute (FBRI) to conduct a peer review study of the Fiberight's technology to convert MSW to biofuels and other products. The results of the study concluded Fiberight's processing technology is sound and capable of converting the insoluble portion of MSW organics to a simple sugar solution. Presently at their pilot plant, Fiberight has successfully used sugar solutions from both the insoluble and soluble portion of MSW to produce biogas through anaerobic digestion (AD). FBRI prepared a report on January 30, 2015 titled *Technology Review Fiberight Process for MSW*. The report was subsequently provided to MRC. A copy of the report is provided in this Attachment. No substantial design changes to the Fiberight process for MSW provided in this Application have been made such that the outcome of the Report's findings would be meaningfully altered.

Project Overview – Process Flow Diagram



Residuals to be Landfilled in Maine

Projections based on data contained in the

2011 Maine Residential Waste Characterization Study

conducted by: The University of Maine, School of Economics

and operational experience in Lawrenceville, VA

Approximately 20% of incoming material is removed via a screen process in the first sort of the production process. Once removed, the material is loaded out on walking floor semis and landfilled at this time. Fiberight is continually working to create the highest and best use for all materials to get to a absolute zero waste to landfill solution for waste generators.

Material – 2" or less in size	%
Food Waste	2
Other Organics	11
Paper (included in bottom fines/ dirt)	
Plastics	1
Other, Bottom Fines & Dirt, including rubber.	1
C & D, wood pieces, asphalt, bricks, concrete pieces, roofing material pieces	1
Metal: alumnimum tabs, toy cars, etc.	.25
Glass, broken by first sort process	2.70
Household Hazardous Materials	1
Total	20

Table 5. Organic waste subcategories and description.

Subcategory	Description
Food Waste	Material resulting from the storage, preparation, and consumption of food. Discarded meat scraps, dairy products, eggshells, coffee grounds, and fruit or vegetable peels.
Other Organics	Organic material that cannot be classified in any other category. Feces-soiled cat litter, cork, hemp rope, cigarette butts, sawdust, bath and body products.
Diapers	All diapers.
Leaves & Grass	All plant material except woody plant material. Fresh grass clippings, leaves, and small plants.
Prunings & Trimmings	All woody plant material up to four inches in diameter. Plant and tree prunings and small branches.

As shown in Table 6, food waste made up 27.78% of the total waste sampled. Food waste, which is nitrogen-rich and highly compostable, is sometimes referred to as a "green waste".

The other four Organics subcategories accounted for 15.42% of the total waste stream. The two largest of these subcategories were Other Organics, comprised mainly of cat litter and animal feces, and Diapers. For health and sanitation reasons these materials are not included in composting programs.

The Leaves & Grass and Prunings & Trimmings subcategories accounted for 1.5% of the trash sampled. This waste has a relatively high concentration of carbon, and when combined with food waste yields a carbon-nitrogen ratio generally well-suited for composting.

Table 6. Organic waste percentages.

Sub-Category	% of Total Waste	% of Organic Waste	Cumulative %
Food	27.86	64.38	64.38
Remainder/Composite Organic	10.97	25.35	89.73
Diapers	2.97	6.86	96.58
Leaves & Grass	1.16	2.68	99.26
Prunings & Trimmings	0.32	0.74	100.00

Fiberight estimates 2% of the incoming food waste will be smaller than 2" and 10.97 (11%) of the incoming remainder / composite organics will be screened out as a residual.

Plastic

Items made of plastic accounted for 13.44% of the total waste stream. Plastic was sorted into eleven subcategories, as listed and described in Table 9.

Table 9. Plastic waste subcategories and description.

Subcategory	Description
All Plastic Film	Contains both food-soiled and non food-soiled film. Also includes shrink wrap, bubble wrap, garbage bags, small plastic bags, and metalized film.
Remainder/Composite Plastic	All plastic that does not fit into the other subcategories or items primarily composed of plastic but combined with other materials. Auto parts, plastic straws, vinyl, linoleum, plastic lids, CDs.
Durable Plastic Items	Items meant to last a few months to many years. Children's toys, furniture, mop buckets, sporting goods.
#3 - #7 Plastics	Items made of Polyvinyl Chloride, Polyethylene, Polypropylene, or non-expanded Polystyrene.
HDPE Bottles	Containers made of high-density polyethylene plastic (a cloudy white or solid-colored plastic). Includes milk jugs and bottles for shampoos and lotions.
Grocery/Merchandise Bags	Bags meant for transporting merchandise from place of purchase. Also includes dry-cleaning bags.
PET Containers (non-bottles)	All Polyethylene Terephthalate containers that are not meant to hold liquids. Mainly food storage units, including peanut butter jars.
Styrofoam	All expanded polystyrene.
PET Bottles	Clear or colored PET bottles used for liquids such as bottled water or salad dressing.
Redeemable Plastic Beverage Containers	Plastic beverage containers subject to Maine's bottle bill.
HDPE Containers (non-bottles)	Buckets and pails made of high density polyethylene plastic, not including mop buckets.

The most common Plastic subcategory was Plastic Film, which constituted over one-third of the plastic waste and nearly 5% of the total waste (see Table 10). While it is possible to recycle non-food plastic film, less than 5% of Maine municipalities currently offer this type of recycling. The second and third largest plastic subcategories were Remainder/Composite Plastic and Durable Plastic. Many durable plastics have the potential to be recycled, although recycling programs for these plastics are not generally available.

Fiberight estimates 1% of the incoming plastics will be 2" or less, including plastic film pieces, plastic bottle caps and small plastic containers.

Other Waste

Materials that could not be sorted into any other category were classified as "Other Waste". Other Waste accounted for 5.77% of the trash sampled. This category was separated into four subcategories, as described in Table 11.

Table 11. Other Waste subcategories and description.

Subcategory	Description
Textiles (non-carpet)	All items (excluding carpet) made of natural or synthetic textiles. Fabric, clothing, curtains, blankets, stuffed animals, and cotton q-tips.
Other Miscellaneous	Any type of waste not listed elsewhere, such as rubber or ceramic items.
Bottom Fines & Dirt	Homogenized granulated residue including dirt, sand, tiny bits of paper, and crumbs.
Bulky Items	Any large item not typical of baggable trash.

Table 12, below, shows percentages for the four Other Waste subcategories. Bottom fines and dirt accounted for less than one-half of a percent of the total waste stream. Only one bulky item was found; this was a suitcase weighing 7.8 pounds. The largest component of the Other Waste category was Textiles, which made up 4.26% of the total waste sampled. Many of the clothing items found were in wearable condition, and some in new condition. While some textile recycling programs exist, Maine municipalities may wish to increase their textile recycling options.

1% of all incoming materials will be bottom fines & dirt, this also includes a small percentage of Other Miscellaneous that will be 2" or less, including rubber pieces and broken ceramic glass.

Construction and Demolition

The total Construction and Demolition (C&D) waste comprised 3.35% of all waste sampled. In accordance with other studies, an initial seven C&D categories were utilized (as described in Table 13). For households, C&D waste is normally generated with home construction projects.

Table 13. Construction and Demolition waste subcategories and description.

Subcategory	Description
Wood	All treated or untreated wood. Does not include particle board, plywood, or yard waste.
Asphalt, Brick, & Concrete	Items made of asphalt, brick, or concrete. Includes pieces of building foundations, cinder blocks, and pavement.
Asphalt Roofing	Asphalt shingles and other attached roofing material such as roofing tar and tar paper.
Drywall/Gypsum Board	Broken or whole pieces of sheetrock, drywall, gypsum board, plasterboard, Gyproc, and wallboard.
Carpet	Flooring applications consisting of various natural or synthetic fibers bonded to a backing material.
Carpet Padding	Plastic, foam, felt, or other material used under carpet to provide insulation and padding.
Remainder/ Composite C&D	Construction and demolition debris that cannot be included in any other subcategory. Includes composite materials that would be hard to separate, such as linoleum glued to plywood.

Perhaps as a result of only collecting and sorting "baggable" waste, a large volume and variety of C&D was not found. In fact, asides from wood wastes, very few items were found that did not belong in the Wood or Remainder/Composite subcategories. To simplify and make weighing manageable, an "All Other C&D" subcategory was created to encompass all of the non-wood C&D waste. These condensed C&D waste percentages are shown in Table 14.

Table 14. Construction and Demolition waste percentages.

Subcategory	% of Total Waste	% of C&D Waste	Cumulative %
All other C & D	2.21	65.93	65.93
Wood	1.14	34.07	100.00
Total C&D Waste	3.35	100.00	

While Fiberight will not accept C & D for processing it will be in residential loads of small household remodel / construction projects. Fiberight estimates 1% of incoming C & D will be materials that are 2" or less that will be removed and landfilled as residuals.

Metal

Metal accounted for 3.26% of the total waste stream. Metal items were sorted into eight subcategories, as listed and described in Table 15.

Table 15. Metal waste subcategories and description.

Subcategory	Description
Tin/Steel Containers	Magnetic metal containers, such as those used for soup, vegetable, and coffee cans, that are made mainly of steel but with a thin coating of tin on the inside.
Other Ferrous	Other magnetic metal items including clothes hangers, empty paint cans, metal pipes, nails, and some cookware.
Other Non-Ferrous	Nonmagnetic metal items including those made of stainless steel, copper, brass, bronze, and lead. Examples include copper wire, shell casings, and brass pipes.
Remainder/Composite Metal	Items made mostly of metal but combined with other materials such as motors, insulated wire, and food-soiled kitchen foil.
Redeemable Aluminum Beverage Containers	Aluminum containers, such as soda and beer cans, that are Maine deposit refundable.
Appliances	Small metal household appliances such as toasters.
Compressed Fuel Containers	Compressed fuel containers such as propane tanks.
Non-Redeemable Aluminum Beverage Containers	Aluminum containers that are not Maine deposit refundable, such as cans brought into Maine from out of state.

Tin/Steel Containers made up almost half of the metal waste sorted. Food-soiled aluminum foil, no deemed recyclable, was the largest component of the Remainder/Composite Metal subcategory. Redeemable Aluminum Beverage Containers, suitable for redemption under Maine's bottle bill, accounted for less than one-tenth of a percent of the total waste sample. Table 16 lists percentages for all metal subcategories.

Table 16. Metal waste percentages.

Subcategory	% of Total Waste	% of Metal Waste	Cumulative %
Tin/Steel Containers	1.45	44.38	44.38
Other Ferrous	0.93	28.58	72.96
Other Non-Ferrous	0.42	12.85	85.81
Remainder/Composite Metal	0.28	8.69	94.51
Redeemable Aluminum Beverage Containers	0.10	3.22	97.72
Appliances	0.04	1.28	99.01
Compressed Fuel Containers	0.03	0.87	99.87
Non-redeemable Aluminum Beverage Containers	0.004	0.13	100.00
Total Metal	3.26	100.00	

Fiberight estimates ¼ of 1% will be metal in nature, including pop tops and small metal containers.

Glass

Glass accounted for 2.71% of the waste stream. Glass was sorted into six subcategories, which are described in Table 17.

Table 17. Glass waste subcategories and description.

Subcategory	Description
Clear Glass Containers	Includes all non-redeemable clear wine bottles and beverage containers, mayonnaise jars, salsa jars, and jelly/jam jars.
Redeemable Glass Beverage Containers	Any glass beverage container subject to Maine deposit law.
Green & Other Glass Containers	Green or other colored bottles including wine, beer, and nonalcoholic beverage containers.
Remainder/Composite Glass	Items made primarily of glass but combined with other materials. Examples include crystal tableware, mirrors, non-florescent light bulbs, car windshields, and curved glass.
Flat Glass (uncoated)	Uncoated, flat glass such as that used for windows, doors, and tabletops, and some auto glass (side windows).
Amber Glass Containers	Amber-colored containers not including alcoholic beverage containers.

The top two glass subcategories in Table 18, Clear Class Containers and Redeemable Glass Beverage Containers, are easily recyclable and accounted for 2.38% of the baggable trash sampled. Redeemable Glass Beverage Containers made up only 0.41% of the waste sampled.

Table 18. Glass waste percentages.

Subcategory	% of Total Waste	% of Glass Waste	Cumulative %
Clear Glass Containers	1.96	72.48	72.48
Redeemable Glass Beverage Containers	0.41	15.23	87.71
Green & Other Glass Containers	0.13	4.84	92.55
Remainder/Composite Glass	0.11	4.00	96.54
Flat Glass (uncoated)	0.07	2.69	99.24
Amber Glass Containers	0.02	0.76	100.00
Total Glass	2.71	100.00	

Fiberight estimates all glass (2.7%), due to the mechanical nature of breaking open bags, will be broken up and included in the residual waste stream.

Table 19. Household Hazardous waste subcategories and description.

Subcategory	Description
Other Hazardous Waste	All products characterized as "toxic", "flammable", or "corrosive". Also includes waste contaminated with bodily fluid and discarded needles.
Paint	Items containing oil-based, latex, or fine art paint. Does not include dried paint or empty paint cans.
Batteries	Household batteries such as AA, AAA, D, button cell, 9 volt, and rechargeable.
Vehicle & Equipment Fluids	Containers holding fluids, such as antifreeze or oil , that are used in vehicles or engines.
Empty Metal, Glass, & Plastic Containers	Empty containers that once held toxic or hazardous materials such as antifreeze, oil, or lye.
Pesticides & Fertilizers	Products used to control pests or enhance plant growth.
Ballasts, CFLs, & Other Fluorescents	Includes ballasts (devices that electrically control fluorescent light fixtures), compact fluorescent lamps, and other fluorescent lighting such as tubular lamps.

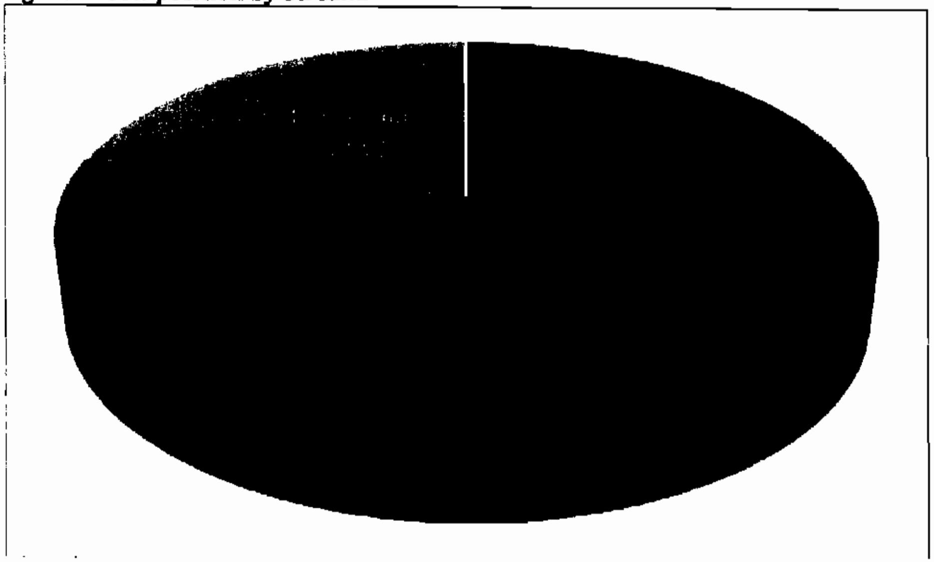
Other Hazardous Waste, the largest subcategory, consisted mainly of items contaminated with bodily fluids. Paint and batteries were also found in large amounts. Items in the Other Hazardous Waste, Paint, and Batteries subcategories accounted for over 81% of the hazardous waste found. Table 20 shows the percentages of all Household Hazardous waste subcategories.

Table 20. Household Hazardous waste (HHZ) percentages.

Subcategory	% of Total Waste	% of HHZ Waste	Cumulative %
Other Hazardous Waste	0.80	46.50	46.50
Paint	0.37	21.70	68.21
Batteries	0.23	13.39	81.59
Vehicle & Equipment Fluids	0.14	8.09	89.69
Empty Metal, Glass, Plastic Containers	0.10	5.54	95.23
Pesticides & Fertilizers	0.07	3.87	99.10
Ballasts, CFLs, & Other Fluorescents	0.02	0.90	100.00
Total Household Hazardous	1.72	100.00	

While every attempt will be made to prevent HHW from entering the waste stream, Fiberight estimates a little over 1% of the incoming HHW will be included in the residual waste stream – mainly other hazardous waste, batteries and ballasts, CFLs & Other Fluorescents. The remaining HHW will be intercepted and recycled according to federal, state and local law (thus reducing the overall toxicity of landfilled waste in Maine.

Figure 4. Composition by Stream.



Waste comprised 39.87% of the trash sampled. Efforts could be made to reduce much of this waste at its source by encouraging the use of recyclable materials and/or the use of more reusable items (e.g. refillable razors). The potential also exists for several materials in this category, such as textiles and grocery bags, to be recycled at much higher rates in the future if better recycling programs for these materials can be developed. Compostable materials, at 38.41%, comprised nearly as much of the trash as Waste. Food waste and compostable paper comprised 93.2% of the Compostable stream. Creating municipal or regional composting programs and increasing awareness about backyard composting could greatly reduce the cost of disposing of solid waste in the State of Maine. Recyclable materials comprised just over 20% of the waste sampled. This category contains desirable materials that should be diverted from the normal waste stream to more economical uses. As shown in the previous section, some municipalities could greatly improve their capture of these materials. While Maine communities have been providing recycling programs to residents since the early 1990's, and recycling initiatives have been increasing with time, municipalities and businesses are still recycling much less of their waste than the state's 50% recycling goal that was established by the Maine Congress in 1989. This deadline for this law has been extended each time it is not met.

A second method we use to examine the data relies on identifying the waste subcategories which make up the greatest part of the residential waste stream. The ten subcategories shown in Table 26 made up 73.05% of the waste sampled for this study. Figure 5 shows the cumulative volume of these ten categories.

Of the waste category identified in the above pie chart, 20% of the 39.87% identified will become a residual material in the Fiberight process and will be landfilled. 19.87%, on the other hand, will be recycled – thus achieving an 80% recycling rate.

Technology Review Fiberight Process for MRC

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1/30/2015

I. Summary:

FBRI was asked to review Fiberight's technology to convert Municipal Solid Waste (MSW) to biofuels and other products. The scope of the review was limited to the biological and chemical conversion of the organic fraction of MSW to liquid fuels and other products. In order to accomplish this task a detailed study of the technology was done which included a site visit to Fiberight's demonstration facility in Lawrenceville, VA. Subject matter experts were consulted to offer comment on process readiness in comparison with similar known biofuel projects and applicable environmental considerations.

The evaluation team concluded that Fiberight's processing technology is sound and capable of converting the insoluble portion of MSW organics to a simple sugar solution. Presently at their pilot plant, Fiberight has successfully used sugar solutions from both the insoluble and soluble portion of MSW to produce biogas through anaerobic digestion (AD). A third party has reported that sugars from the Fiberight process have been used to produce ethanol on a laboratory scale.

1. The equipment and processing steps that constitute the proposed technology are similar to existing equipment and processing steps found today in the pulp and paper industry and in related fields.
2. There are no concerns regarding the scaling up of the technology from the scale demonstrated at the Fiberight facility in Lawrenceville, Virginia, to the scale proposed for the MRC-sponsored facility, particularly for production of biogas and clean sugars. There was no data on Fiberight's operating experience on combustion or gasification of residual post hydrolysis solids at Lawrenceville, VA.
3. Fiberight has demonstrated that its technology can convert the organic fractions of MSW into clean, fermentation-ready sugars without significant inhibitors.
4. The experience at the Fiberight facility in Lawrenceville, Virginia, showed that odor issues are limited to the front-end of trash handling and sorting, with areas beyond the pulp washer are similar to the a paper mill and are relatively odor free. Issues related to air emissions would arise based on combustion or gasification of residual biomass and post hydrolysis solids. Although Lawrenceville VA experience is not directly applicable to Maine's winter operations, Fiberight's experience in Iowa should prepare them in addressing winter operation issues.

The economics of the Fiberight process were outside of the scope of the project and are not reviewed in this report. The claimed hydrolysis efficiency is somewhat lower than that reported for other biofuel feedstock processing technologies, potentially due to the MSW origin. The selection of final products produced from this process will have a large impact on the economics of the project. A Maine specific market analysis is recommended if biomethane, sugars, and biomass are planned to be significant end products from the plant.

Contents

II. Scope:

This review is based on analysis of the elements of the Fiberight technology that involve biological and chemical conversion of the organic fraction of MSW to liquid fuels and other products. The primary aim of this study is to provide the Municipal Review Committee (MRC) with insights regarding the feasibility and viability of the reviewed aspects of the Fiberight technology. Additional limited analysis was conducted to obtain relevant perspectives regarding the Fiberight technology on environmental permitting, host site selection, and technology scale-up issues.

Specific concerns raised by MRC regarding the implementation of new technology in Maine include the following:

1. The extent to which the equipment and processing steps that constitute the proposed technology are similar to, or represent a departure from, existing equipment and processing steps found today in the pulp and paper industry and in related fields.
2. Concerns regarding the scaling up of the technology from the scale demonstrated at the Fiberight facility in Lawrenceville, Virginia, to the scale proposed for the MRC-sponsored facility, with special attention to the continued viability and the potential for changes in performance of the technology at the larger scale.
3. Whether Fiberight has demonstrated that its technology can convert the organic fractions of MSW into ethanol or other liquid fuels or chemical products that meet commercial specifications.
4. Whether the experience at the Fiberight facility in Lawrenceville, Virginia, provides the basis for concerns that an MRC-sponsored Fiberight facility might result in issues related to air emissions, odor emissions, solid or liquid wastes requiring special treatment, or other potential emissions or nuisances.

III. Process Review:

The Fiberight process description with a process flow diagram is reproduced as Appendix A. This was extracted from the information packet submitted to Maine DEP by MRC on September 26, 2014. Based on a site visit by Michael Bilodeau, this process flow has changed slightly, and the updated process flow is described in his site visit report in Appendix B.

A. Front-end Separation System

Review of the US EPA Decision document[1] dated June 2012 indicated that approval of the "Fiberight Separation Plan" means that separated-MSW feedstock produced according to the submitted separation plan for Blairstown, Iowa, with its associated addendum, qualifies as renewable biomass. Thus, Fiberight may use such separated-MSW to produce certain renewable fuels that generate RIN credits. The Fiberight Separation Plan was deemed to be equivalent to a fully functional municipal recycling facility (MRF) as a front-end to their waste-to-energy plant. Fiberight had assumed no prior separation of the waste stream. This is important for the communities not served by curbside recycling. The Fiberight Separation Plan provided for separation of recyclable aluminum, ferrous and other metals, plastic containers, film plastic, glass, aggregate, and organics to the extent reasonably practicable. Fiberight proposes to produce 'recovered recyclables' as products for end markets. The significance of a fully functional MRF as a front-end can be evaluated by the MRC to the extent curbside sorting and recycling practices are applicable to the anticipated waste stream coming to the proposed facility.

Once the initial recyclables have been recovered, the MSW is processed in a pulper at 160°F to 180°F with the addition of water and heat. This creates conditions to allow the organic, primarily food and paper, to break down forming a fine particulate biomass. Once the biomass is produced, it has a much smaller particle size than the remaining materials allowing a high level of separation in standard MRF equipment. The biomass is cleaned in a two-stage washing tunnel where first the soluble organics are removed for the feed to the anaerobic digester, and then the high-cellulose biomass pulp is separated from any small inorganic contamination.

B. Conversion of MSW Organics

For the present review, we focused on evaluating the proposed technologies for conversion of MSW organics, including: (1) soluble organics derived from organics in the mixed MSW, and (2) insoluble organics derived from cellulosic waste, compostable or soiled fiber, and low-lignin yard waste. Fiberight proposes to convert wash water rich in dissolved organics into biogas, and convert washed and pre-treated cellulosic solids into a filtered and concentrated sugar solution.

The biogas can be upgraded on-site to pipeline quality methane-rich gas for injection into a natural gas pipeline or further compressed for use in CNG (compressed natural gas) vehicles as one or more co-products. The sugar solution will be concentrated and sold to a third party as cellulosic sugar.

[1] http://www.epa.gov/otaq/fuels/renewablefuels/documents/fiberight-decision.pdf

1. Anaerobic Digestion

Fiberight proposes to use a "liquid-only" high capacity anaerobic digestion (AD) system to process wash water rich in dissolved organics derived from mixed MSW. This type of reactor system is claimed to produce clean water that can be reused in the washing process and not generate significant quantities of digestate. It should be noted that Fiberight proposes to process only 'soluble' organics in their AD system.

Commonly AD systems have been used to process both dissolved solids as well as suspended solids. When total solids level is less than 15 wt % the digestion is called 'wet', and when total solids level is 25-30 wt % it is called 'dry'. Often, dewatered solid organics are subjected to composting.

The most suitable feedstock for current commercial Anaerobic Digesters is often described as:

- Animal waste and biowaste from wastewater treatment plants
- Food and kitchen wastes from restaurants, canteens, food markets, and municipal source- separated food wastes.
- Organic waste from food processing industry, slaughter houses, etc.

Source Separated Organics are comprised of food waste, paper napkins, and used kitchen paper, as well as green waste. The "all other" fraction is the waste that remains after the recyclable and compostable materials are separated at the source by the citizens at curbside. Most AD plants process "source separated organics (SSO)" but attempts to process organics separated from mixed MSW have proven to be quite challenging. These reported operational problems often come from suspended solids in the feed.

For Fiberight's 'soluble organics only' feed case, AD operations are expected to be more efficient and less problematic. Our site visit indicated that Fiberight has accumulated significant operating experience on biogas production with a small commercial AD installation, using a 8,000 gallon Voith[2] R2S reactor with a maximum capacity of 1,320 lb COD/day. Based on the initial work with Voith, they found there was a limitation of 500 ppm in the feed to the AD. Fiberight now is working with Hydrothane who also supply Expanded Granular Bed (EGB) systems. Fiberight claims this system can tolerate suspended solids up to 2,500 ppm and gives more flexibility. This type of AD is in Fiberight's plan for their site in Iowa. The scale up of the AD is not expected to be an issue. Fiberight's proposed plans for Maine include possible biogas upgrading for input to a natural gas pipeline or production of CNG.

2. Enzymatic Hydrolysis to produce clean sugars

Fiberight proposes to use washed MSW-derived pulp press cake (over 40 wt. % solids) for producing clean fermentable simple sugars. The key step is the thermo-mechanical pretreatment involving pH adjustment and cooking at 260°F for 30 min residence time using steam injection in a pressurized vessel,

[2] http://www.vp-environmental.com/en/Industrial_Environmental/Wastewater/Anaerobic_Biological_Treatment/R2S-Anaerobic_Reactor.html

followed by low consistency (3 to 4 wt.%) refining and dewatering that produces clean and sterile MSW-derived pulp press cake. This MSW-derived pulp is similar to what Old Town Pulp mill was using out of their brownstock washers as far as suitability for hydrolysis is concerned. Actual hydrolysis efficiencies, enzyme loading requirements, and cleanliness of resulting sugars are expected to be quite different for MSW-derived pulp versus brownstock (unbleached chemical) pulp.

Fiberight has an active partnership with a major enzyme supplier (Novozymes) for hydrolysis of pretreated MSW-derived pulp. Unhydrolyzed solids can then be separated from sugar solution using a filter press. Filtered sugar solution can be concentrated using evaporators and/or membrane filtration with evaporator condensate being reused onsite.

This portion of the processing is similar to the brownstock pulp hydrolysis scheme planned for the Old Town mill. The brownstock pulp contains liberated virgin wood fibers from woodchips with lignin and some hemicellulose removed in the black liquor through the chemical pulping process. The black liquor solids are burned in a recovery boiler at a pulp mill providing steam and power. After cooking, the pulp is washed to remove spent chemicals and dissolved lignin prior to hydrolysis. Hydrolysis efficiency for the brownstock pulp is found to be 90% to 95% on the basis of complex carbohydrate content in the brownstock. Resulting simple sugars then need to be cleaned to remove various potential inhibitors.

Fiberight has partnered with Andritz, a major supplier to the pulp and paper industry, to supply the cooking systems for their full scale plants.

The MSW derived insoluble organics are subjected to the thermo-mechanical pretreatment outlined above to prepare the pulp for hydrolysis. Hydrolysis efficiency for the carbohydrate in the MSW-derived pretreated pulp is in the 40 to 50 w/w% range as reported in Michael Bilodeau's site visit report in Appendix B. For example, with hydrolysis feed containing 80% carbohydrates one would get 60% mass out as unhydrolyzed solids at 50% hydrolysis efficiency. The efficiency is low in comparison with virgin cellulosic undried pulp, due mostly to a phenomenon known as hornification. When cellulosic pulp fibers are dried in papermaking, the internal volume of the fiber shrinks. When the fibers are rewetted, they do not swell to the original volume. This lack of swelling to the original state is known as hornification. Due to this occurrence, the enzymes don't have easy access to all of the fiber surfaces, like they do in undried virgin pulp. Fiberight uses some refining to open up the fibers for better enzyme efficiency and is working on a plan to improve this process. Improvements in enzyme technology could aid in the conversion efficiency in the future. The unhydrolyzed solids can be used as biomass fuel if dewatered to low enough moisture content, and burned onsite for steam and power needs of the facility. The resulting sugars need to be evaluated for fermentation yield using selected microbes. Fiberight has reportedly benchmarked such sugars for fermentability to ethanol with the help from Novozymes.

Fiberight has accumulated operating experience on a 1500 gallon hydrolyzer and associated pre-treatment set up in their pilot facility, using current technology. No scale-up issues are anticipated for these steps.

3. Utilization options for MSW derived sugars

Fiberight and Novozymes have carried out a number of bench scale tests converting sugars produced from Fiberight's biomass pulp. The results demonstrate that the conversion of the C6 sugars to ethanol is within industry standards. Technology for fermenting sugar into ethanol, irrespective of the source of sugar, can be supplied by a yeast supplier as long as sugars meet the minimum quality specifications and are available at the required feed rate in a reliable fashion to support the installed processing capacity. Fiberight is planning to ferment sugars to ethanol in the plant in Iowa, but is not planning this step in Maine.

As part of Fiberight's development process, modifications were made to the plant in Blairstown to allow the plant to run paper mill sludge. Conversion efficiencies of the mill sludge were low, possibly due to the use of an early generation enzyme during hydrolysis where the sugars were produced and then fermented to ethanol.

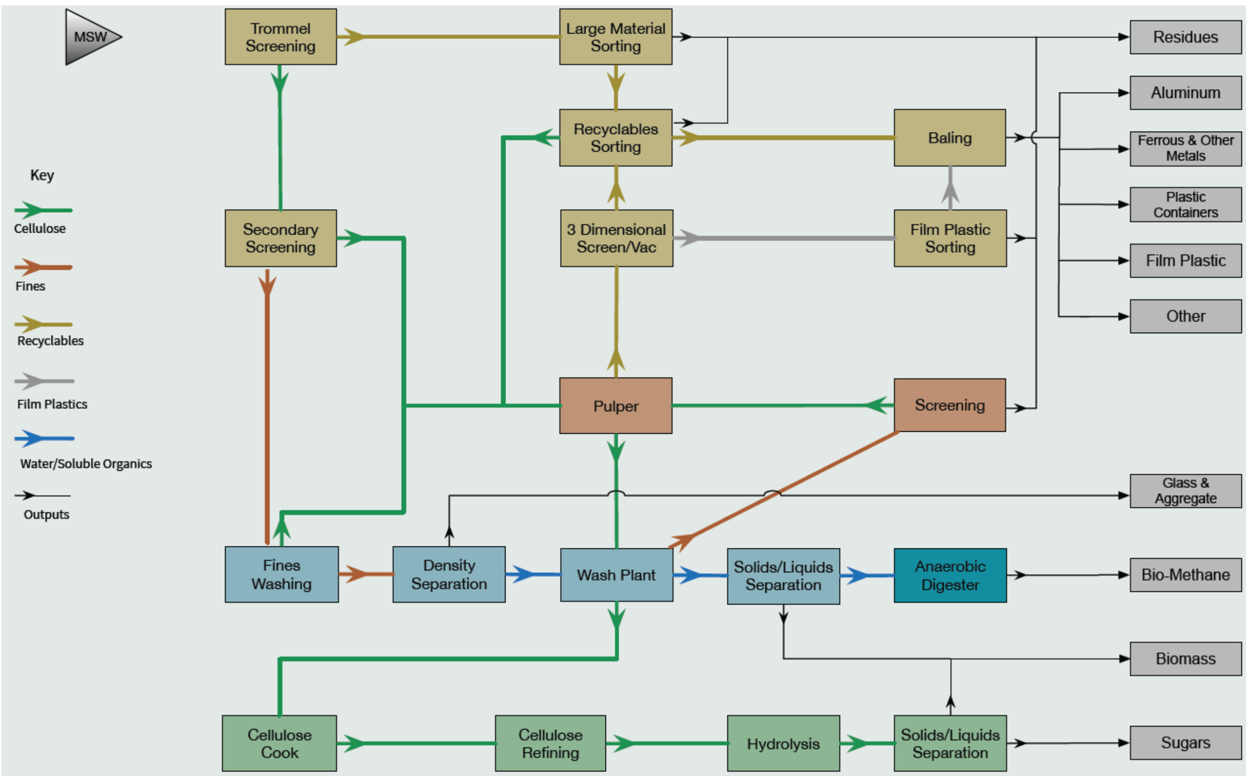
The proposed product of the Fiberight processing in Maine is a concentrated, filtered, clean simple sugar solution for off-site use. Another option involves processing simple sugars from the hydrolyzer in the AD system as soluble organics on-site for additional biogas production. Fiberight claims this is likely the option they will choose during 3 of the winter months in Maine due to the short supply of natural gas in Maine. Both of these alternatives would avoid the technical risk and capital investment associated with the fermentation and upgrading of ethanol. Darrell Waite's report on proposed MSW sugar utilization in Appendix D cautions having sugars as an end product due to lack of market for cellulosic sugars. Fiberight claims they have an interested party for the sugars produced in their plant in Virginia and is looking into the market for the Maine sugars with multiple parties. Transportation of the clean sugars to the end user will need to be evaluated for cost and possible contamination.

IV. Site infrastructure and permitting needs:

As shown in an overall process flow diagram below (See Appendix A and B for process descriptions), a variety of processing options raise certain site attributes that need to be considered early. The process description supplied by Fiberight does not adequately specify on-site waste water treatment and disposal needs. Furthermore, solid waste disposal to a landfill is also not clearly specified. A full mass and energy balance should be obtained and reviewed because it is needed to fully understand impacts on air, water and landfill as well as process energy requirements. With the elimination of ethanol production from the scope of the Maine project, now there is no product with current established markets in Maine. There appears to be a significant reliance on emerging Maine markets for biomethane produced from AD, sugars produced from hydrolysis, and residual unhydrolyzed biomass. It is unclear what portion will be used onsite versus sold.

Fiberight is exploring the use of paper mill sludge at their Iowa plant. A possibility of accepting pulp or paper mill sludge to supplement MSW derived organics may be an interesting option, but avoidance of current landfilling in favor of transporting sludge to the proposed Fiberight facility combined with ongoing pressure to reduce cellulose losses from mills into waste sludge raises various practical business issues.

A report by Sevee & Maher Engineering, Inc. (SME) in Appendix E offers more information on details of permitting requirements. Once the material and energy balance information is complete along with equipment selection and sizing, the permitting process should begin in order to meet the project deadlines. The permitting process could take an estimated 6 months to one year. As mentioned in the SME report in Appendix E, the Fiberight site proximity to Acadia National Park and Moosehorn Preserve could raise air emissions concerns.



Site selection criteria should include consideration of the following attributes:

1. Access to waste water treatment – industrial preferred or municipal with adequate capacity.
2. Access to natural gas pipeline
3. On-site natural gas usage
4. Good road for truck traffic and rail access
5. Industrially permitted site for air and water emissions and deployment of MSW Organics conversion technologies
6. Distance away from residential and retail zones or other environmentally sensitive areas.
7. Space for co-location with users of recovered materials.
8. Shielded from public view.
9. Pine Tree or other incentivized zone is a plus.

V. Technology Readiness and Project Implementation Considerations:

Proposed process technology for converting MSW derived organics into biogas and MSW cellulosic sugars has been clearly identified by Fiberight, with several aspects already deployed at pilot or small commercial scale. Processing equipment used for MSW pulping, washing, pretreatment, hydrolysis, and anaerobic digestion at the Fiberight pilot plant in Lawrenceville, VA is sufficiently similar to what has been deployed in pulp and paper industry so that scale up risk is not an issue. Appendix B gives detailed notes from the November 2014 site visit, and Appendix C provides comments on MRC site visit report of December 2013 as an update.

Fiberight has been working with a number of strategic equipment suppliers, including Vickers Seerdrum for a continuous pulper, Milnor for the two-stage washing unit, Andritz for the cooking and refining stages, Proquip for mixing, HydroThane for the EGB (expanded granular bed) reactors for the AD plant, and Novozymes for the enzyme and technical support. These relationships are valuable assets. Fiberight is also working with an independent engineer (Black & Veatch) in connection with an USDA loan guarantee application for the Iowa project. The Independent Engineers report on Fiberight's Iowa project will provide significant information that would useful for evaluating a business case for the proposed project for MRC in Maine. Such a report may contain details on the material and energy balances, along with estimates of CapEx and OpEx, for various process blocks in the Fiberight process flow diagram.

The proposed technology is close to beginning construction for commercial deployment in Iowa, although we have not seen a detailed resource loaded construction schedule with a specific starting date. The next step for the Maine project is to clearly define the scope of the project in terms of the final products and end users/customers. There is still some uncertainty regarding what is going to be used on-site and what is going to be sold and in what form. Once that is defined, there should be a deeper dive for the capital required for process technology implementation. A table showing the DOE[3] Class 5 Concept Screening study is shown in the table below. Based on the fact that the Iowa project is at or near the Class 2 level, there will be many similarities for the Maine project and the planning time should be reduced. It would still require resource commitments on Fiberight's part dedicated to advancing the Maine project. Another planning stage process used for construction projects is Front End Loading and it has 3 levels, of which level 3 is defined below. This will need to be completed to have all basic data/information to file for permits. Once FEL 3 is complete, the permitting will take conservatively 12 months for a greenfield site. Often the permitting needs to be completed before major equipment can be ordered. Major equipment may have lead times as long as 12 - 18 months. As an example, evaporators are typically 15 +/- 3 months for delivery. The major lead time items will drive the schedule. A project completion schedule for startup of operations by April 1, 2018 appears to be aggressive, but still realistic.

[3] https://www.directives.doe.gov/directives-documents/400-series/0413.3-EGuide-21

	Primary Characteristic	Secondary Characteristic		
ESTIMATE CLASS	DEGREE OF PROJECT DEFINITION Expressed as % of complete definition	END USAGE Typical purpose of estimate	METHODOLOGY Typical estimating method	EXPECTED ACCURACY RANGE Typical variation in low and high ranges [a]
Class 5	0% to 2%	Concept screening	Capacity factored, parametric models, judgment, or analogy	L: -20% to -50% H: +30% to +100%
Class 4	1% to 15%	Study or feasibility	Equipment factored or parametric models	L: -15% to -30% H: +20% to +50%
Class 3	10% to 40%	Budget authorization or control	Semi-detailed unit costs with assembly level line items	L: -10% to -20% H: +10% to +30%
Class 2	30% to 70%	Control or bid/tender	Detailed unit cost with forced detailed take-off	L: -5% to -15% H: +5% to +20%
Class 1	70% to 100%	Check estimate or bid/tender	Detailed unit cost with detailed take-off	L: -3% to -10% H: +3% to +15%

Notes: [a] The state of process technology and availability of applicable reference cost data affect the range markedly. The +/- value represents typical percentage variation of actual costs from the cost estimate after application of contingency (typically at a 50% level of confidence) for given scope.

Front-End Loading (FEL) 3: Project Planning[4]

This stage is referred to as the project planning stage. The beginning of this phase is defined as the point at which one alternative evaluated during FEL 2 has been selected for further definition, with the goal of taking it to an authorization board for funding. During this phase, most project teams grow in size due to the increased amount of engineering work to be completed prior to authorization.

The goal of FEL 3 is to develop a set of engineering documents (design basis package) that incorporate site-specific conditions and a plan for executing the project, such that reliable cost and schedule estimates can be established. Typically at the FEL 3 stage the cost estimates reflect an accuracy of between ±10 to 20 percent accuracy. The product of this phase will allow a detailed package to be presented at the authorization gate. The specific deliverables for the FEL 3 stage are:

- Complete P&IDs
- Detailed Equipment Specification

[4] http://www.ipaglobal.com/Services/Individual-Capital-Project-Services/FEL-3

- Procurement Plan
- Detailed Scope of Work (including quantities)
- Critical-Path Method, Resource-Loaded Schedule (including startup activities)
- Authorization-Grade Estimate (±10 to 20 percent accuracy)

  The end of FEL 3 occurs when the project is authorized and the project team receives funding to move into detailed engineering. This corresponds to Class 3 accuracy.

An immediate recommendation is that an owner's or lender's representative, similar to what DOE and USDA require for their programs, be secured for the Maine project. This representative should have the capability to complete or review the Front End Loading (FEL 3) process for the Maine project, which is the common capital project process today. This representative should focus on an Independent Engineering Review and Risk Management for the MRC. The timing of this is critical because it is an incremental, cumulative process that builds upon early tasks to complete later, more complicated tasks.

VI. List of Appendices

A. Fiberight Process Description

B. Notes from visit to Fiberight pilot plant in Lawrenceville, VA Nov. 11, 2014

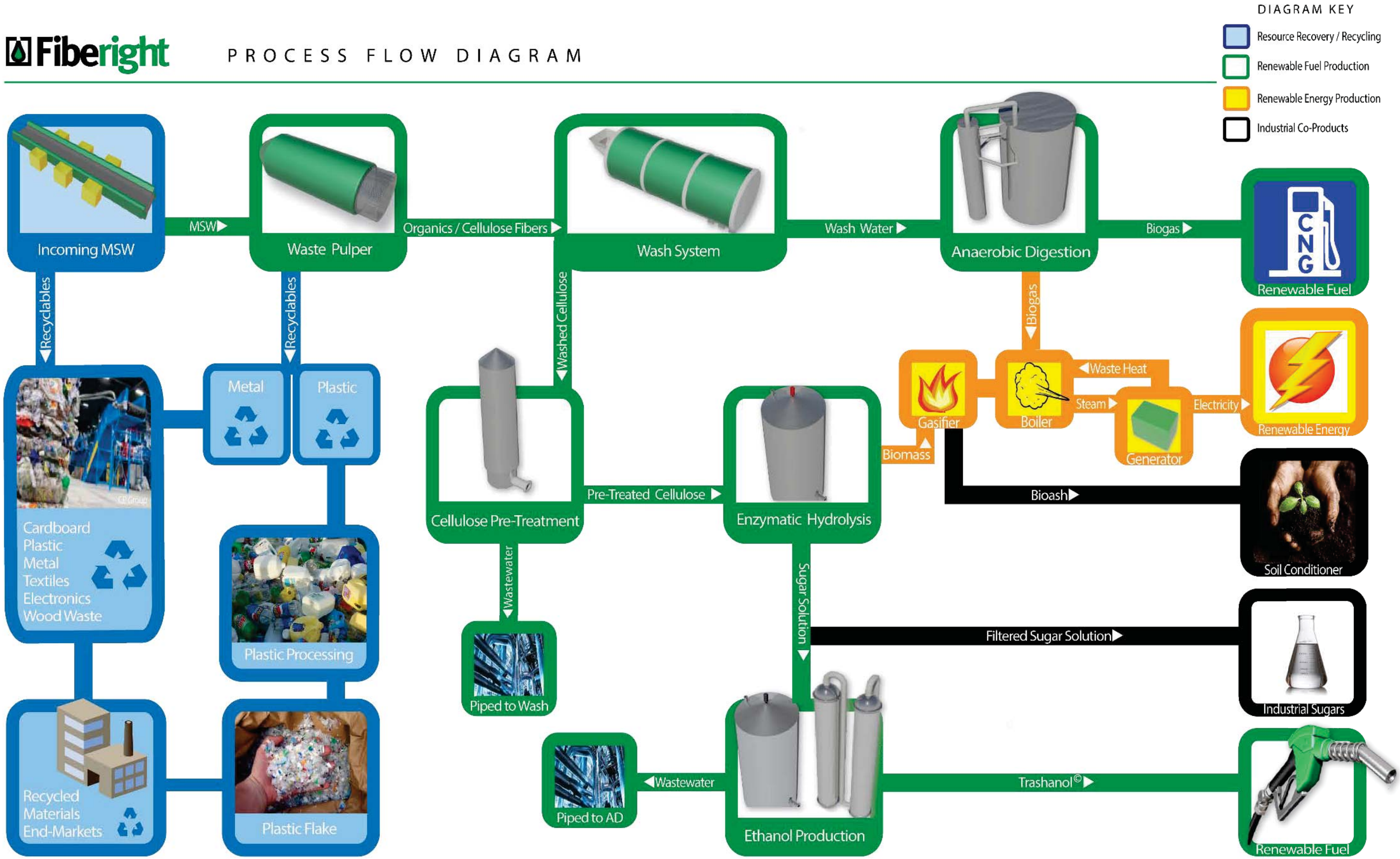
C. Report on Trip to Fiberight Facility in Virginia with Mike Bilodeau's comments and updates

D. Fiberight Technology Evaluation of Conversion of MSW Organics into Ethanol

E. Site Infrastructure and Permitting Considerations

APPENDIX A

"Fiberight Process Description", Memo to Karen Knuuti, Maine DEP Regional Office, from Municipal Review Committee, September 26, 2014, pgs. 4-8.



Fiberight
PROCESS FLOW DIAGRAM
DIAGRAM KEY
Resource Recovery / Recycling
Renewable Fuel Production
Renewable Energy Production
Industrial Co-Products
Incoming MSW
MSW
Waste Pulper
Organics / Cellulose Fibers
Wash System
Wash Water
Anaerobic Digestion
Biogas
Renewable Fuel
Recyclables
Recyclables
Metal
Plastic
Cardboard
Plastic
Metal
Textiles
Electronics
Wood Waste
Plastic Processing
Recycled Materials End-Markets
Plastic Flake
Washed Cellulose
Cellulose Pre-Treatment
Pre-Treated Cellulose
Enzymatic Hydrolysis
Biogas
Gasifier
Boiler
Waste Heat
Steam
Generator
Electricity
Renewable Energy
Biomass
Bioash
Soil Conditioner
Wastewater
Piped to Wash
Sugar Solution
Filtered Sugar Solution
Industrial Sugars
Wastewater
Piped to AD
Ethanol Production
Trashanol©
Renewable Fuel

PROCESS DESCRIPTION

MSW Receiving

Primary MRF

The first step in the process is to remove large bulky items prior to MSW loading into a low torque shredder which opens and empties bags of trash. MSW is conveyed through a series of screens to create different size fractions. Materials larger than 14 inches continue on to be hand sorted for recycling or disposal.

Pulping

The sorted material is conveyed into a drum pulper which breaks the organic material down to form a biomass and allows for the removal of any fine contamination, the recovery of soluble organics and resulting cellulosic pulp. Pulped material is discharged, as a high moisture solid and passes across a screen to recover recyclables such as metals and plastics. The remaining biomass, approximately 80%, still containing fine contaminants and soluble organic material, is conveyed to the washing system.

Plastics processing

The plastics recovered post-pulping is first separated into a mixed plastic stream and then further separated into individual plastic streams. These steams are shredded and go through a washing process where residual contaminates are removed. The final stage is to “flake” and dry each of the plastics to produce a product suitable for reprocessing, commanding a higher price per ton than marketing the plastics as received.

Washing

The homogeneous organic fiber is conveyed into a two stage washing process. This a continuous process utilizing a series of drums and screens to contaminants and concentrate the organic fraction. The first stage wash removes soluble organic material and pumps the high chemical oxygen demand wastewater to a pre-acidification tank prior to entering the high-rate anaerobic digester for biogas production. The second stage wash dilutes the remaining material where filters are used to separate out the fine cellulose from the remaining contaminates. The washed cellulose is then pumped into a stock tank. From the stock tank, the cellulosic pulp is pumped as a slurry into a screw press where it is de-watered to about a 50% solids press cake. Washed fibers exit the system and are pumped to be pre-treated for hydrolysis.

Enzymatic Hydrolysis

Pretreatment Reactor

The dewatered pulp is conveyed to the pretreatment reactor whereby water and acid is added into a pretreatment mixer so the appropriate solids concentration and pH is obtained. Slurry from the pre-treatment mixer is then pumped to pre-treatment reactor and held at approximately 125°C for a minimum of 30 minutes. Fiber exiting the pretreatment reactor is pumped to a medium consistency refiner and then to a screw press to be dewatered. The filtrate from the screw press is returned to the mix tank. The pretreated fiber press cake is conveyed to an enzymatic hydrolysis digester. The pretreatment reactor, pumps, filtrate tank, and screw press are connected to a Clean-in-Place (CIP) system for regular cleaning and sterilization.

Hydrolysis

The hydrolysis process is carried out in within a high viscosity digester paired with a set of mixing tanks. The pre-treated fibers enter the mixing tanks along with water and enzymes. The enzymes, produced by Novozymes (our strategic partner - ***novozymes****.com*) help break the cellulose bonds to produce C6 and C5 sugars. Fiberight has developed intellectual capital to maximize cellulose to sugar conversion efficiency and lower enzyme costs, the most expensive component of ethanol manufacturing costs. The wetted fibers circulate through the hydrolysis tank where cellulose within the fiber is converted to sugars on a batch basis. The temperature of the process is controlled for optimum digestion and the pH is controlled by adding either acid or alkali, as required. Once the optimum mixture is obtained, it is left in the digester where the low-temperature biological process is complete. Each digester, pump, heat exchanger and mixing vessel are connected to a CIP system for regular cleaning and sterilization.

Solids Separation and Sugar Concentration

A filter press is utilized to separate the undigested solids from the liquid sugar solution. The undigested solids are slurried and passed to the water treatment plant. The sugar solution is pumped to an evaporator where it is concentrated for storage. The condensate recovered from the evaporator is stored and used as make-up water for the digestion process. The pumps and tanks are connected to a CIP system for routine cleaning and sterilization. The filter press membrane system is a skid mounted vendor system that incorporates a clean-in-place feature.

Renewable Energy Production

Anaerobic Digester

The high organically loaded liquid is cooled and sent to an anaerobic digestion system. This system uses microorganisms to digest suspended and dissolved solids contained in the water to reduce the chemical oxygen demand (COD) of the water. The conversion efficiency of this process and the high soluble organic loading produces clean water which can be reused in the washing process and does not generate digestate. A methane-rich biogas stream is also produced, which can be used as supplementary fuel for internal energy production via a boiler, cleaned and compressed for use in CNG vehicles or injected into a natural gas pipeline.

Recovered Water & Clean-in-Place

Process water recovered from the water treatment system is used to dilute solids in the pulp and wash systems to maintain desired moisture content. A portion of the recovered water is sent to the CIP storage tank. Sodium hydroxide (caustic) is added to the water in this tank to produce a cleaning solution. The caustic CIP solution is circulated to and through equipment to remove accumulated solids and to sterilize equipment to prevent the growth of bacteria. Cleaning frequency is based on equipment type and plant / production performance.

Biomass Combustion

The solids from the water treatment plant, which is spent fiber with a high lignin content, are processed in a specially designed combustion unit. The heat from the combustion process is recovered, in the form of high pressure steam, which is let down through a back pressure steam turbine. The exhaust steam from the turbine is then used to provide process heat. The amount of electrical and heat energy generated by the biomass combustion is sufficient to provide the energy demand for the plant.

Renewable Fuel Production

Fermentation

The C6 and C5 sugars are used to produce cellulosic ethanol through a fermentation process. Once the concentrated sugar solution is cooled to 33°C (the temperature for fermentation), fermentation is accomplished in three tanks, all of equal size. The fermentation process generates heat, which is removed by circulating the tank contents through external heat exchangers. The fermenters are piped to circulation pumps and coolers for cooling and transferring the beer, the liquid resulting from fermentation, to the beer well, a holding tank that continuously feeds the distillation system.

The carbon dioxide (CO_2) that is produced during fermentation is collected and routed to a scrubber. Residual ethanol is recovered by the scrubber and the resulting carbon dioxide gas can be recovered and sold as food-grade CO_2. The fermenter tanks, pumps, and heat exchangers are connected to a CIP system for regular cleaning and sterilization.

Distillation and Dehydration

The distillation system separates the ethanol in the beer from the remaining water and solids. The beer is preheated using the hot bottoms from a rectifying column. The solids and a portion of the water exit the bottom of the column. This stream, commonly called "stillage," is partially cooled by preheating the beer and sent to the water treatment system. The ethanol vapor is concentrated as it rises through the column eventually reaching the azeotropic point (95.5 % v/v) as it exits the top of the column. A portion of the column overheads are condensed and returned to the column as reflux. The remaining part of the concentrated ethanol is then fed to the dehydration system.

To produce fuel grade ethanol, the remaining water must be removed. This is done utilizing a two-bed molecular sieve dehydration system. Water is adsorbed on the sieve bed material while ethanol passes through the bed. The dehydration system uses a "pressure swing" process that requires virtually no external heat. Each of the sieve beds cycles between adsorption and regeneration modes to maintain maximum water removal capacity. Adsorption takes place under positive pressure while regeneration is accomplished under vacuum. The adsorbed water is removed during a regeneration step and is routed back to the distillation system.

Fuel Ethanol Storage and Loading

Cellulosic ethanol is pumped to one of two shift tanks, each sized to store 24 hours of production at the full plant design production rate. The production rate of the ethanol from the distillation / dehydration system is monitored with in-line instrumentation, while moisture content is monitored with laboratory equipment from regularly scheduled samples. Once ethanol quality is verified it is transferred to a product storage tank. A blending system is used to blend gasoline denaturant from a denaturant storage tank into the ethanol as it transfers to a product storage tank. The product storage tank stores four days of ethanol production. The capability to add additional denaturant in-line before the truck load-out is also provided. A loading system is provided to allow the drivers to load their own trucks with minimal assistance from plant operators. One loading arm, with a 600 gallons per minute loading capacity, is provided. Trucks are bottom filled. Vapor displaced during the filling process is burned in a flare or vented to the atmosphere in accordance with environmental permits.

Plant Water Management

Recycling & Reuse

Purge water from the washing system, diluted solids from the sugar recovery and the stillage from distillation are blended together. The solids are removed using a belt press and any residual fine suspended material is removed using a dissolved air flotation system. The high organic liquid created is sent to the anaerobic digester. The solids, in the form of cake, are sent to the biomass combustion plant.

APPENDIX B

"Notes from visit to Fiberight pilot plant in Lawrenceville, VA Nov. 11, 2014", Michael Bilodeau, December 10, 2014.

Process Development Center
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December 10, 2014

Subject: Notes from visit to Fiberight pilot plant in Lawerenceville, VA Nov. 11, 2014

The following are notes from my visit to the Fiberight pilot plant in Lawerenceville, VA on November 11, 2014. Nick Thompson, Fiberight CTO, hosted the visit and provided responses to questions and other information contained in this memo.

The pilot plant is located in a separate building on an industrial lot on the outskirts of a rural town. The plant can process 50 tpd of municipal solid waste (MSW). Some of the feedstock for the current campaign was stored outside during my visit.

Front End

Unit operations at the Fiberight pilot plant can be arranged in such a way that MSW can be processed, in a batch mode, to simulate some of the process flows proposed for commercial facilities, such as the one in Maine. Some equipment is used twice to simulate the proposed process. For example, one set of screens and conveyors are used to process the in-coming raw material (MSW) in an initial fractionation step. The same screens are subsequently used to fractionate the material leaving the autoclave in a second pass. While not uncommon for a pilot facility, it does limit the ability to simulate a continuous process at the pilot plant scale.

Autoclave (Pulper)

The key to the Fiberight process is the low “cooking” temperature sorted MSW is processed at in the autoclave, or pulper. Typically, the autoclave operates at 70-80 C. for up to one hour. The temperature is held low enough as to not melt or degrade the plastics that are to be recovered, yet high enough to sterilize the material. The low temperature ensures that the plastic fraction is not degraded, preserving the value of the recovered plastic and makes the separation process more efficient. Sufficient water must be used to fully hydrate the fibers which aids in fiber recovery.

The output from the Autoclave goes to a screen where the fiber is sent to the washers and the larger plastics, metal and glass are sorted from the stream.

Washing

The fiber washing step uses a continuous, multi-stage process, similar to a cruise ship clothes washing line. Wash water goes to AD, solids go to a screen and then on to the refiner. Refining of the fiber improves enzyme conversion efficiency.

The refined fiber is then heated with steam and thickened in a screw press.

Phosphoric acid is added to the material exiting the screw press and just prior to entering the hydrolysis reactor for pH control. The use of phosphoric acid minimizes the dissolution of any calcium carbonate present in the fiber faction and, unlike sulfuric acid, does not form gypsum which is difficult to process. The pH is buffered at approximately 5.2-5.5 and provides for improved pH control compared to stronger acids such as hydrochloric or sulfuric acid.

Andritz is the technology partner for the pulper, washer and refiner.

Hydrolysis

The hydrolysis is carried out in a 1500 gallon fed batch reactor at 55 C and a pH of 5.5. Some ammonia can be added to control pH. Suspended solids are about 12%, but can be as high as 20%. Proper mixing is challenging at the higher solids/viscosity.

The hydrolysis reactor is front end loaded with enzyme and fed continuously during the hydroysis.

Fiberight achieves about 40% hydrolysis conversion, on a solids basis – 50% conversion based on carbohydrates. The hydrolysis reaction takes between 60 -72 hours to complete.

Enzyme efficiency with CTech3 is about 0.07 kg enzyme/kg of sugar. Novazyme anticipates that this will improve by 25% when they begin to use CTech4. Fiberright reports that the sugar out of the hydrolysis stage contains “very little” lactic acid or other inhibitors. No data on the sugar purity was made available. Sugar concentration out of the hydrolysis reactor is about 6-7%, with a composition of 20% C5 and 80% C6.

Fiberight is interested in improving refiner control for hydrolysis improvement. They are interested in exploring moving the refiner to process the isolated hydrolysate solids leaving the hydrolysis reactor. The processed solids are added to the next hydrolysis reaction. This is expected to provide refiner energy savings and improved enzyme efficiency.

The output from the hydrolysis reactor goes to a plate and frame press. Filter cake solids are about 40% with about 10% sugar losses. Some of these losses are recovered in subsequent passes through the hydrolysis reactor as the solids are fed back to the reactor.

The recovered sugars would be sent off to fermentation or concentrated and sold.

Outputs and Sugar Conversion

The pilot plant does not have any fermentation or ethanol processing capability. The inability to secure an environmental permit to produce ethanol for the site has contributed to this situation. Thus, no assessment in the ability to ferment the sugars into ethanol at the pilot scale could be made.

Currently, C6-rich sugars isolated from the hydrolysis reactor are combined with the C5-rich sugars streams and then sent to the anaerobic digester (AD) to produce biogas. The biogas produced in the AD is flared.

Novazyme is the technology partner for enzymes and fermentaton. They have fermented the Fiberight sugars into ethanol, but only at the bench scale. The fermentation model is based on C6 conversion only.

In commercial operations, it is expected that enough centrifuge solids (@ 24-25 MJ/kg, primarily lignin), and plastics-rich rejects are generated to satisfy the steam and electrical requirements for a plant producing ethanol. The biogas generated would be an additional revenue stream.

The AD needs to be started with “starter seed water” from another operating AD reactor. The AD reactor is “self-sufficient” after start-up. Voith is the current technology partner for the AD, which is a “high capacity”, liquid only digester.

Typically, as much as 20% of the MSW raw material is not able to be processed (such as furniture, mattresses, large toys, etc) and would need to be land filled.

Very little, if any, process water is discharged from the process. Fresh water is needed for steam generation (boiler quality water) and to start the hydrolysis reactor on start-ups. All other operations reuse process water.

Other

The Blairstown, Iowa plant is scheduled to start construction soon, with start-up expected in late 2015. The plant will use 650 tpd of MSW and plans to supplement the feedstock with 350 tpd of paper mill sludge. One of the paper mills is an IP mill. They have not yet run paper mill sludge in the pilot plant.

Fiberight secured an USDA Loan Guarantee for the IA project. Black & Veatch is the independent engineer on the project and expects to issue their report in Feb 2015. The loan is expected to close in June 2015.

The core technology is sugar production. Fiberight is working with a company on take-off agreements for sugar. The final product/application was not disclosed.

Fiberight expects to build and operate the ME plant. Break-even scale is 250 tpd of MSW. Fiberight claims that the current economic model doesn’t work with a tipping fee of 0$/ton, but if plastic film could be sold, then plant would operate in the black.

Sincerely,

Michael A. Bilodeau
Director, Process Development Center
mbilodeau@maine.edu

APPENDIX C

"Report on Trip to Fiberight Facility in Virginia", Greg Lounder and George Aronson, 19 December, 2013, with comments added by Michael Bilodeau, December 22, 2014.

MEMORANDUM

TO:	MRC Board of Directors
FROM:	Greg Lounder, Executive Director, MRC
	George Aronson, Principal, CRMC
RE:	Report on Trip to Fiberight Facility in Virginia
DATE:	19 December 2013

This memorandum describes the trip to the Fiberight MSW processing facility in Lawrenceville, Virginia, which was visited by MRC Board Chair Chip Reeves and MRC executive director Greg Lounder and consultant George Aronson on December 18, 2013.

The Fiberight Facility is a pilot project that was recently upgraded to a demonstration scale in order to demonstrate a process for converting MSW into ethanol and other fuels or chemicals. At present, the facility accepts about five tons of MSW every two days. The MSW is solicited from local towns or haulers on an on-call basis. The facility includes four components:

1. A dirty MRF for recycling easily recoverable components of incoming MSW.
2. A pulp and wash plant for converting the organic components of incoming MSW into pulp.
3. A chemical plant for converting the pulp into ethanol or other products.
4. An anaerobic digestion plant for converting slurried organics into bio-gas.

The MRF

When received, the MSW is off-loaded into a bunker (Figure 1), then pushed onto an inclined conveyor that feeds a trommel with a bag-opener and screens with 2.5-inch holes (Figure 2). Materials that pass through the trommel ("overs") are sent to a picking line for removal of large textiles (Figure 3) and other non-processibles, then stockpiled in a bunker near the autoclave. Materials that fall through the holes in the trommel screen ("unders") are sent through a second trommel having 0.75-inch holes. The overs from the second trommel (which do not contain any large textiles) are also sent to the bunker near the autoclave. The unders from the second trommel screen, which consist mostly of dirt, sand and stones, are sent to a landfill.

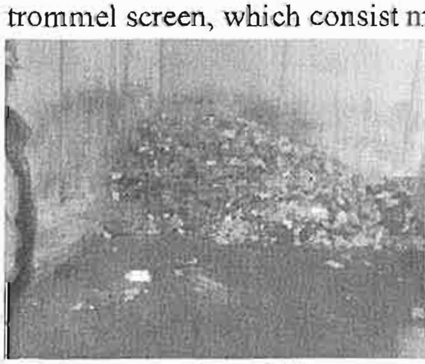

Figure 1. Bunker for tipped MSW.

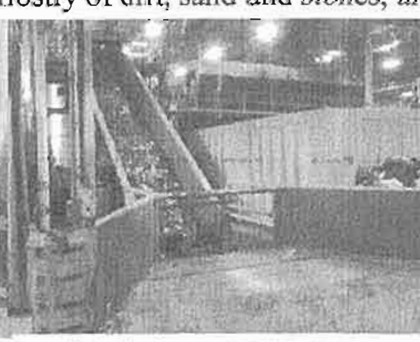

Figure 2. Inclined conveyor and trommel.

Figure 3. Recovered textiles

The autoclave (Figure 4) is loaded with material in 1000-pound batches, then mixed with 100 gallons of water per batch. Each batch is mixed and heated for 45 minutes at 230 degrees F. The autoclave acts as a high-solids pulper that solubilizes the organic waste and turns the paper to fiber, but does not depolymerize the plastic. Material leaves the autoclave having absorbed the added water to reach a moisture content on the order of 70 percent (Figure 5). This material is then pushed onto the same in-feed conveyor used on the raw MSW to the same trommel with screens having 2.5-inch holes referenced previously [a new plant would have separate conveyors and trommels]. The trommel overs are sent to the picking station for manual recovery of plastics and metals (Figures 6 and 7) [A new plant would use automation to recover plastics, ferrous and non-ferrous metals, and might recover other materials]. The trommel unders consist almost entirely of organics and fibers that are sent to the pulp and wash plant.

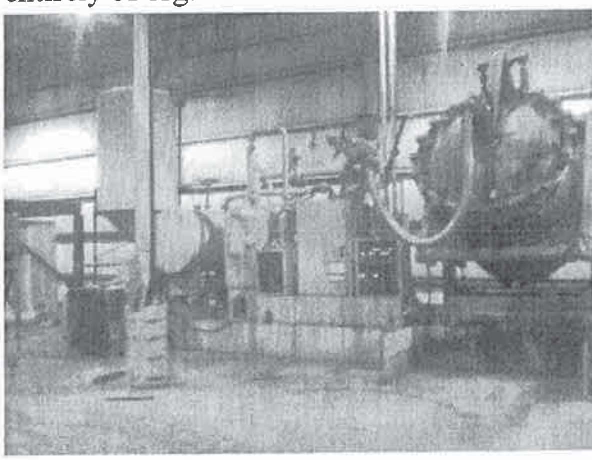

Figure 4. The autoclave.

Figure 5. Autoclaved materials.

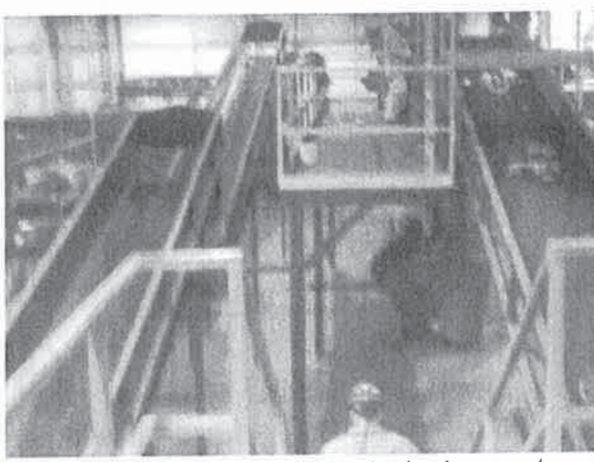

Figure 6. Pulped organics and recyclables leaving the trommel.

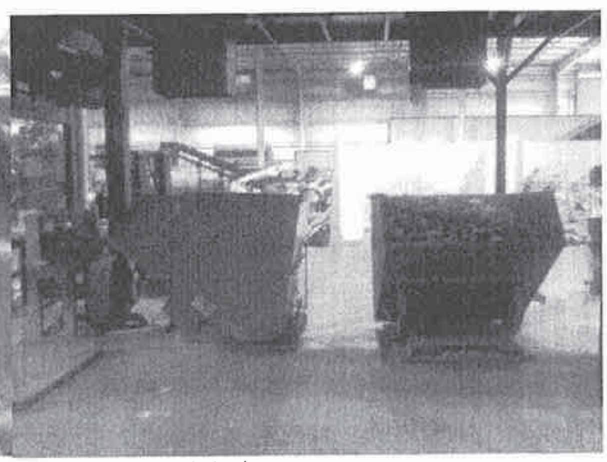

Figure 7. Recovered plastics.

Summary of Comments on MRC memo_001 mab comments 12 22 2014.pdf

Page: 2

Number: 1 Author: mbilodeau Subject: Sticky Note Date: 12/22/2014 10:29:55 AM

They have since gone to low temp cooks to preserve plastic value and not melt materials.

The Pulp and Wash Plant

The pulp and wash plant involves use of a "continuous batch washer" (Figures 8 and 9) to produce clean sterilized pulp from the incoming materials. Materials are agitated and sterilized in multiple stages for 35-minute cycles at 250 degrees Fahrenheit. The pulp and wash plant also includes an elaborate scheme for recycling incoming water and for minimizing water and energy use through counter-flow configurations, as well as elaborate systems for de-watering and removing entrained plastics from the pulp.

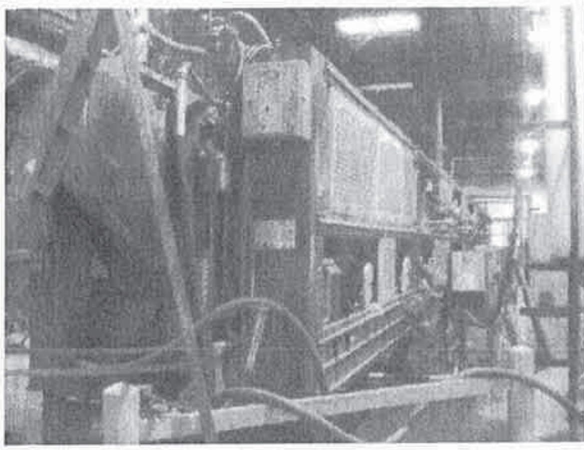

Figure 8. The continuous batch washer.

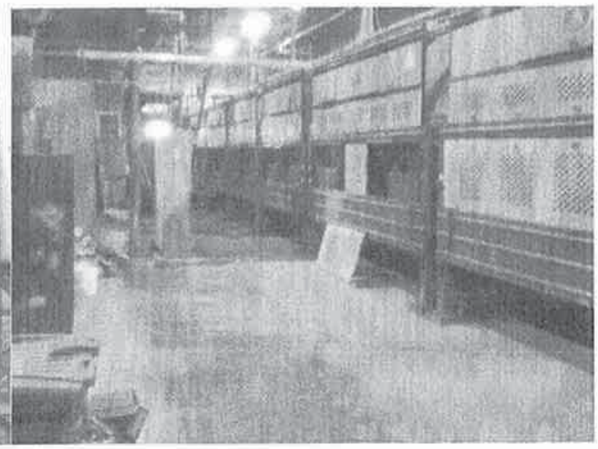

Figure 9. The continuous batch washer.

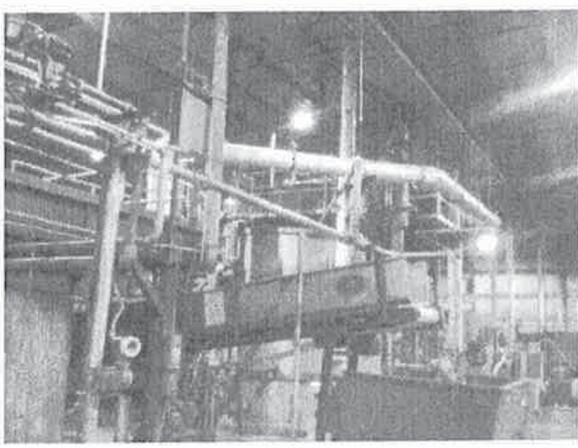

Figure 10. De-watering and plastics removal systems.

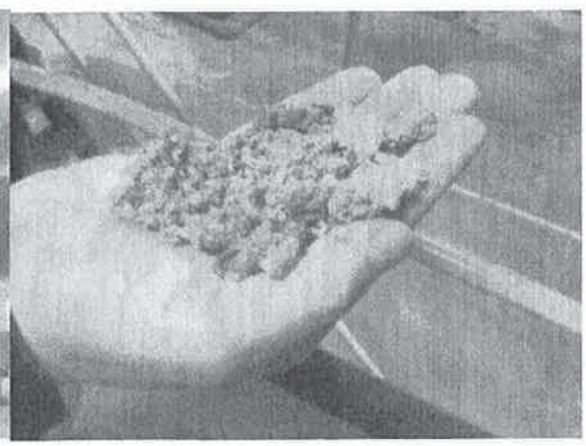

Figure 11. Clean pulp made from MSW.

The Chemical Plant

The chemical plant includes elaborate processes for adding enzymes to the pulp, adjusting pH, and controlling mixing and temperature to create sugars, encourage fermentation and create ethanol and various other products (Figures 12 and 13). Fiberight is selling the ethanol to fuel blenders for $1.80 per gallon, which translates to $32.40 per ton of incoming MSW at a production rate of 18 gallons of ethanol per ton of MSW. Fiberight continues to experiment with

Number: 1 Author: mbilodeau Subject: Sticky Note Date: 12/22/2014 10:36:59 AM

I did not see pressurized vessels in the equipment that I saw.

the process to demonstrate the types of products that can be created and the optimum methods for production. Among the products that are generated is a residual material stream from the conversion process referred to as "post-hydrolysis solids" (Figure 14), which Fiberight indicated had sufficient energy value to be pelletized for use as a solid fuel, and sufficient nutrient value to be blended with compost.

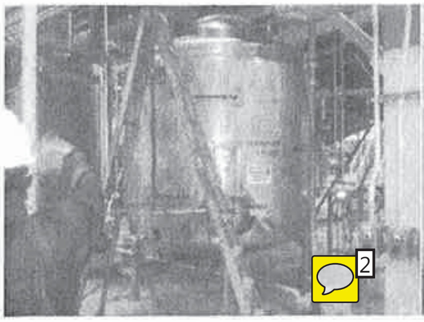
Figure 12. Fermentation in the chemical plant.

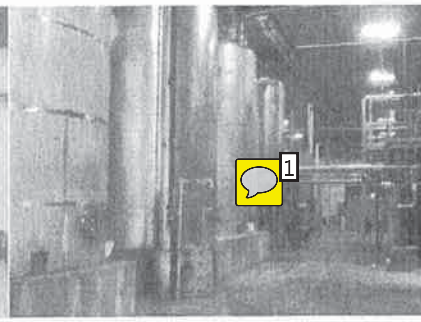
Figure 13. Ethanol production.


Figure 14. Post-hydrolysis solids.

The Anaerobic Digestion (AD) Plant

The AD plant is used to digest a liquid wastewater from the continuous batch washer that is laden with organic material from the pulp and wash plant. The AD plant is a low-solids reactor vessel that has an 8-hour residence time for COD destruction. The AD plant produces bio-gas, which is destroyed in a flare.

Status of Technology Development

Fiberight is using the results of its experience at the Lawrenceville facility as the basis for developing a set of facilities in Iowa. Fiberight already owns a small chemical plant for producing ethanol from biomass in Blairstown, Iowa. Fiberight is about to start construction on a commercial 650 tons-per-day facility in Marion, Iowa (near Cedar Rapids), that would include a mixed MSW MRF and a pulp and wash plant. The pulp would be sent to the Blairstown facility for conversion to ethanol. Fiberight has also been selected for development of a facility in Iowa City, Iowa, that would accept mixed MSW, remove non-processibles, then transfer the material to the Marion facility for processing. As part of the agreement, Iowa City would discontinue its curbside recycling collection program on the assumption that all of the recyclable material would be recovered either at the Iowa City mixed MSW MRF and transfer station or at the Marion processing facility.

Fiberight is familiar with RDF from the PERC facility. During the development of the Lawrenceville facility (before it was taking MSW), Fiberight arranged to receive several loads of RDF from the PERC facility. The RDF was processed, autoclaved and washed at the

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Number: 1 Author: mbilodeau Subject: Sticky Note Date: 12/22/2014 10:40:47 AM

There are a series of tanks on site. These could be used for fermentation but we not during my visit. Some contained recycled process water and they were working on managing volumes to run "continuously".

Number: 2 Author: mbilodeau Subject: Sticky Note Date: 12/22/2014 10:38:24 AM

hydrolysis tank

Number: 3 Author: mbilodeau Subject: Sticky Note Date: 12/22/2014 10:43:48 AM

They were processing both wash water and recovered sugars to the AD when I visited. Voith is their partner for AD technology.

Number: 4 Author: mbilodeau Subject: Sticky Note Date: 12/22/2014 10:49:19 AM

We did not review this capability during my visit.

Number: 5 Author: mbilodeau Subject: Sticky Note Date: 12/22/2014 10:46:59 AM

I incorrectly identified the site as Blairsville in my report.

Lawrenceville facility, put into 40-pound bags, then shipped to the Blairstown, Iowa, facility for conversion to fuel-grade ethanol. Fiberight reported that the RDF from PERC was converted to ethanol successfully.

Evaluation

The Fiberight facility warrants significant additional evaluation for consideration by the MRC. Fiberight's technology concept for MSW management has been demonstrated at both a pilot and demonstration level, and Fiberight is close to starting construction on a full-scale commercial facility using the technology in Iowa. The Lawrenceville facility is actively recovering and marketing recyclable materials from mixed MSW, and is producing a high-value liquid fuel product from MSW. The scale and type of the facility appear to be consistent with the needs of the MRC communities. Moreover, Fiberight has expressed interest in developing a facility in Maine, which would be consistent with its own roll-out plan for pursuing opportunities along the East Coast. Finally, one of the key investors in Fiberight is Cate Street Capital, which owns and operates the Millinocket paper mill and has a strong presence and an active interest in facility development and operations in Maine.

The next steps in investigating the opportunity include the following:

- Get more information on potential facility mass and energy balances, capital costs, operating costs, revenues and tip fee requirements. Fiberight has offered to provide a conceptual pro forma that could be the basis for the next level of economic evaluation by the MRC.
- Confirm the requirements for a site for the facility, including site area, building dimensions and infrastructure requirements (e.g., electric, natural gas, water and sewer services).
- Evaluate the feasibility of marketing ethanol or other products in the form produced by the facility to purchasers located in Maine or otherwise within reasonable transportation distance of the facility.
- Evaluate the MRC's preferences regarding business arrangements with Fiberight as the developer of an emerging technology, as well as the MRC's preferred approach to procurement and selection of a specific technology and vendor.
- Evaluate the alternatives to Fiberight for organics management, including anaerobic digestion alternatives (e.g., as proposed in the responses to the RFEI by Orgaworld, Mustang, RRT, Vecoplan and Van Dyk).

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Number: 1 Author: mbilodeau Subject: Sticky Note Date: 12/22/2014 10:51:46 AM

could be out of the Blairtown facility, but I didn't see this capability during my visit to the VA pilot plant.

Number: 2 Author: mbilodeau Subject: Sticky Note Date: 12/22/2014 10:52:05 AM

was not mentioned to me...

APPENDIX D

“Fiberight Technology Evaluation of Conversion of MSW Organics into Ethanol”, Darrell Waite, December 26, 2014.

December 26, 2014

TO: Hemant Pendse; Director, FBRI University of Maine

FROM: Darrell Waite; Formerly Process Manager, Biorefinery and Director of Technology, Old Town Fuel and Fiber, Old Town, ME

SUBJECT: Fiberight Technology Evaluation of Conversion of MSW Organics into Ethanol

The Fiberight technology was evaluated for economic feasibility based on pilot data and process information provided directly by Fiberight. This summary is based on a comparison of several years of woody biomass to sugar to ethanol technology development completed by the Biorefinery team at Old Town Fuel and Fiber (OTFF) in partnership with the University of Maine FBRI. The following evaluation is preliminary in nature and should be considered FEL1 level (+/-50%).

The primary focus in this portion of the overall evaluation was the organic component conversion of the MSW. The Fiberight technology will utilize the organic portion of the MSW to convert to C6 rich sugars which will either be sold as cellulosic sugar on the open sugar market, used to produce cellulosic ethanol or used to produce higher value bio-products.

OTFF, along with the U.S. Department of Energy (DOE), investigated the potential of selling cellulosic sugar on the sugar market. There were several issues that led OTFF and DOE to conclude that this was not a viable option. These issues included the lack of a current cellulosic sugar market, the expensive and time consuming requirement to create this market, the impracticality of competing with the global sugar markets, and the expense of drying the sugar to minimize shipping costs. DOE would be willing to share their experience in this matter as the work they completed is in the public domain.

The Fiberight data and feedback does suggest that their technology can convert the organic portion of the MSW into two sugar rich streams. The first is a C5 rich stream, which is liquid and goes to an AD where it is converted into Biogas. The second stream is a cellulose rich stream that is deconstructed to a C6 rich sugar stream. This C6 rich stream is the stream we focus on here.

Based on feedback from Fiberight, effective yield is very low probably due to low enzymatic conversion of cellulose/hemicellulose to sugars. This is an area that will need significant improvement, as enzyme cost will be the major cost component in conversion to sugar.

One important note on the mass balance is that when the by-products (plastics, metals, glass and rigid plastics) are added together with the amount of sugar, there is still approximately two thirds of the total mass unaccounted for. This should be further explored and may be easily explained by Fiberight.

Fiberight data on conversion of MSW derived sugar conversion to ethanol was much lower than both woody biomass derived sugars and corn dextrose. This suggests that a high level of inhibitors may be present in the MSW sugar that may diminish ethanol conversion efficiency. Further investigation should be completed to determine if it economically feasible to further clean up these MSW sugar prior to fermentation.

Scale up concerns could be caused by these inhibitors (possible contamination) in the MSW sugar fermentation. Fermentation stability could be jeopardized. One thought to minimize this risk should be to complete systematic pilot scale testing utilizing MSW derived sugars to produce ethanol, possibly have smaller fermenters, aggressive CIP systems and aggressive SOP's to counter the potential contamination.

A Greenfield site for this type of process will be a major challenge. The need for MSW receiving, sorting, organic cooking, organic solid/liquid separation, liquid C5 rich conversion to biogas via AD and conversion of the solid organic stream to C6 rich sugar to ethanol is a complicated process requiring an energy platform, water intake, water treatment and all supporting equipment and systems. To simplify the process, one option to consider is eliminating the sugar conversion to ethanol portion of the overall process and forward all liquid sugar to the AD. This would reduce a major portion of capital outlay and may be more efficient overall.

It is my opinion this technology is 3 – 5 years from ***beginning*** commercial deployment. The next step should be a deeper dive for the capital required for process technology implementation. A FEL1 engineering study should be completed to determine the extent of the capital outlay and determine if the process is economically feasible.

An immediate recommendation is that an owner's representative, similar to what DOE and USDA requires for their programs, be secured. This representative should have the capability to complete the Front End Loading (FEL) process, which is the common capital project process today. This representative should focus on an Independent Engineering Review and provide Project Development Services to the owner. The timing of this is critical because it is an incremental, cumulative process that builds upon early tasks to complete later, more complicated tasks.

Darrell Waite

Formerly Process Manager, Biorefinery and Director of Technology, Old Town Fuel and Fiber, Old Town, ME

APPENDIX E

“Site Infrastructure and Permitting Considerations”, James S. Atwell, P. E. of Sevee & Maher Engineers, Inc., December 29, 2014.

SITE INFRASTRUCTURE AND PERMITTING CONSIDERATIONS
FIBERIGHT TECHNOLOGY
December 29, 2014

GENERAL

The available information on the Fiberight facility to be built in Maine is very limited. We do not have a detailed process flow diagram or a materials balance that is necessary to estimate the air, solid waste and wastewater emissions from the proposed facility. Therefore, it is not possible to reach definitive conclusions regarding the specific permitting requirements that might be necessary for a full scale Fiberight facility to serve the MRC communities.

However, based on a review of available information and an understanding of the approximate scale of the proposed facility, we do not see any factors that would prevent the permitting of the Fiberight technology at a site in Maine. However, any solid waste facility of this scale would be expected to undergo a comprehensive permitting process that would address the siting of the facility as well as its liquid, solid and gaseous emissions.

Permitting the Fiberight facility will involve several units within the Maine Department of Environmental Protection (MEDEP). For that reason, a pre-application meeting should be scheduled with MEDEP to review the permitting process and to identify the MEDEP team that will process the application and interact with the applicant.

Following are: 1) a summary of the advantages and disadvantages of a brownfields site compared to a greenfields site for the Fiberight facility and 2) a summary of the permits that would be reasonably anticipated for a Fiberight facility.

BROWNFIELD VS GREENFIELD

Brownfield sites offer potential advantages over a greenfield sites; based on existing permits and available infrastructure for power, and wastewater treatment. These factors have the potential to simplify the permitting process and to reduce the capital cost of the facility. It is also recognized that local, community issues could make it difficult to construct the Fiberight facility at a brownfield site. However, potential brownfield sites should be considered as part of the facility siting process.

PERMITTING

Following is a list of the permits that will likely be required for the proposed Fiberight facility. Based on our review and understanding of the proposed Fiberight technology, there do not appear to be any environmental or emission issues that would prevent the permitting of the facility, provided the required exhibits can be provided.

However, permitting the facility would involve a comprehensive process with many issues to be addressed. Permitting the Fiberight technology will require detailed information on the character of the air, wastewater and solid wastes emissions from the facility. Because there is no long term operating information on systems that use the Fiberight technology on municipal solid waste (MSW), the local and state permitting agencies are likely to conduct a detailed analysis of the processes to be certain that the estimated emissions are accurate. Past experience has shown that the variable character of the MSW stream and the presence of a broad range of impurities, makes cost effective operation of these systems difficult. The absence of long term operating information on these processes may extend the duration of the permitting process.

Following is a summary of the primary permits that will be required for the Fiberight Facility.

Solid Waste. The Fiberight facility would require a permit under Maine's Solid Waste Rules, Chapter 400 (General Provisions) and Chapter 409 for Solid Waste Processing Facilities, which are administered by the Maine Department of Environmental Protection (MEDEP). This is a comprehensive permit that incorporates many of the requirements of Maine's Site Location Law. The Solid Waste permitting process would require detailed information on each of the "unit processes" included in Fiberight's system. The permit applicant will also have to address general licensing criteria, such as the following:

- Financial and technical ability to construct and operate the project.
- Must control nuisance odor.
- Cannot be located within 10,000 feet of an airport.
- Annual reporting requirements.
- Consistency with the Solid Waste Management Hierarchy.

MEDEP will look at the Fiberight technology as a Box, with waste materials as the feedstock. They will expect to see a comprehensive description of the outputs from the Process, including: recycled materials, Wastewater Emissions, Air Emissions, Solid Waste, and Hazardous Waste. Each waste stream will require characterization. The characterization will define the specific treatment, disposal and permitting requirements.

The Solid Waste Permit will require that a demonstration that: a) applicable federal, state and local permits are in place and b) final provisions are in place for the disposal/management of facility emissions (wastewater, solid waste, hazardous waste, recycled materials).

By-Products/Wastes. Information provided by Fiberight seems to indicate that the process is self-contained and that there are no by-products that must be managed. However, without detailed process flow diagrams and a mass balance, it is not possible to confirm these claims.

Based on past experience with similar processes, there are several points in the Fiberight technology where byproducts, or waste materials, are expected to be produced that would require treatment and or management. For example:

- Liquids from the unit processes, as well as liquids/wastewater from general washdowns will require treatment. Even though Fiberight indicates that wastewater emissions would be low, or non-existent, our experience is that impurities build up in the system over time and these impurities must be purged from the system. This liquid waste would require some form of treatment, and would have to be considered in the permitting process.
- Waste solids that have no value to the process and are rejected by the system, throughout the process (waste pulperand associated recovery operations, and microorgainisms in the anaerobic digester), will have to be characterized for disposal.

Wastewater. Assuming that there will be some liquid waste produced by the Fiberight technology, some provision for treatment/management will be required. Specific requirements cannot be determined without more detailed information on the quantity and character of the wastewater.

If the plant in Hampden transports wastewater to a Publicly Owned Treatment Works (POTW), the wastewater will have to be characterized, pre-treatment requirements (local limits) will have to be met, and a permit from POTW community will be required.

Air Permit. Although we have no knowledge regarding potential emissions from the Fiberight technology, the facility will likely require an Air Permit issued by the MEDEP. Even if the waste processing portion of the facility does not exceed air permit threshold limits, the power generation portion of the project may require an air permit. Based on the estimated emissions from the facility, a determination will be made to determine if the facility would be permitted as Major Source under Chapter 115 (and related Federal Regulations). If certain thresholds are met, it may also be necessary purchase emission offsets for NOx, VOCs, PM10 and CO.

Depending on the level of emissions and the location of the facility, air permitting issues associated with the proximity of the plant to Acadia National Park and the Moosehorn Preserve, could arise.

Site Location of Development Law (SLODA) and Stormwater Management (SWM) Permits: Since the Fiberight facility will be permitted under the Solid Waste Rules, the facility will not be required to obtain either a SLODA or Stormwater Management Permit. However, if roadway or other infrastructure improvements are required (i.e. industrial park road) to service the facility, which exceed the non-revegetated or disturbed area thresholds in the SLODA or SWM rules, MEDEP may require one of the permits. This would likely be the case if the infrastructure required will be under another owner (i.e. industrial park) and will not be exclusive to the processing facility.

Natural Resource Protection Act (NRPA) Wetland Alterations Permit: The level of environmental permitting will be site specific. If the facility will be constructed entirely, or partially on a greenfield site, a wetlands investigation will be required to establish the presence of on-site wetlands, significant wildlife habitat and wetlands of special significance. As part of this process, a review of the presence of State identified threatened and endangered species, essential wildlife habitat and species of special significance should be completed through the Maine Department of Inland Fisheries and Wildlife, and the Maine Natural Areas Program.

Army Corps of Engineers Wetlands Permit: Wetlands permit requirements will be controlled by the site selected and the natural resources present. This process will include a review of endangered species identified by U.S. Fish and Wildlife Service.

Local Permit. A facility of this type and scale would require permitting by the host community. Likely this permitting would be done under the municipality's Site Plan Review Process, and would involve the local Planning Board.

PFD 1: Primary Sorting

Overall Purpose:

Preparation of incoming MSW for pulping, by the removal of large contaminants, textiles and other materials that would interfere with downstream processing. Separation of the "fines" component of the incoming MSW, and processing it using different techniques to remove glass and grit that would damage downstream equipment.

Unit Operation 1.1: QC Sort

The incoming MSW is dumped into the receiving bays directly from the trucks, and is loaded onto CB-1001 MSW Feed Conveyor using a wheeled grapple type materials handler and/or a front-end loader. The MSW Feed Conveyor discharges onto CB-1002 QC Sort Conveyor for the removal of large contaminants (masonry, furniture, domestic appliances, carpets, etc.). These have little or no recycling value and would occupy volume in the downstream equipment unnecessarily.

The QC Sort Conveyor is manned, and large contaminants are hand-picked from the sorting belt and dropped into a rejects bin for transfer to landfill for disposal. Large contaminants may also be removed during the transfer from the receiving bays onto the MSW Feed Conveyor.

Unit Operation 1.2: Primary Sort Trommel

The incoming MSW contains a significant fraction of wood, which is of no value to the sugar/biogas production process, but is of value as a biomass fuel. This is removed by SS-1003 Primary Sort Trommel, which has a screen size of 20". Trommel overs are fed to a Shredder, where they are shredded to approximately 1 ½". The wood recovered from the shredded material will be sent to the Biomass Boiler to provide energy for the process, or combined with other combustible rejects as an energy bale for sale off-site. The unders from the Primary Sort Trommel are fed forward to Secondary Screening.

Unit Operation 1.3: Secondary Screening

The incoming MSW contains a portion of glass and grit that needs to be removed in order to prevent damage to downstream equipment. This is achieved by feeding the unders from the Primary Sort Trommel onto SN-1007 Fines Screen, which separates items > 2" (the "overs": mostly plastic, containers, cardboard and paper) from the "fines" (mostly food waste, glass with some paper and plastic). The overs from Secondary Screening are fed forward onto the pulper feed tipping floor, while the unders are fed to the Fines Processing System.

Unit Operation 1.4: Fines Processing

The fines from the Primary Sort Trommel contain the majority of the glass, grit and food waste present in the incoming MSW, as well as recoverable cellulose pulp. The glass and grit need to be removed as they would damage downstream equipment. The food waste needs to be recovered as water soluble organics to contribute to biogas production in the anaerobic digestion plant.

This is achieved by passing the fines from the Fines Screen into SD-1009 Fines Density Separator.

PFD 2: Pulping

Overall Purpose:

Disintegration of the paper and cardboard components of the incoming MSW, to produce a pulp suitable for washing, and separate out plastic film and recyclable rigid containers for recycling.

Unit Operation 2.1: Drum Pulper

The overs from the Fines Screen are a mixture of paper, cardboard, plastic film, plastic containers and metal containers, all contaminated with food waste and other minor components. The lights from the Fines Density Separator are a saturated mixture of paper, cardboard, and plastic. The biogenic components need to be separated to allow recovery of recyclables and production of a biomass pulp suitable for downstream processing.

This is achieved by use of DP-2400 and DP-2410 Drum Pulpers. In the first section of the machine, the feed is mixed with hot water, in the pulping drum. This part of the machine contains a proprietary system that break down the paper and cardboard into a biomass pulp.

This pulped biomass is removed from the stream in the end section of the pulper, while the metal containers, plastic containers and plastic films are ejected from the end of the unit. The biomass pulp is fed forward to the Washing System (PFD 4), and the rejects are fed forward to Secondary Sorting (PFD 3).

The water used in the Drum Pulper is supplied from the Washing System (PFD 4), and serves to replace the water required to saturate the incoming MSW overs.

PFD 3: Secondary Sorting

Overall Purpose:

Processing of the rejects produced by the Drum Pulper to maximise recovery of recyclables.

Unit Operation 3.1: Plastic Film Removal

The rejects from the Drum Pulper contain plastic film which, although a relatively low proportion in terms of mass, has a high proportion in terms of volume, which can interfere with recovery of other recyclables. In order to maximise recovery of recyclable rigid containers, the plastic film is removed first.

This is achieved by passing the overs across DS-3007 Disc Screen, which separates 2-dimensional objects (e.g. film, unpulped cardboard) from 3-dimensional objects (e.g. plastic containers).

The 2-D objects pass along CB-3002 2D Fraction QC Line, which is a manual sorting line where unpulped cardboard and paper is removed and returned to the pulper feed tipping floor. At the end of the 2D Fraction QC Line, plastic film is removed by a vacuum hood and is collected for baling in BA-3100 Baler and transfer off site for sale as recyclable film or as an energy bale. Any heavy material not picked up by the vacuum hood falls into a rejects bin for transfer to landfill for disposal. The 3-D objects fall onto CB-3001 3-D Fraction Conveyor, and onto Rejects Separation.

Unit Operation 3.3: Rejects Separation

Having removed the plastic film from the Drum Pulper rejects, the recyclable materials can be separated from the remainder, for recovery and recycling.

This is achieved by passing the 3-D rejects along CB-3104 Sorting Belt. Mixed plastic containers are removed manually, SM-3102 Overband Magnet removes ferrous containers and any other miscellaneous ferrous materials, and SE-3103 Eddy Current Separator removes aluminium containers and any other miscellaneous non-ferrous metals. Any remaining objects or materials fall into a rejects bin for transfer to landfill for disposal.

The separated recyclables are sent to BA-3100 Baler, and the baled materials sent off-site for recycling and recovery.

PFD 4: Washing

Overall Purpose:

To remove food waste, water soluble contaminants, and other solid debris from the biomass pulp, to provide a clean, cellulose-rich substrate for enzyme hydrolysis. This is achieved by using a multistage washing tunnel, first removing soluble contaminants in the washing section, and then removing insoluble contaminants in the extraction section.

Unit Operation 4.1: Pulp Washing

The biomass pulp produced by the Drum Pulper still contains significant contamination from food waste and other soluble organic and inorganic compounds, which might interfere with enzyme hydrolysis. The biomass pulp requires washing to remove these soluble compounds, producing a clean pulp and a COD-rich waste water stream. This is accomplished in a proprietary piece of equipment called a wash unit.

Unit Operation 4.2: Pulp Extraction

The washed, drained pulp still contains small pieces of non-cellulosic material (plastic, glass, food waste) that have not been fully broken down and will add to the solids loading in downstream equipment. The washed pulp is screened to remove these contaminants in the extraction section of the wash unit.

Unit Operation 4.3: Glass and Grit Removal

The extracted pulp still contains small pieces (< ¼”) of non-cellulosic material (plastic, glass, food waste) that passed through the holes in the baskets in the extraction zone of the Washing Tunnel. Glass and grit are a particular problem as they can cause damage to rotating equipment by erosion. These hard particulate contaminants are removed from the extracted pulp utilizing a settling tank followed by Grit Hydrocyclones.

Unit Operation 4.4: Pulp Dewatering

The grit-free washed pulp still holds a significant quantity of potentially contaminated water which could be carried into downstream processes which might interfere with enzyme hydrolysis. The pulp needs to be dewatered remove as much of this water to reduce contamination to acceptable levels. This action also minimises the net flow of water through the plant, minimising pumping costs.

This is achieved by a two stage approach employing a set of screens followed by a screw press. The filtrate is collected in TK-4800 Separation Tank.

Unit Operation 4.5: Washing Water System

The washing process uses significant quantities of water. The capital and operating costs of water treatment are proportional to the volume of water to be treated, so minimising the quantity has operational and economic benefits. This is achieved with a counter flow of water from the “clean” end of the wash system to the “dirty” end of the wash system, and segregation of water for different uses.

There are four types of water in the washing water system: Process Water, which is treated effluent from the AD plant. Separation Water, which is essentially the filtrate from pulp dewatering; White Water, which is used in the washing section of the Washing Tunnels, and Dirty Water, which is sent to the AD Plant.

PFD 5: Pulp Pre-Treatment

Overall Purpose:

To pre-treat the cellulose-rich dewatered pulp by thermal, chemical and physical processes to make an Activated Cellulose Substrate (ACS) more amenable to enzyme hydrolysis.

Holding the pulp at elevated temperature for a controlled time also kills the majority of microorganisms in the pulp, which would otherwise consume the sugar produced during enzyme hydrolysis.

Unit Operation 5.1: Thermal and Chemical Treatment

In order to prepare the cellulose-rich dewatered pulp from the washing system for enzyme hydrolysis, the pulp is held at elevated temperature and at a controlled pH for a controlled period of time.

Direct steam injection is the preferred method of heating, as the presence of calcium, magnesium, carbonate and phosphates in solution rapidly fouls any heat transfer surfaces that are used.

Unit Operation 5.2: Disc Refining

Cellulose fibres are naturally formed as cylindrical structures, which can inhibit access for hydrolysis enzymes. Opening of the structure will improve access for the enzymes, thereby increasing yield.

This is achieved by the application of MD-5400 LC Refiner, a standard piece of equipment in the paper industry, which acts to chop and shear the cellulose fibres.

Unit Operation 5.3: Pulp Dewatering

The ACS pulp produced will still hold a significant quantity of potentially contaminated water which processes which might interfere with enzyme hydrolysis. The pulp needs to be dewatered remove as much of this water to reduce contamination to acceptable levels. This action also minimises the net flow of water through the plant, minimising pumping costs, and also retains the acidified water within the cook system, reducing the need for further acid addition.

This is achieved by FS-5500 Cook Screw Press, which dewaters the treated pulp (Activated Cellulose Substrate, ACS) which is fed forward to Hydrolysis (PFD 6). The filtrate from dewatering is collected in TK-5700 Cook Press Filtrate Tank and recycled to TK-5100 Cook Mix Tank. The water balance is maintained by the addition of Process Water to the filtrate tank, or the export of a purge to the AD Feed System (PFD 9).

PFD 6: Enzyme Hydrolysis

Overall Purpose:

To convert the activated cellulose substrate to sugar by the application of enzyme hydrolysis, and separation of unreacted solids from the hydrolysate.

Unit Operation 6.1: Hydrolysis

Enzyme hydrolysis requires intimate contact between substrate and enzyme, at controlled temperature, pH and sterility for a period of time. In order to produce a hydrolysate with an economically acceptable sugar concentration, the solids concentration in the reactor needs to be as high as possible. In normal continuous stirred tank reactors, this is normally limited to 10% by the viscosity of pulp slurries at such concentrations. Higher solids concentrations are achieved in the Fiberight process.

Unit Operation 6.2: Separation of Unreacted Solids

Unreacted carbohydrates and non-carbohydrate biomass present in the ACS need to be removed from the hydrolysate to produce a clean sugar solution for downstream processing.

This is achieved by pumping the contents of the Hydrolysis Reactor through FP-6400 Hydrolysis Filter Press, collecting the filtered hydrolysate in TK-6500 Sugar Break Tank. The filtered hydrolysate stored in TK-6500 is then either further concentrated in a membrane system and stored in a series of Sugar Storage Tanks to be shipped and sold as industrial sugar or the filtered hydrolysate is fed to the anaerobic digestion plant for conversion to biogas. The exact disposition of the filtered hydrolysate is dependent on current contractual, market and operational conditions. The filtered Post Hydrolysis Solids (PHS) are discharged from the Filter Press and sent to the Biomass Boiler to provide energy for the process.

PFD 9: AD Feed Preparation

Overall Purpose:

To combine all of the liquid streams from the process and prepare them so that they are suitable for feeding to the Anaerobic Digestion Plant. This requires homogenisation of the feed, removal of solids and temperature correction.

Unit Operation 9.1: Solids Removal

The dirty wash water from the washing system (PFD 4) and the purge from the pre-treatment system (PFD 5) contain suspended solids that exceed the specification for the feed to the Anaerobic Digestion (AD) Plant, and need to be removed.

This is achieved by combining these liquid streams in TK-9100 Dilution Tank and pumping them to FF-9900 High Flow DAF unit. This will remove solids by gravity settling and dissolved air flotation, the clarified liquid being collected in TK-9600 Clarified Waste Water Tank. The sludge removed is collected in TK-9700 DAF Sludge Tank.

Filtered sugar solution from the hydrolysis system (PFD 6) has already been filtered and is fed directly to the clarified water tank.

Unit Operation 9.2: Sludge Dewatering

The sludge from the DAF unit is fed to FB-9200 Belt Press for dewatering to approximately 40%wt dry solids. The pressed sludge is sent to landfill for disposal. The filtrate from the Belt Press is collected in TK-9400 and returned to TK-9100 Dilution Tank.

Unit Operation 9.3: AD Plant Feed Temperature Control

The AD Plant operates under typical mesophilic conditions, at around 95°F. The effluent from the washing system will be below this temperature, and require warming to minimise the risk of thermal shock on the AD plant.

This is achieved by first passing the stream through a heat exchanger and using and secondly using live steam if necessary to bring the feed up to the desired operating temperature.

Direct steam injection is the preferred method of heating, as the presence of calcium, magnesium, carbonate and phosphates in solution rapidly fouls any heat transfer surfaces that are used.

PFD 10: Anaerobic Digestion Plant

Overall Purpose:

To convert the soluble organic materials present in the feed into biogas and bio methane.

Unit Operation 10.1: AD Plant

The dirty wash water from the washing system and hydrolysate from the hydrolysis system contain soluble organic materials that can easily be converted to bio methane for export to the gas grid, compression and use as a transport fuel, or as a fuel within the process.

This is achieved by employing a proprietary anaerobic digestion system. This converts the soluble organics into a biogas (a mixture of methane and carbon dioxide).

The biogas can be further processed to produce pure methane for injection into the gas grid, or for use as a transport fuel. Approximately 90% of the soluble organics are converted in the anaerobic digester, the remaining 10% being destroyed in an aerobic reactor downstream. Inorganic compounds are essentially unaffected by these processes.

The treated effluent from the AD plant is recycled as process water in the plant, any excess being discharged off site for disposal. It may be necessary to deliberately purge water from the system to prevent the build-up of inorganic salts in the process, although the use of live steam injection at various points in the process helps mitigate this.

CES INC

ATTACHMENT 14

ENVIRONMENTAL MONITORING PLAN

ATTACHMENT 14

ENVIRONMENTAL MONITORING PLAN

An Environmental Monitoring Plan is not anticipated for this project.

CES INC

ATTACHMENT 15

TRAFFIC MOVEMENT

ATTACHMENT 15

TRAFFIC

Traffic at the proposed facility will enter and exit at a single point of access located at the northeast corner of the property. The facility entrance will be located at the end of a proposed 4460 foot long access road which will enter onto the Coldbrook Road directly across from the existing HO Bouchard truck facility. The proposed access road will consist of two 12-foot travel lanes with 3-foot shoulders. A Maine Department of Transportation (MaineDOT) Entrance Permit Application for the access road entrance onto Coldbrook Road was submitted and an Entrance Permit was subsequently issued by the MaineDOT. A copy of the Entrance Permit is included in this Attachment.

The main traffic generator at this facility will be the incoming MSW deliveries and to a lesser extent the outgoing waste and commodities. These materials will enter and exit the facility in trucks ranging from packer trucks to trailer trucks. Passenger vehicles will make up the remainder of the facilities traffic and will be spread out over the full 24-hours of the day as employees will be needed for multiple shifts throughout the day. No MaineDOT Traffic Movement Permit is required because the project's estimated overall traffic volume is less than 100 passenger car equivalents during the peak hour. Details on estimated traffic volumes, haul routes, safety, sight distance, and the interior road network are provided below.

TRAFFIC VOLUMES

Traffic to the facility will be composed of varying traffic components. The two primary components will be employees and incoming haul trucks carrying MSW. Additional traffic components will include general deliveries, outgoing waste residues and recyclables generated by processing, material deliveries related to the processing facility, and the outgoing product deliveries. These traffic components are broken down as follows:

Employees, Visitors, and General Deliveries

The facility is expected to employ up to 70 employees at full operation. These employees will work different shifts and will enter and exit the facility at different times of the day. It is anticipated that these employees will arrive and depart in personal vehicles such as passenger cars and trucks. Visitors and general day to day deliveries may account for an additional 20% increase above and beyond the total number of employees for a total of 84 employees, visitors, and general deliveries per day. This equates to 168 total daily vehicle trips for this facility during ordinary operations.

Incoming MSW

MSW generation varies by time of year which will correspondingly result in an increase or decrease of shipments into the facility. Daily MSW deliveries to the facility will vary from an estimated 410-550 Tons/day (for the purpose of traffic estimation an average of 525 Tons/day is used to determine the lower threshold truck volumes) to a high of 950 Tons/day. The delivery method is broken down between packer trucks which haul an average of 7 Tons, roll-offs which haul an average of 12 Tons, and trailers which haul an average of 28 tons. Based on collected data MSW deliveries are comprised of 40% packer trucks by weight, 33% roll-offs by weight, and 27% trailers by weight. From this data it is estimated that the following deliveries will be made to the facility:

Packer Trucks:	29 – 53 deliveries/day
Roll-offs:	14 – 26 deliveries/day
Trailers:	5 – 10 deliveries/day

The highest expected total MSW deliveries to this facility on any given day is 89 deliveries comprised of 53 packer trucks, 26 roll-offs, and 10 trailers.

It needs to be noted that a delivery will equate to two vehicle trips since the truck will enter the facility and exit the facility during the same day.

Additional Traffic Sources

The facility will generate a daily average of 82-130 Tons of residue waste and recyclables which will need to be shipped to a landfill for disposal or to the recycling commodities market. Residue waste and recyclables will be transported in trailers containing 28 Tons of material per trailer. This equates to a daily total of 4-5 trailers exiting the facility daily.

The plant's boilers are expected to generate between 3,000 and 4,000 tons/year of ash. Ash will be transported to a landfill for disposal using transport trailers up to 100 cubic yards. At 1.5 CY/ton this equates to 100 trips/year or 2 trips every week.

Phosphoric acid is used during processing at the proposed facility. It is estimated that 19,000 gal/year will be required. Phosphoric acid will be delivered to the facility in 55 gallon drums or totes in truckload quantities. Deliveries of phosphoric acid will equate to 4-5 deliveries per year.

Under current market conditions the industrial sugars produced at the facility will be converted to bio-methane and piped underground directly to the closest natural gas pipeline. This will require no delivery vehicles in or out of the facility for processed industrial sugars for the foreseeable future. If market conditions change in the future Fiberight has the capacity to produce up to 11,000 gallons of industrial sugars per day. These sugars would be transported off-site in 10,000 gallon tanker trucks approximately 8-10 times per week.

Urea is used during the scrubbing process for the boilers as part of its air quality requirements. It is estimated that the scrubbers will require 80,000 gallons per year and stored on-site in a 5,000 gallon tank. Urea will be delivered to the site in tanker trucks. Based on the on-site storage capacity, it is estimated that the Facility will require 16 to 20 deliveries per year.

HAUL ROUTES

The enclosed Haul Routes map shows the anticipated haul routes for MSW to the new facility. The MSW generated by the charter municipalities presently is trucked to the existing PERC plant in Orrington, Maine which is less than three aerial miles from the proposed facility in Hampden. Due to the close proximity of these two facilities the new trucking routes will show a minimal increase in mileage travelled. The blue lines on the map depict the current truck routes that will not change due to the processing facility being relocated to Hampden. The red lines show changes that will be made to the trucking routes to access the new facility in Hampden.

The MSW generated in the charter municipalities to the east of the new MRC facility in Hampden will continue to use existing routes that were used to deliver MSW to the PERC plant in Orrington except that the trucks will enter I-395 in Brewer and continue across the river to EXIT 2 and onto US Route 202. Trucks will follow US Route 202 westerly to the intersection of Coldbrook Road where they will take a right turn onto Coldbrook Road where they will travel 1.1 mile to the facility entrance on the right. The mileage travelled for this new route will increase slightly but will eliminate truck traffic through the busy South Street area of Brewer.

It is also anticipated that MSW being shipped from towns and facilities off from Route 9 will begin using State Route 46 as a bypass to access I-395 off from Route 1A. This will eliminate a large portion of this waste from travelling through North Main Street and South Main Street in Brewer as it presently does on its trip to the existing PERC facility.

It is anticipated that the MSW produced in the Hancock County area around Bucksport will be shipped along its normal route until it reaches Route 46 in Orland where it will travel along Route 46 to the intersection of Route 1A in Holden. From this intersection the waste will be transported along Route 1A into Brewer where it will exit onto I-395 for its trip across the river to EXIT 2 and the Coldbrook Road.

The MSW generated in the charter municipalities to the north and west of the new MRC facility will continue to use existing haul routes that were used to deliver MSW to the PERC plant in Orrington except that the trucks will exit I-95 at exit 180 in Hampden and turn onto the Coldbrook Road where they will travel the 0.5 mile to the facility entrance on the left. The mileage travelled for this new route will stay approximately the same or decrease slightly and will eliminate truck traffic through the busy South Street area of Brewer.

The MSW generated in the charter municipalities to the south along the Route 1 and 3 corridors will travel their normal route north until the intersection with Route 1A in Stockton Springs. The MSW will then be transported up Route 1A to Winterport to Route 69. It is anticipated that Route 69 will be used to transport the MSW to I 95 Northbound and on to the Coldbrook Road exit and on to the facility. Route 69 was chosen to bypass the section of Route 1A which runs through Hampden and the congested traffic signal at the intersection of Route 1A and Route 9. The remaining routes from the charter municipalities to the south follow routed highways to I-95 for their transport north to Exit 180 and the Coldbrook Road. These routes were used previously to transport MSW to the PERC facility in Orrington.

The new routes of travel for the MSW deliveries follow Maine State Routed highways and the Federal Interstate I-95 and I-395 system. These roadways are built to handle truck traffic and are not posted during the spring months so access to the facility is available year round.

It bears repeating that the blue routes are existing travel routes for MSW coming to the existing PERC facility in Orrington, Maine. These routes will not change as the deliveries are moved to the proposed facility in Hampden except for the above stated route changes. The route changes are concentrated to the Interstate system and will prove to have minimal impact to the traffic patterns in the Brewer and Hampden area. If anything these changes will reduce the truck traffic volume in the North and South Main Street area of Brewer.

SAFETY ANALYSIS

The access road to the facility will intersect with the Coldbrook Road directly across from the HO Bouchard truck facility entrance. This location provides safe access to the Coldbrook road and is located to eliminate potential conflict points with the existing entrance across the Coldbrook Road.

The Coldbrook Road is a 2-lane roadway with 12-foot travel lanes and 10-foot paved shoulders designed to move trucks between US Route 202 and Interstate 95 at exit 180. Sight distance along the Coldbrook Road is very good and provides safe access for all vehicles.

A Maine Department of Transportation inventory and analysis of traffic crashes is included for the entire Coldbrook Road corridor from the southbound off-ramp of Interstate 95 to the intersection of US Route 202. Analysis of this report shows that there are no locations along that corridor, including the intersections, which are classified as High Crash Locations (HCL) as defined by MaineDOT. An HCL is defined as any roadway segment or intersection with more than 8 crashes in any 3-year period and has a Critical Rate Factor greater than 1.0.

Analysis of the data shows that the Coldbrook Road and the related intersections are very safe. The average number of crashes on any roadway segment along Coldbrook road ranges from 0-3 in the latest 3-year period. The intersections show similar numbers except for the intersection of Coldbrook Road and US Route 202.

This intersection of Coldbrook Road and US Route 2 shows 9 crashes in the latest 3-year period but does not have a Critical Rate Factor greater than 1.0 and therefore it is not defined as an HCL. Analysis of the crash reports show that there are no identifiable safety issues with this intersection. The crashes were broken down as follows; 3 red light running crashes, 2 rear end crashes, 3 failure to yield crashes, and 1 truck crash where the load shifted and the truck went off the road without hitting any other vehicle. This type of crash history shows that there are no safety design issues with the intersection itself.

SIGHT DISTANCE

The proposed access road will be located onto the Coldbrook Road directly across the road from the HO Bouchard truck terminal. The sight distance to the left is more than 2,000 feet in this direction. The sight distance to the right is 740 feet in this direction. These sight distances exceed the requirements for a Maine Department of Transportation Entrance Permit which, as noted above, has been issued for the access road. The existing sight distance will thus provide safe and efficient access to the Coldbrook Road.

INTERIOR ROAD NETWORK

The proposed facility will be accessed by a new paved road that is expected to be owned and maintained by the Town of Hampden. The new road is proposed to be approximately 30 feet in width and end at a cul-de-sac at the proposed Facility entrance. Immediately upon entering the Facility entrance, visitors and employees will enter the staff and visitor parking lots on the right hand side. All inbound trucks will continue on the site road in an easterly direction to the inbound scale or bypass lane. The site road is two lanes, approximately 32 feet wide up to the point where it transitions to approximately 82 feet to accommodate the scales and bypass lanes. Beyond the inbound scale the road transitions to approximately 48 feet wide and three lanes. Two lanes are for inbound trucks and one for outbound trucks. The trucks then enter a large paved maneuvering area for loading/unloading at the overhead doors or loading dock areas. After unloading the trucks leave by the outbound lane to the outbound scale where they either scale out or go around the scale through the bypass lane and proceed on to the facility entrance/exit. All interior roads and parking areas will be paved. The employee and visitor parking lots provide 50 parking spaces. The speed limit of the interior roads will be limited to 15 mph.

Pedestrian use will be limited to the employee/visitor parking areas and the walkway to the administration building from those parking areas. Any pedestrian use of the truck maneuvering area would be limited to facility employees directing trucks within that area. There is a five foot sidewalk along the north side of the processing building in order to provide emergency egress points as required by building codes. Access along the south side of the building has been provided for emergency and maintenance vehicles. This access will be constructed with a gravel base, but will be seeded to grow grass.

Circulation patterns will be defined through the use of striping and signage.

Maintenance of the facility roads, parking areas, and truck maneuvering areas will include sweeping of the paved surfaces as needed as well as repair of damaged pavement as it becomes necessary.

Please refer to the Proposed Site Plan located in Attachment 12 for the layout of the facility roads, parking, and maneuvering areas.

SUMMARY

Based on the above information, the project has been designed to provide adequate provisions for safe and uncongested traffic movement into, out of, and within the proposed facility for the estimated peak day traffic volume of 356 vehicle trips/day.

The estimated peak daily traffic volume will be spread out throughout the entire day and will not create a congestion issue during either of the typical AM or PM peak hours on Coldbrook Road or the closest intersections.

The Coldbrook Road and its intersections with US Route 202 and Interstate I-95 are designed for the largest trucks expected at the proposed facility and the crash data supports that there are no safety issues along this corridor.

The haul routes from the charter municipalities will remain largely unchanged from their existing routes and follow roadways appropriate for truck traffic.

The entrance onto Coldbrook Road and the interior road network have been designed with adequate sight distance and provide for safe traffic movements.

STATE OF MAINE
VICTOR J.
SMITH
No. 560[illegible]
LICENSED
PROFESSIONAL ENGINEER

6/24/15

Maine Department of Transportation

Paul R. LePage
Governor

Driveway/Entrance Permit

David Bernhardt, P.E,
Commissioner

Permit Number: 15947 - **Entrance ID:** 1

OWNER

Name:	**Hickory Development, LLC**
Address:	**PO Box 249** **Hampden, Me 04444**
Telephone:	**(207)862-4070**

Date Printed: **May 22, 2015**

LOCATION

Route:	**C531K, Coldbrook Rd**
Municipality:	**Hampden**
County:	**Penobscot**
Tax Map:	14 Lot Number: **7/8**
Culvert Size:	**inches**
Culvert Type:	**N/R**
Culvert Length:	**feet**
Date of Permit:	**May 22, 2015**
Approved Entrance Width:	**30 feet**

In accordance with rules promulgated under 23 M.R.S.A., Chapter 13, Subchapter I, Section 704, the Maine Department of Transportation (MaineDOT) approves a permit and grants permission to perform the necessary grading to construct, in accordance with sketch or attached plan, **an Entrance** to at a point **1140** feet **East** from **Old Coldbrook Rd**, subject to the Chapter 299 Highway Driveway and Entrance Rules, standard conditions and special conditions (if any) listed below.

Conditions of Approval:

This Permittee acknowledges and agrees to comply with the Standard Conditions and Approval attached hereto and to any Specific Conditions of Approval shown here.

(W = Waiver; S = Special Condition)

S - Proposed entrance will need an over sized 36 inch STOP sign.

S - Truck Entering signs must be placed on Coldbrook Rd 300 feet on either side of proposed entrance.

S - Entrance to be built to the revised plan of C.E.S. dated 5/14/2015, attached. The plan shows that the shoulder on Coldbrook Road needs to be removed for approximately 250 feet and strethened with 4 inches of new pavement to support truck loads.

S - This entrance permit is transferable to the Municipal Review Committee, Inc. upon closing of the property option agreement between Hickory Development, LLC and the Municipal Review Committee, Inc.

Approved by: Bruce W Mattson Date: 5-22-15

Bruce W. Mattson, P.E.
Region Traffic Engineer

STANDARD CONDITIONS AND APPROVAL

1. Provide, erect and maintain all necessary barricades, lights, warning signs and other devices as directed by MaineDOT to properly safeguard traffic while the construction is in progress.

2. At no time cause the highway to be closed to traffic

3. Where the driveway is located within a curb, curb and gutter, and/or sidewalk section, completely remove the existing curb, curb and gutter, and/or sidewalk as may be required to create the driveway and restore drainage. All driveways abutting sidewalk sections shall meet the requirements set forth in the Americans with Disabilities Act of 1990, 42 U.S.C. Sec. 12131 et seq.

4. Obtain, have delivered to the site, and install any culverts and/or drainage structures which may be necessary for drainage, the size, type and length as called for in the permit pursuant to 23 M.R.S.A. Sec. 705. All culverts and/or drainage structures shall be new.

5. Start construction of the proposed driveway within twenty-four (24) months of the date of permit issuance and substantially complete construction of the proposed driveway within twelve months of commencement of construction.

6. Comply with all applicable federal, state and municipal regulations and ordinances.

7. Do not alter, without the express written consent of the MaineDOT, any culverts or drainage swales within the MaineDOT right of way.

8. File a copy of the approved driveway permit with the affected municipality or LURC, as appropriate within 5 business days of receiving the MaineDOT approval.

9. Construct and maintain the driveway side slopes to be no steeper than the adjacent roadway side slopes, but in no case to be steeper than 3 horizontal to 1 vertical, unless the side slope is behind existing roadway guardrail, in which case it shall be no steeper than 2 horizontal to 1 vertical.

10. Notify the MaineDOT of a proposed change of use served by the driveway when increase in traffic flow is expected to occur. This does not exempt the need for obtaining a Traffic Movement Permit (TMP) if trip generation meets or exceeds 100 passenger car equivalents (PCE) during the peak hour of the day.

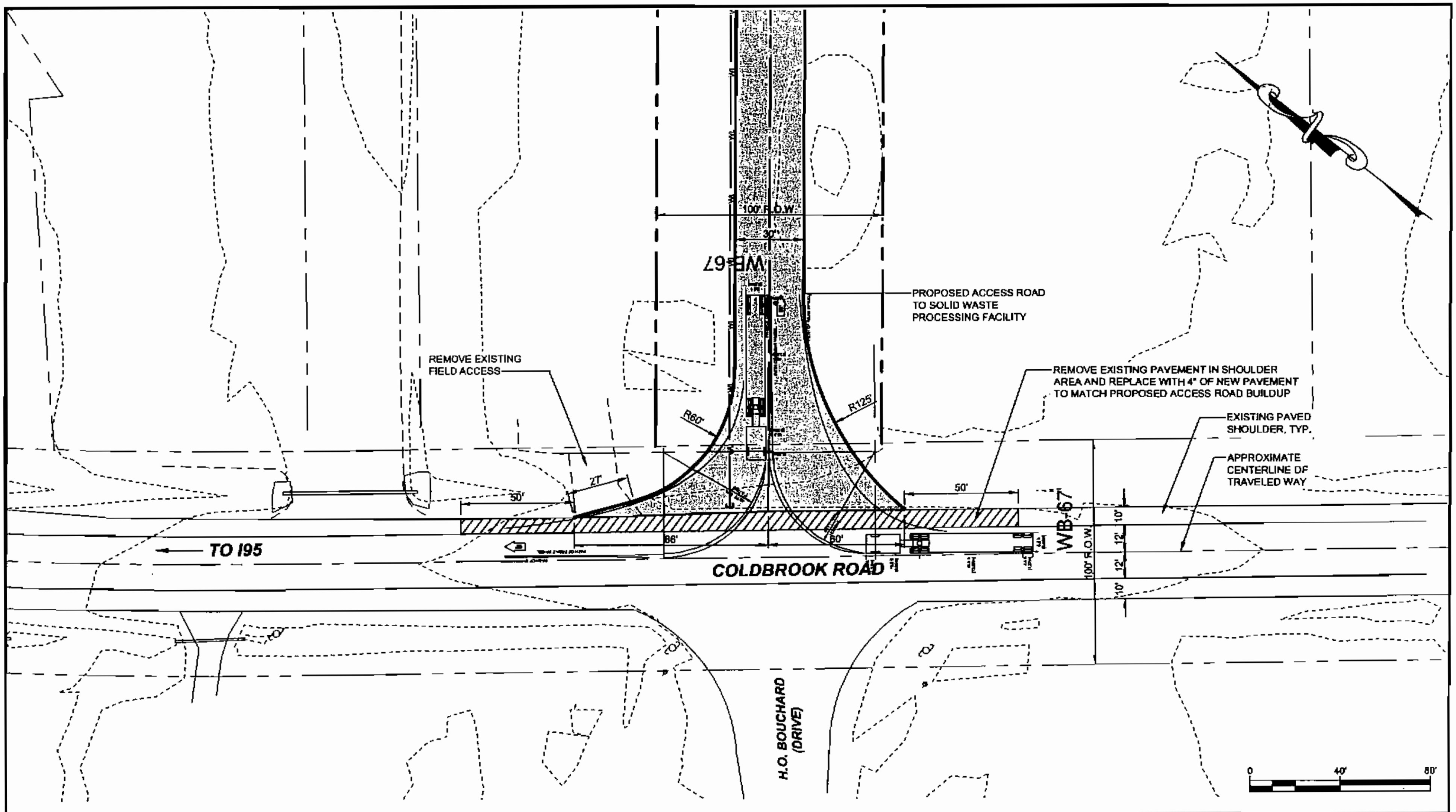
11. Construct or implement and maintain erosion and sedimentation measures sufficient to protect MaineDOT facilities.

12. Driveways shall be designed such that all maneuvering and parking of any vehicles will take place outside the highway right-of-way and where vehicles will exit the premises without backing onto the highway traveled way or shoulders. All driveways will have a turnaround area to accomodate vehicles using the premises.

FURTHER CONDITION OF THE PERMIT

The owner shall assume, the defense of, and pay all damages, fines, and penalties for which he/she shall become liable, and shall indemnify and safe harmless said Department, its representatives, agents and employees from liability, actions against all suits, claims, damages for wrongful death, personal injuries or property damage suffered by any person or association which results from the willful or negligent action or inaction of the owner/applicant (agent) and in proceedings of every kind arising out of the construction and maintenance of said entrance(s), including snow removal.

Nothing herein shall, nor is intended to, waive any defense, immunity or limitation of liability which may be available to the MaineDOT, their officers, agents or employees under the Maine Tort Claims Act or any other privileges and/or immunities provided by law. It is a further condition that the owner will agree to keep the right of way inviolate for publie highway purposes and no signs (other than traffic signs and signals), posters, billboards, roadside stands, culvert end walls or private installations shall be permitted within Right of Way limits.



PROJECT TITLE: SOLID WASTE PROCESSING FACILITY HAMPDEN, MAINE	DWG 1 OF 1	BY: BLQ	REV:	DESCRIPTION:	CES INC
		DATE: 2015-05-14	REV DATE:		
SHEET TITLE: PROPOSED ACCESS ROAD INTERSECTION AT COLDBROOK ROAD	#: 10973.003	APPROVED BY:	ISSUE:	DESCRIPTION:	Engineers • Environmental Scientists • Surveyors
	SCALE: 1:40	CHECKED BY:	ISSUE DATE:		

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I ☑ Section Detail ☑ Crash Summary II ☐ 1320 Public ☐ 1320 Private ☐ 1320 Summary

REPORT DESCRIPTION

Coldbrook Rd from I-95 NB to Rte 202 in Hampden

REPORT PARAMETERS

Year 2012, Start Month 1 through Year 2014 End Month: 12

Route: 1900553	Start Node: 38034	Start Offset: 0	☐ Exclude First Node
	End Node: 39612	End Offset: 0	☐ Exclude Last Node
Route: 19E1873	Start Node: 41162	Start Offset: 0	☐ Exclude First Node
	End Node: 41164	End Offset: 0	☑ Exclude Last Node
Route: 19F1873	Start Node: 38035	Start Offset: 0	☑ Exclude First Node
	End Node: 41165	End Offset: 0	☐ Exclude Last Node
Route: 19G1873	Start Node: 38034	Start Offset: 0	☑ Exclude First Node
	End Node: 38038	End Offset: 0	☑ Exclude Last Node

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
38034	1900553 - 2.15	Int of COLDBROOK RD RAMP CON	1	2	0	0	0	0	2	0.0	2.771	0.24 Statewide Crash Rate:	0.12 0.03	1.93
38035	1900553 - 2.22	Int of COLDBROOK RD RAMP ON FROM COLD BROOK RD	1	0	0	0	0	0	0	0.0	2.267	0.00 Statewide Crash Rate:	0.13 0.03	0.00
41164	1900553 - 2.26	Int of COLDBROOK RD RAMP E OFF TO COLD BROOK RD	1	1	0	0	0	0	1	0.0	2.560	0.13 Statewide Crash Rate:	0.13 0.03	1.03
39070	1900553 - 2.46	Int of COLDBROOK RD, OLD COLDBROOK RD	1	0	0	0	0	0	0	0.0	2.250	0.00 Statewide Crash Rate:	0.39 0.12	0.00
40692	1900553 - 2.69	Int of BRYER LN COLDBROOK RD	1	1	0	0	0	0	1	0.0	2.158	0.15 Statewide Crash Rate:	0.39 0.12	0.00
38889	1900553 - 3.17	Int of COLDBROOK RD, PAPER MILL RD	1	0	0	0	0	0	0	0.0	2.119	0.00 Statewide Crash Rate:	0.40 0.12	0.00
40302	1900553 - 3.35	Int of COLDBROOK RD LINDSEY WY	1	0	0	0	0	0	0	0.0	1.986	0.00 Statewide Crash Rate:	0.40 0.12	0.00
40299	1900553 - 3.59	Int of COLDBROOK RD, EMERSON DR	1	0	0	0	0	0	0	0.0	2.048	0.00 Statewide Crash Rate:	0.40 0.12	0.00
39611	1900553 - 3.71	Int of COLDBROOK RD RAMP CON	1	0	0	0	0	0	0	0.0	1.631	0.00 Statewide Crash Rate:	0.42 0.12	0.00
39612	1900553 - 3.77	Int of COLD BROOK RD COLDBROOK RD US HWY 202	9	9	0	0	0	2	7	22.2	4.642	0.65 Statewide Crash Rate:	1.18 0.66	0.00
41162	19E1873 - 0	Int of I 95 RAMP E OFF TO COLD BROOK RD	1	0	0	0	0	0	0	0.0	4.413	0.00 Statewide Crash Rate:	0.11 0.03	0.00
38038	19F1873 - 0.08	Int of RAMP CON RAMP ON FROM COLD BROOK RD	1	1	0	0	0	1	0	100.0	1.680	0.20 Statewide Crash Rate:	0.13 0.03	1.53
41165	19F1873 - 0.31	Int of I 95 RAMP ON FROM COLD BROOK RD	1	2	0	0	0	0	2	0.0	5.909	0.11 Statewide Crash Rate:	0.11 0.03	1.05
Study Years: 3.00		NODE TOTALS:		16	0	0	0	3	13	18.8	36.434	0.15	0.23	0.64

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
38034	38035	3110617	0 - 0.07	1900553 - 2.15	0.07	1	0	0	0	0	0	0	0.0	0.00146	0.00	551.91	0.00
Int of COLDBROOK RD RAMP CON				RD INV 19 00553											Statewide Crash Rate: 165.41		
38035	41164	3110619	0 - 0.04	1900553 - 2.22	0.04	1	0	0	0	0	0	0	0.0	0.00098	0.00	606.37	0.00
Int of COLDBROOK RD RAMP ON FROM COLD BROOK RD				RD INV 19 00553											Statewide Crash Rate: 165.41		
39070	41164	3124219	0 - 0.20	1900553 - 2.26	0.20	1	3	0	0	0	0	3	0.0	0.00461	217.09	411.06	0.00
Int of COLDBROOK RD, OLD COLDBROOK RD				RD INV 19 00553											Statewide Crash Rate: 165.41		
39070	40692	3110833	0 - 0.23	1900553 - 2.46	0.23	1	0	0	0	0	0	0	0.0	0.00502	0.00	402.16	0.00
Int of COLDBROOK RD, OLD COLDBROOK RD				RD INV 19 00553											Statewide Crash Rate: 165.41		
38889	40692	3110751	0 - 0.48	1900553 - 2.69	0.48	1	2	0	0	0	0	2	0.0	0.01016	65.60	338.75	0.00
Int of COLDBROOK RD, PAPER MILL RD				RD INV 19 00553											Statewide Crash Rate: 165.41		
38889	40302	3110750	0 - 0.18	1900553 - 3.17	0.18	1	1	0	0	0	1	0	100.0	0.00360	92.57	437.88	0.00
Int of COLDBROOK RD, PAPER MILL RD				RD INV 19 00553											Statewide Crash Rate: 165.41		
40299	40302	3111224	0 - 0.24	1900553 - 3.35	0.24	1	1	0	0	1	0	0	100.0	0.00466	71.51	409.82	0.00
Int of COLDBROOK RD, EMERSON DR				RD INV 19 00553											Statewide Crash Rate: 165.41		
39611	40299	3110964	0 - 0.12	1900553 - 3.59	0.12	1	0	0	0	0	0	0	0.0	0.00256	0.00	478.45	0.00
Int of COLDBROOK RD RAMP CON				RD INV 19 00553											Statewide Crash Rate: 165.41		
39611	39612	3132117	0 - 0.06	1900553 - 3.71	0.06	1	0	0	0	0	0	0	0.0	0.00068	0.00	654.15	0.00
Int of COLDBROOK RD RAMP CON				RD INV 19 00553											Statewide Crash Rate: 165.41		
41162	41164	3111304	0 - 0.32	19E1873 - 0	0.32	1	1	0	0	0	0	1	0.0	0.00059	568.50	264.06	2.15
Int of I 95 RAMP E OFF TO COLD BROOK RD				RD INV 19 E1873											Statewide Crash Rate: 62.55		
38035	38038	3110618	0 - 0.08	19F1873 - 0	0.08	1	0	0	0	0	0	0	0.0	0.00029	0.00	180.12	0.00
Int of COLDBROOK RD RAMP ON FROM COLD BROOK RD				RD INV 19 F1873											Statewide Crash Rate: 62.55		
38038	41165	3110622	0 - 0.23	19F1873 - 0.08	0.23	1	2	0	0	0	0	2	0.0	0.00386	172.56	208.65	0.00
Int of RAMP CON RAMP ON FROM COLD BROOK RD				RD INV 19 F1873											Statewide Crash Rate: 62.55		
38034	38038	3124204	0 - 0.04	19G1873 - 0	0.04	1	0	0	0	0	0	0	0.0	0.00053	0.00	258.55	0.00
Int of COLDBROOK RD RAMP CON				RD INV 19 G1873											Statewide Crash Rate: 62.55		

Study Years: 3.00											
Section Totals:	2.29	10	0	0	1	1	8	20.0	0.03900	85.48	239.95	0.36
Grand Totals:	2.29	26	0	0	1	4	21	19.2	0.03900	222.24	273.26	0.81

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
38034	38035	3110617	0 - 0.07	1900553 - 2.15	0	0	0	0	0	0				
38035	41164	3110619	0 - 0.04	1900553 - 2.22	0	0	0	0	0	0				
39070	41164	3124219	0 - 0.20	1900553 - 2.26	3	0	0	0	0	3	2014-4916	02/09/2014	2.30	PD
											2014-25819	09/24/2014	2.36	PD
											2014-6614	02/20/2014	2.42	PD
39070	40692	3110833	0 - 0.23	1900553 - 2.46	0	0	0	0	0	0				
38889	40692	3110751	0 - 0.48	1900553 - 2.69	2	0	0	0	0	2	2014-26560	10/01/2014	2.99	PD
											2014-31104	11/10/2014	3.13	PD
38889	40302	3110750	0 - 0.18	1900553 - 3.17	1	0	0	0	1	0	2013-20271	08/12/2013	3.23	C
40299	40302	3111224	0 - 0.24	1900553 - 3.35	1	0	0	1	0	0	2013-12961	05/16/2013	3.47	B
39611	40299	3110964	0 - 0.12	1900553 - 3.59	0	0	0	0	0	0				
39611	39612	3132117	0 - 0.06	1900553 - 3.71	0	0	0	0	0	0				
41162	41164	3111304	0 - 0.32	19E1873 - 0	1	0	0	0	0	1	2012-23320	03/03/2012	0.15	PD
38035	38038	3110618	0 - 0.08	19F1873 - 0	0	0	0	0	0	0				
38038	41165	3110622	0 - 0.23	19F1873 - 0.08	2	0	0	0	0	2	2013-5784	03/01/2013	0.10	PD
											2014-8490	03/14/2014	0.26	PD
38034	38038	3124204	0 - 0.04	19G1873 - 0	0	0	0	0	0	0				
				Totals:	10	0	0	1	1	8				

Crash Summary II - Characteristics

Crashes by Day and Hour

	AM												Hour of Day PM													
Day Of Week	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	Un	Tot
SUNDAY	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	3
MONDAY	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	3
TUESDAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
WEDNESDAY	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	6
THURSDAY	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	4
FRIDAY	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	1	0	0	5
SATURDAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	1	0	4
Totals	0	0	1	1	0	0	0	0	1	1	3	2	1	1	3	3	2	2	1	1	0	0	2	1	0	26

Vehicle Counts by Type

Unit Type	Total	Unit Type	Total
1-Passenger Car	28	23-Bicyclist	0
2-(Sport) Utility Vehicle	4	24-Witness	5
3-Passenger Van	0	25-Other	1
4-Cargo Van (10K lbs or Less)	1	Total	48
5-Pickup	5		
6-Motor Home	0		
7-School Bus	0		
8-Transit Bus	0		
9-Motor Coach	0		
10-Other Bus	0		
11-Motorcycle	0		
12-Moped	0		
13-Low Speed Vehicle	0		
14-Autocycle	0		
15-Experimental	0		
16-Other Light Trucks (10,000 lbs or Less)	0		
17-Medium/Heavy Trucks (More than 10,000 lbs)	4		
18-ATV - (4 wheel)	0		
20-ATV - (2 wheel)	0		
21-Snowmobile	0		
22-Pedestrian	0		

Crash Summary II - Characteristics

Crashes by Driver Action at Time of Crash

Driver Action at Time of Crash	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
No Contributing Action	13	10	0	0	0	0	23
Ran Off Roadway	1	0	0	0	0	0	1
Failed to Yield Right-of-Way	3	1	0	0	0	0	4
Ran Red Light	3	0	0	0	0	0	3
Ran Stop Sign	0	0	0	0	0	0	0
Disregarded Other Traffic Sign	0	0	0	0	0	0	0
Disregarded Other Road Markings	0	0	0	0	0	0	0
Exceeded Posted Speed Limit	0	0	0	0	0	0	0
Drove Too Fast For Conditions	2	1	0	0	0	0	3
Improper Turn	0	0	0	0	0	0	0
Improper Backing	0	0	0	0	0	0	0
Improper Passing	2	1	0	0	0	0	3
Wrong Way	0	0	0	0	0	0	0
Followed Too Closely	0	3	0	0	0	0	3
Failed to Keep in Proper Lane	0	0	0	0	0	0	0
Operated Motor Vehicle in Erratic, Reckless, Careless, Negligent or Aggressive Manner	1	0	0	0	0	0	1
Swerved or Avoided Due to Wind, Slippery Surface, Motor Vehicle, Object, Non-Motorist in Roadway	0	0	0	0	0	0	0
Over-Correcting/Over-Steering	0	0	0	0	0	0	0
Other Contributing Action	1	1	0	0	0	0	2
Unknown	0	0	0	0	0	0	0
Total	26	17	0	0	0	0	43

Crashes by Apparent Physical Condition And Driver

Apparent Physical Condition	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
Apparently Normal	26	16	0	0	0	0	42
Physically Impaired or Handicapped	0	1	0	0	0	0	1
Emotional(Depressed, Angry, Disturbed, etc.)	0	0	0	0	0	0	0
Ill (Sick)	0	0	0	0	0	0	0
Asleep or Fatigued	0	0	0	0	0	0	0
Under the Influence of Medications/Drugs/Alcohol	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Total	26	17	0	0	0	0	43

Driver Age by Unit Type

Age	Driver	Bicycle	SnowMobile	Pedestrian	ATV	Total
09-Under	0	0	0	0	0	0
10-14	0	0	0	0	0	0
15-19	5	0	0	0	0	5
20-24	8	0	0	0	0	8
25-29	3	0	0	0	0	3
30-39	11	0	0	0	0	11
40-49	5	0	0	0	0	5
50-59	5	0	0	0	0	5
60-69	4	0	0	0	0	4
70-79	1	0	0	0	0	1
80-Over	1	0	0	0	0	1
Unknown	0	0	0	0	0	0
Total	43	0	0	0	0	43

Crash Summary II - Characteristics

Most Harmful Event

Most Harmful Event	Total
1-Overturn / Rollover	1
2-Fire / Explosion	0
3-Immersion	0
4-Jackknife	0
5-Cargo / Equipment Loss Or Shift	0
6-Fell / Jumped from Motor Vehicle	0
7-Thrown or Falling Object	0
8-Other Non-Collision	0
9-Pedestrian	0
10-Pedalcycle	0
11-Railway Vehicle - Train, Engine	0
12-Animal	2
13-Motor Vehicle in Transport	36
14-Parked Motor Vehicle	0
15-Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle	0
16-Work Zone / Maintenance Equipment	0
17-Other Non-Fixed Object	0
18-Impact Attenuator / Crash Cushion	1
19-Bridge Overhead Structure	0
20-Bridge Pier or Support	0
21-Bridge Rail	0
22-Cable Barrier	0
23-Culvert	0
24-Curb	0
25-Ditch	0
26-Embankment	0
27-Guardrail Face	1
28-Guardrail End	0
29-Concrete Traffic Barrier	0
30-Other Traffic Barrier	0
31-Tree (Standing)	1
32-Utility Pole / Light Support	0
33-Traffic Sign Support	1
34-Traffic Signal Support	0
35-Fence	0
36-Mailbox	0
37-Other Post Pole or Support	0
38-Other Fixed Object (wall, building, tunnel, etc.)	0
39-Unknown	0
40-Gate or Cable	0
41-Pressure Ridge	0
Total	43

Traffic Control Devices

Traffic Control Device	Total
1-Traffic Signals (Stop & Go)	9
2-Traffic Signals (Flashing)	0
3-Advisory/Warning Sign	0
4-Stop Signs - All Approaches	0
5-Stop Signs - Other	1
6-Yield Sign	2
7-Curve Warning Sign	0
8-Officer, Flagman, School Patrol	0
9-School Bus Stop Arm	0
10-School Zone Sign	0
11-R.R. Crossing Device	0
12-No Passing Zone	0
13-None	14
14-Other	0
Total	26

Injury Data

Severity Code	Injury Crashes	Number Of Injuries
K	0	0
A	0	0
B	1	1
C	4	4
PD	21	0
Total	26	5

Road Character

Road Grade	Total
1-Level	20
2-On Grade	6
3-Top of Hill	0
4-Bottom of Hill	0
5-Other	0
Total	26

Light

Light Condition	Total
1-Daylight	19
2-Dawn	0
3-Dusk	0
4-Dark - Lighted	1
5-Dark - Not Lighted	6
6-Dark - Unknown Lighting	0
7-Unknown	0
Total	26

Crash Summary II - Characteristics

Crashes by Year and Month

Month	2012	2013	2014	Total
JANUARY	0	2	1	3
FEBRUARY	0	0	2	2
MARCH	1	3	3	7
APRIL	0	0	0	0
MAY	1	1	0	2
JUNE	1	0	1	2
JULY	1	0	0	1
AUGUST	1	2	0	3
SEPTEMBER	1	1	1	3
OCTOBER	0	0	1	1
NOVEMBER	0	0	1	1
DECEMBER	0	1	0	1
Total	6	10	10	26

Report is limited to the last 10 years of data.

Crash Summary II - Characteristics

Crashes by Crash Type and Type of Location

Crash Type	Straight Road	Curved Road	Three Leg Intersection	Four Leg Intersection	Five or More Leg Intersection	Driveways	Bridges	Interchanges	Other	Parking Lot	Private Way	Cross Over	Railroad Crossing	Total
Object in Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rear End / Sideswipe	1	0	2	2	0	1	0	3	0	0	0	0	0	9
Head-on / Sideswipe	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intersection Movement	0	0	1	6	0	0	0	0	0	0	0	0	0	7
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Train	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Went Off Road	2	0	0	0	0	0	0	3	0	0	0	0	0	5
All Other Animal	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Bicycle	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	1	0	0	0	0	1	0	0	0	0	0	0	0	2
Jackknife	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rollover	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Fire	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Submersion	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thrown or Falling Object	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deer	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Moose	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	6	0	3	9	0	2	0	6	0	0	0	0	0	26

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather / Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Blowing Sand, Soil, Dirt												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Blowing Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Clear												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	2	0	0	0	0	0	0	0	0	0	1	3
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	13	1	0	0	0	0	0	0	0	0	0	14
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Cloudy												
Dark - Lighted	1	0	0	0	0	0	0	0	0	0	0	1
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	1	0	0	0	0	0	0	0	0	0	0	1
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Fog, Smog, Smoke												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Other												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Rain												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	1	0	0	0	0	1
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	1	1	2
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Severe Crosswinds												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather / Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Sleet, Hail (Freezing Rain or Drizzle)												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	1	0	0	1	2
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	1	0	0	0	0	0	1	0	0	0	2
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	17	2	0	0	0	0	1	2	0	1	0	26

Definitions of Injury Codes

(K) = Fatal injury. A fatal injury is any injury that results in death. Within 30 days of the Crash.

(A) = Incapacitating injury. An Incapacitating injury is any injury, other than a fatal injury, which prevents the injured person from walking, driving or normally continuing the activities the person was capable of performing before the injury occurred.

(B) = Nonincapacitating injury. A Nonincapacitating injury is any injury, other than fatal injury or an incapacitating injury, which is evident to observers at the scene of the crash in which the injury occurred.

(C) = Possible injury. A possible injury is any injury reported or claimed which is not a fatal injury, incapacitating injury or nonincapacitating injury.

(PDO) = Property Damage only. Damage is harm to property that reduces the monetary value of that property.   No injuries.

Definition of Time Codes

00 = 12 – 12:59 AM	12 = 12 – 12:59 PM
01 = 1 – 1:59 AM	13 = 1 – 1:59 PM
02 = 2 – 2:59 AM	14 = 2 – 2:59 PM
03 = 3 – 3:59 AM	15 = 3 – 3:59 PM
04 = 4 – 4:59 AM	16 = 4 – 4:59 PM
05 = 5 – 5:59 AM	17 = 5 – 5:59 PM
06 = 6 – 6:59 AM	18 = 6 – 6:59 PM
07 = 7 – 7:59 AM	19 = 7 – 7:59 PM
08 = 8 – 8:59 AM	20 = 8 – 8:59 PM
09 = 9 – 9:59 AM	21 = 9 – 9:59 PM
10 = 10 – 10:59 AM	22 = 10 – 10:59 PM
11 = 11 – 11:59 AM	23 = 11 – 11:59 PM


Hampden
I 95 SB
I 95
COLDBROOK RD
OLD COLDBROOK RD
BRYER LN
PAPER MILL RD
SIDNEY BLVD
LINDSEY WY
JAYS WY
EMERSON DR
RUTH AV
MAIN TRL
US HWY 202
STONEYBROOK RD
CHARLES ST
WILLIAMS ST
GEORGE ST
HORSE SHOE LN

Description of Abbreviations and Headings used on the Crash Summary Reports

1

U/R – Urban or Rural code indicated by a number

1 = Rural

2 = Urban Area (over 6,000 population in compact area)

3 = Rural – Urban (over 1,000 but less than 6,000 population in compact area)

4 = Federal Urban-State Rural

5 = Federal Rural-State Urban

6 = Federal Urban-State Rural-Urban

9 = Signalized Intersection

2

Type Injury/Severity

K = Killed

A = Incapacitating Injury

B = Non-Incapacitating Injury

C = Possible Injury

PD = Property Damage Only

3

$$\text{Annual MEV} = \frac{\text{Annual Average Daily Traffic for Each Leg of the Intersection} \times 365 \times 0.5}{10^6}$$

4

$$\text{Annual HMVMT} = \frac{\text{Annual Average Daily Traffic} \times \text{Section Length} \times 365\ \text{Days}}{10^8}$$

5

$$\text{Element Crash Rate} = \frac{\text{Number of Crashes}}{\text{Annual Hundred Million Vehicle Miles} \times \text{Study Period in Years}}$$

(Actual rate)

6

$$\text{Node Crash Rate} = \frac{\text{Number of Crashes}}{\text{Annual Million Entering Vehicles} \times \text{Study Period in Years}}$$

(Actual rate)

7

$$\text{Critical Crash Rate} = \text{Statewide Average} + \text{Confidence Level} \times \sqrt{\frac{\text{Statewide Average}}{\text{Study Period Years} \times \text{Annual HMVM}}} - \frac{1}{2\left(\text{Study Period Years}\right) \times \text{Annual HMVM}}$$

(Expected Rate)

8

$$\text{Critical Rate Factor} = \frac{\text{Crash Rate}}{\text{Critical Rate}} \quad (\text{Number of times the Crash Rate exceeds the Critical Rate})$$

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I ☑ Section Detail ☑ Crash Summary II ☐ 1320 Included ☐ 1320 & Driver Report Included

REPORT DESCRIPTION

Rte 2 from Penobscot Valley Ave to Main St in Lincoln ← **(Location)**

REPORT PARAMETERS

Year 2006, Start Month 1 through Year 2008 End Month: 12 ← **(Study Period)**

Route: **0002X**	Start Node: **41119**	Start Offset: **0**	☑ Exclude First Node
	End Node: **37679**	End Offset: **0**	☑ Exclude Last Node

4/1/2010 9:40:41 AM

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
39928	0002X - 190.09	Int of LIN CEMETARY RD, US 2	1	1	0	0	0	0	1	0.0	3.723	0.09	0.32	0.00
											Statewide Crash Rate:	0.11		
40770	0002X - 190.17	Int of ENT SHOP & SAVE, MILL ST, US 2	1	8	0	0	1	3	4	50.0	4.608	0.58	0.30	1.91
											Statewide Crash Rate:	0.11		
39929	0002X - 190.27	Int of PARK ST, US 2	1	0	0	0	0	0	0	0.0	4.750	0.00	0.30	0.00
											Statewide Crash Rate:	0.11		
39930	0002X - 190.49	Int of KATAHDIN AV, US 2	1	3	0	0	0	0	3	0.0	4.900	0.20	0.30	0.00
											Statewide Crash Rate:	0.11		
40128	0002X - 190.52	Int of SPRING ST, US 2	1	0	0	0	0	0	0	0.0	2.407	0.00	0.36	0.00
											Statewide Crash Rate:	0.11		
39931	0002X - 190.53	Non-Int US 2	1	0	0	0	0	0	0	0.0	4.750	0.00	0.30	0.00
											Statewide Crash Rate:	0.11		
39932	0002X - 190.56	Int of LIN VOCATIONAL, LINDSAY ST, US 2	1	1	0	0	0	0	1	0.0	4.795	0.07	0.30	0.00
											Statewide Crash Rate:	0.11		
40776	0002X - 190.58	Int of LIN VOCATIONAL, US 2	1	0	0	0	0	0	0	0.0	4.705	0.00	0.30	0.00
											Statewide Crash Rate:	0.11		
39933	0002X - 190.61	Int of PERRY ST, US 2	1	0	0	0	0	0	0	0.0	4.687	0.00	0.30	0.00
											Statewide Crash Rate:	0.11		
39934	0002X - 190.69	Int of BALLANTINE CT, FLEMING ST, US 2	1	3	0	0	0	0	3	0.0	6.035	0.17	0.28	0.00
											Statewide Crash Rate:	0.11		
41852	0002X - 190.71	Int of BROADWAY WB, US 2	1	0	0	0	0	0	0	0.0	5.061	0.00	0.30	0.00
											Statewide Crash Rate:	0.11		
Study Years: 3.00		NODE TOTALS:		16	0	0	1	3	12	25.0	50.421	0.11	0.18	0.60

1 2 3 5 7 8

Type Injury/Severity

K = Killed

A = Incapacitating Injury

B = Non-Incapacitating Injury

C = Possible Injury

PD = Property Damage Only

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
39928	41119	220364	0 - 0.91	0002X - 189.18	0.91	1	13	0	0	0	3	10	23.1	0.02918	148.49	213.75	0.00
Int of LIN CEMETARY RD, US 2				US 2										Statewide Crash Rate:	122.93		
39928	40770	220363	0 - 0.08	0002X - 190.09	0.08	1	0	0	0	0	0	0	0.0	0.00339	0.00	357.02	0.00
Int of LIN CEMETARY RD, US 2				US 2										Statewide Crash Rate:	122.93		
39929	40770	220366	0 - 0.10	0002X - 190.17	0.10	1	4	0	0	0	2	2	50.0	0.00453	294.36	331.14	0.00
Int of PARK ST, US 2				US 2										Statewide Crash Rate:	122.93		
39929	39930	220365	0 - 0.22	0002X - 190.27	0.22	1	5	0	0	0	3	2	60.0	0.01060	157.17	267.34	0.00
Int of PARK ST, US 2				US 2										Statewide Crash Rate:	122.93		
39930	40128	220368	0 - 0.03	0002X - 190.49	0.03	1	0	0	0	0	0	0	0.0	0.00143	0.00	442.30	0.00
Int of KATAHDIN AV, US 2				US 2										Statewide Crash Rate:	122.93		
39931	40128	220370	0 - 0.01	0002X - 190.52	0.01	1	0	0	0	0	0	0	0.0	0.00048	0.00	528.52	0.00
Non-Int US 2				US 2										Statewide Crash Rate:	122.93		
39931	39932	220369	0 - 0.03	0002X - 190.53	0.03	1	0	0	0	0	0	0	0.0	0.00142	0.00	443.29	0.00
Non-Int US 2				US 2										Statewide Crash Rate:	122.93		
39932	40776	220372	0 - 0.02	0002X - 190.56	0.02	1	0	0	0	0	0	0	0.0	0.00094	0.00	483.85	0.00
Int of LIN VOCATIONAL, LINDSAY ST, US 2				US 2										Statewide Crash Rate:	122.93		
39933	40776	220374	0 - 0.03	0002X - 190.58	0.03	1	1	0	0	0	0	1	0.0	0.00139	239.83	445.32	0.00
Int of PERRY ST, US 2				US 2										Statewide Crash Rate:	122.93		
39933	39934	220373	0 - 0.08	0002X - 190.61	0.08	1	0	0	0	0	0	0	0.0	0.00366	0.00	349.93	0.00
Int of PERRY ST, US 2				US 2										Statewide Crash Rate:	122.93		
37679	41852	217116	0 - 0.03	0002X - 190.68	0.03	1	2	0	0	0	1	1	50.0	0.00098	682.24	479.88	1.42
Int of HIGH ST, US 2				US 2										Statewide Crash Rate:	122.93		
39934	41852	220375	0 - 0.02	0002X - 190.69	0.02	1	0	0	0	0	0	0	0.0	0.00111	0.00	467.81	0.00
Int of BALLANTINE CT, FLEMING ST, US 2				US 2										Statewide Crash Rate:	122.93		
Study Years: 3.00				Section Totals:	1.56		25	0	0	0	9	16	36.0	0.05911	140.99	187.94	0.75
				Grand Totals:	1.56		41	0	0	1	12	28	31.7	0.05911	231.22	228.84	1.01

1 2 4 6 7 8

Type Injury/Severity

K = Killed

A = Incapacitating Injury

B = Non-Incapacitating Injury

C = Possible Injury

PD = Property Damage Only

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
39928	41119	220364	0 - 0.91	0002X - 189.18	13	0	0	0	3	10	2008-4649	01/31/2008	189.38	PD
											2007-24687	07/23/2007	189.48	C
											2007-12785	05/09/2007	189.49	PD
											2008-27798	10/02/2008	189.49	PD
											2008-20036	07/07/2008	189.58	PD
											2006-32774	12/26/2006	189.59	PD
											2008-390	01/03/2008	189.69	PD
											2006-22174	09/16/2006	189.79	PD
											2006-19996	08/08/2006	189.89	C
											2006-12770	05/30/2006	189.89	PD
											2007-36193	12/14/2007	189.89	PD
											2008-34136	12/08/2008	189.93	PD
											2006-10987	05/09/2006	189.99	C
39928	40770	220363	0 - 0.08	0002X - 190.09	0	0	0	0	0	0				
39929	40770	220366	0 - 0.10	0002X - 190.17	4	0	0	0	2	2	2007-24692	07/30/2007	190.18	C
											2008-20039	07/16/2008	190.18	PD
											2008-20027	05/12/2008	190.18	PD
											2007-31998	10/22/2007	190.21	C
39929	39930	220365	0 - 0.22	0002X - 190.27	5	0	0	0	3	2	2008-5760	03/01/2008	190.28	C
											2006-31431	12/08/2006	190.37	C
											2006-16728	07/05/2006	190.37	C
											2007-24688	07/24/2007	190.37	PD
											2007-15738	06/08/2007	190.38	PD
39930	40128	220368	0 - 0.03	0002X - 190.49	0	0	0	0	0	0				
39931	40128	220370	0 - 0.01	0002X - 190.52	0	0	0	0	0	0				
39931	39932	220369	0 - 0.03	0002X - 190.53	0	0	0	0	0	0				
39932	40776	220372	0 - 0.02	0002X - 190.56	0	0	0	0	0	0				
39933	40776	220374	0 - 0.03	0002X - 190.58	1	0	0	0	0	1	2008-28769	02/14/2008	190.59	PD
39933	39934	220373	0 - 0.08	0002X - 190.61	0	0	0	0	0	0				
39934	41852	220375	0 - 0.02	0002X - 190.69	0	0	0	0	0	0				
37679	41852	217116	0 - 0.03	0002X - 190.71	2	0	0	0	1	1	2007-32024	12/04/2007	190.72	PD
											2008-34141	12/18/2008	190.73	C
				Totals:	25	0	0	0	9	16				

<u>Section Details</u> – Lists the number of crashes by route mile point.

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary II - Characteristics

Crashes by Day and Hour

	AM												Hour of Day						PM							
Day Of Week	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	Un	Tot
SUNDAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MONDAY	0	0	0	0	0	0	0	0	1	0	0	3	0	0	1	3	1	0	0	0	0	0	0	0	0	9
TUESDAY	0	0	0	0	0	0	1	1	0	0	1	1	1	1	0	3	0	1	0	0	0	0	0	0	0	10
WEDNESDAY	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	5
THURSDAY	0	0	0	0	0	0	0	1	0	2	1	0	1	1	1	0	1	0	0	0	0	0	0	0	0	8
FRIDAY	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	3	0	0	0	0	0	0	0	5
SATURDAY	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	0	0	0	0	0	0	0	4
Totals	0	0	0	0	0	0	2	2	1	3	2	6	2	3	3	9	3	5	0	0	0	0	0	0	0	**41**

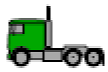
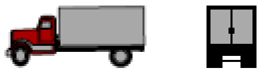
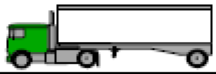
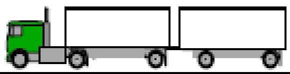
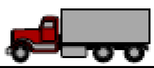
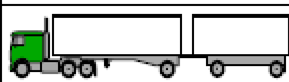
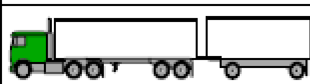
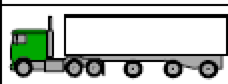
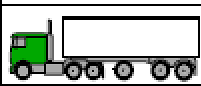
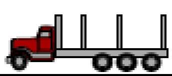
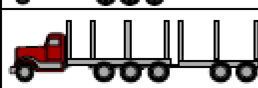
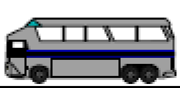
Crashes by Year and Month

Month	2006	2007	2008	Total
JANUARY	0	1	2	3
FEBRUARY	0	1	2	3
MARCH	0	0	2	2
APRIL	0	1	0	1
MAY	3	2	1	6
JUNE	1	1	0	2
JULY	1	3	2	6
AUGUST	1	0	2	3
SEPTEMBER	1	0	0	1
OCTOBER	1	1	2	4
NOVEMBER	0	1	1	2
DECEMBER	2	3	3	8
Total	**10**	**14**	**17**	**41**

Vehicle Counts by Type

Unit Type	Total	Unit Type	Total
1-2 Door	9	32-3 Axle Tractor with Tandem Axle Semi	1
2-4 Door	33	33-3 Axle Tractor with Tridem Axle Semi	2
3-Convertible	0	35-3 Axle Tractor with Single Axle Semi & 2 Axle Trailer	0
4-Station Wagon	2	36-3 Axle Tractor with Tandem Axle Semi & 2 Axle Trailer	0
5-Van	2	37-5 Axle Semi; Split Trailer Tandem	0
6-Pickup Truck	18	38-6 Axle Semi; Split Trailer Tandem with Center Axle	0
7-SUV	14	39-6 Axle; Standard Trailer Tandem with Center Axle	0
10-Truck Tractor Only (Bobtail)	0	40-4 Axle Single Unit	0
12-School Bus	0	42-4 Axle Tractor with Tandem Axle Semi	0
13-Motor Home	0	50-Any Other Axle Configuration	0
14-Motorcycle	0	60-Other Unit	0
15-Moped	0	70-ATV	0
16-Motor Bike	0	81-2 Axle Bus	0
17-Bicycle	1	82-3 Axle Bus	0
18-Snowmobile	0	98-Farm Vehicles / Tractors	0
20-2 Axle Single Unit with Dual Tires	1	99-Unknown	0
21-2 Axle Tractor with Single Axle Semi	0	**Total**	**83**
22-2 Axle Tractor with Tandem Axle Semi	0		
25-2 Axle Tractor with Single Axle Semi & 2 Axle Trailer	0		
30-3 Axle Single Unit	0		
31-3 Axle Tractor with Single Axle Semi	0		

For a more detailed description of truck axle configurations see next page.

VEHICLE CODE	AXLE CONFIGURATION	DESCRIPTION
10		TRUCK TRACKTOR ONLY (BOB TAIL)
20		2 AXLE SINGLE UNIT WITH DUAL TIRES
21		2 AXLE TRACTOR WITH SINGLE AXLE SEMI
22		2 AXLE TRACTOR WITH TANDEM AXLE SEMI
25		2 AXLE TRACTOR WITH SINGLE AXLE SEMI AND 2 AXLE TRAILER
30		3 AXLE SINGLE UNIT
31		3 AXLE TRACTOR WITH SINGLE AXLE SEMI
32		3 AXLE TRACTOR WITH TANDEM AXLE SEMI
33		3 AXLE TRACTOR WITH TRIDEM AXLE SEMI
35		3 AXLE TRACTOR WITH SINGLE AXLE SEMI AND 2 AXLE TRAILER
36		3 AXLE TRACTOR WITH TANDEM AXLE SEMI AND 2 AXLE TRAILER
37		5 AXLE SEMI; SPLIT TRAILER TANDEM
38		6 AXLE SEMI; SPLIT TRAILER TANDEM WITH CENTER AXLE
39		6 AXLE; STANDARD TRAILER TANDEM WITH CENTER AXLE
40		4 AXLE SINGLE UNIT
42		4 AXLE TRACTOR WITH TANDEM AXLE SEMI
50	ANY OTHER AXLE CONFIGURATION	ANY TRUCK NOT DESCRIBED ABOVE
81		2 AXLE BUS
82		3 AXLE BUS

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary II - Characteristics

Crashes by Apparent Contributing Factor And Driver

Apparent Contributing Factor	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
No Improper Action	1	37	1	0	0	0	39
Failure to Yield Right of Way	12	0	0	0	0	0	12
Illegal Unsafe Speed	3	0	0	0	0	0	3
Following Too Close	11	0	0	0	0	0	11
Disregard Traffic Control Device	0	0	0	0	0	0	0
Driving Left of Center Not Passing	0	0	0	0	0	0	0
Improper Passing, Overtaking	0	0	0	0	0	0	0
Improper Unsafe Lane Change	2	0	0	0	0	0	2
Improper Parking Start, Stop	0	0	0	0	0	0	0
Improper Turn	0	0	0	0	0	0	0
Unsafe Backing	2	0	0	0	0	0	2
No Signal or Improper Signal	0	0	0	0	0	0	0
Impeding Traffic	0	0	0	0	0	0	0
Driver Inattention, Distraction	7	0	0	0	0	0	7
Driver Inexperience	0	0	0	0	0	0	0
Pedestrian Violation Error	0	0	0	0	0	0	0
Physical Impairment	0	0	0	0	0	0	0
Vision Obscured, Windshield Glass	0	0	0	0	0	0	0
Vision Obscured, Sun, Headlights	1	0	0	0	0	0	1
Other Vision Obscurement	0	0	0	0	0	0	0
Other Human Violation Factor	0	0	0	0	0	0	0
Hit and Run	0	0	0	0	0	0	0
Defective Brakes	0	0	0	0	0	0	0
Defective Tire, Tire Failure	0	0	0	0	0	0	0
Defective Lights	0	0	0	0	0	0	0
Defective Suspension	0	0	0	0	0	0	0
Defective Steering	0	0	0	0	0	0	0
Other Vehicle Defect or Factor	1	1	0	0	0	0	2
Unknown	1	3	0	0	0	0	4
Total	41	41	1	0	0	0	83

Crashes by Apparent Physical Condition And Driver

Apparent Physical Condition	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
Normal	40	41	1	0	0	0	82
Under the Influence	0	0	0	0	0	0	0
Had Been Drinking	0	0	0	0	0	0	0
Had Been Using Drugs	0	0	0	0	0	0	0
Asleep	0	0	0	0	0	0	0
Fatigued	0	0	0	0	0	0	0
ill	0	0	0	0	0	0	0
Handicapped	1	0	0	0	0	0	1
Other	0	0	0	0	0	0	0
Total	41	41	1	0	0	0	83

Driver Age by Unit Type

Age	Driver	Bicycle	SnowMobile	Pedestrian	ATV	Total
09-Under	0	0	0	0	0	0
10-14	0	0	0	0	0	0
15-19	10	0	0	0	0	10
20-24	9	0	0	0	0	9
25-29	5	0	0	0	0	5
30-39	8	0	0	0	0	8
40-49	11	0	0	0	0	11
50-59	15	0	0	0	0	15
60-69	10	0	0	0	0	10
70-79	8	0	0	0	0	8
80-Over	6	0	0	0	0	6
Unknown	0	1	0	0	0	1
Total	82	1	0	0	0	83

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary II - Characteristics

Fixed Object Struck

Fixed Object Struck	Total
1-Construction, Barricades Equipment, etc.	0
2-Traffic Signal	0
3-R.R. Crossing Device	0
4-Light Pole	0
5-Utility Pole (Tel. Electrical)	0
6-Sign Structure Post	0
7-Mail Boxes or Posts	0
8-Other Poles, posts or supports	0
9-Fire Hydrant/Parking Meter	0
10-Tree or Shrubbery	0
11-Crash Cushion	0
12-Median Safety Barrier	0
13-Bridge Piers (including protective guard rails)	0
14-Other Guardrails	0
15-Fencing (not median barrier)	0
16-Culvert Headwall	0
17-Embankment, Ditch, Curb	0
18-Building, Wall	0
19-Rock Outcrops or Ledge	0
20-Other	0
21-Gate or Cable	0
22-Pressure Ridge	0
Total	0

Traffic Control Devices

Traffic Control Device	Total
1-Traffic Signals (Stop & Go)	10
2-Traffic Flashing	0
3-Overhead Flashers	0
4-Stop Signs - All Approaches	0
5-Stop Signs - Other	6
6-Yield Sign	0
7-Curve Warning Sign	0
8-Officer, Flagman, School Patrol	1
9-School Bus Stop Arm	0
10-School Zone Sign	0
11-R.R. Crossing Device	0
12-No Passing Zone	0
13-None	24
14-Other	0
Total	41

Road Character

Road Character	Total
1-Level Straight	34
2-Level Curved	2
3-On Grade Straight	4
4-On Grade Curved	0
5-Top of Hill Straight	0
6-Top of Hill Curved	1
7-Bottom of Hill Straight	0
8-Bottom of Hill Curved	0
9-Other	0
Total	41

Injury Data

Severity Code	Injury Crashes	Number Of Injuries
K	0	0
A	0	0
B	1	1
C	12	15
PD	28	0
Total	41	16

Light

Light	Total
1-Dawn (Morning)	1
2-Daylight	37
3-Dusk (Evening)	0
4-Dark (Street Lights On)	3
5-Dark (No Street Lights)	0
6-Dark (Street Lights Off)	0
7-Other	0
Total	41

2

Type Injury/Severity

K = Killed

A = Incapacitating Injury

B = Non-Incapacitating Injury

C = Possible Injury

PD = Property Damage Only

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary II - Characteristics

Crashes by Crash Type and Type of Location

Crash Type	Straight Road	Curved Road	Three Leg Intersection	Four Leg Intersection	Five Leg Intersection	Driveways	Bridges	Interchanges	Other	Total
Object in Road	0	0	0	0	0	0	0	0	0	0
Rear End / Sideswipe	4	1	5	7	0	9	0	0	0	26
Head-on / Sideswipe	0	0	0	0	0	0	0	0	0	0
Intersection Movement	0	0	1	3	0	10	0	0	0	14
Pedestrians	0	0	0	0	0	0	0	0	0	0
Train	0	0	0	0	0	0	0	0	0	0
Ran Off Road	0	0	0	0	0	0	0	0	0	0
All Other Animal	0	0	0	0	0	0	0	0	0	0
Bike	1	0	0	0	0	0	0	0	0	1
Other	0	0	0	0	0	0	0	0	0	0
Jackknife	0	0	0	0	0	0	0	0	0	0
Rollover	0	0	0	0	0	0	0	0	0	0
Fire	0	0	0	0	0	0	0	0	0	0
Submersion	0	0	0	0	0	0	0	0	0	0
Rock Thrown	0	0	0	0	0	0	0	0	0	0
Bear	0	0	0	0	0	0	0	0	0	0
Deer	0	0	0	0	0	0	0	0	0	0
Moose	0	0	0	0	0	0	0	0	0	0
Total	**5**	**1**	**6**	**10**	**0**	**19**	**0**	**0**	**0**	**41**

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather / Light	Debris	Dry	Ice, Packed Snow, Not Sanded	Ice, Packed Snow, Sanded	Muddy	Oily	Other	Snow Slush, Not Sanded	Snow, Slush, Sanded	Wet	Total
Blowing Sand or Dust											
Dark (No Street Lights)	0	0	0	0	0	0	0	0	0	0	0
Dark (Street Lights Off)	0	0	0	0	0	0	0	0	0	0	0
Dark (Street Lights On)	0	0	0	0	0	0	0	0	0	0	0
Dawn (Morning)	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0
Dusk (Evening)	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Clear											
Dark (No Street Lights)	0	0	0	0	0	0	0	0	0	0	0
Dark (Street Lights Off)	0	0	0	0	0	0	0	0	0	0	0
Dark (Street Lights On)	0	0	0	0	0	0	0	0	0	1	1
Dawn (Morning)	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	25	0	2	0	0	0	0	1	2	30
Dusk (Evening)	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Cloudy											
Dark (No Street Lights)	0	0	0	0	0	0	0	0	0	0	0
Dark (Street Lights Off)	0	0	0	0	0	0	0	0	0	0	0
Dark (Street Lights On)	0	0	0	0	0	0	0	0	0	2	2
Dawn (Morning)	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	2	0	0	0	0	0	0	0	1	3
Dusk (Evening)	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Fog, Smog, Smoke											
Dark (No Street Lights)	0	0	0	0	0	0	0	0	0	0	0
Dark (Street Lights Off)	0	0	0	0	0	0	0	0	0	0	0
Dark (Street Lights On)	0	0	0	0	0	0	0	0	0	0	0
Dawn (Morning)	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0
Dusk (Evening)	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Debris	Dry	Ice, Packed Snow, Not Sanded	Ice, Packed Snow, Sanded	Muddy	Oily	Other	Snow Slush, Not Sanded	Snow, Slush, Sanded	Wet	Total
Other											
Dark (No Street Lights)	0	0	0	0	0	0	0	0	0	0	0
Dark (Street Lights Off)	0	0	0	0	0	0	0	0	0	0	0
Dark (Street Lights On)	0	0	0	0	0	0	0	0	0	0	0
Dawn (Morning)	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0
Dusk (Evening)	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Rain											
Dark (No Street Lights)	0	0	0	0	0	0	0	0	0	0	0
Dark (Street Lights Off)	0	0	0	0	0	0	0	0	0	0	0
Dark (Street Lights On)	0	0	0	0	0	0	0	0	0	0	0
Dawn (Morning)	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	2	2
Dusk (Evening)	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Severe Cross Winds											
Dark (No Street Lights)	0	0	0	0	0	0	0	0	0	0	0
Dark (Street Lights Off)	0	0	0	0	0	0	0	0	0	0	0
Dark (Street Lights On)	0	0	0	0	0	0	0	0	0	0	0
Dawn (Morning)	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0
Dusk (Evening)	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Sleet, Hail, Freezing Rain											
Dark (No Street Lights)	0	0	0	0	0	0	0	0	0	0	0
Dark (Street Lights Off)	0	0	0	0	0	0	0	0	0	0	0
Dark (Street Lights On)	0	0	0	0	0	0	0	0	0	0	0
Dawn (Morning)	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	1	1
Dusk (Evening)	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Debris	Dry	Ice, Packed Snow, Not Sanded	Ice, Packed Snow, Sanded	Muddy	Oily	Other	Snow Slush, Not Sanded	Snow, Slush, Sanded	Wet	Total
Snow											
Dark (No Street Lights)	0	0	0	0	0	0	0	0	0	0	0
Dark (Street Lights Off)	0	0	0	0	0	0	0	0	0	0	0
Dark (Street Lights On)	0	0	0	0	0	0	0	0	0	0	0
Dawn (Morning)	0	0	0	0	0	0	0	1	0	0	1
Daylight	0	0	0	0	0	0	0	0	1	0	1
Dusk (Evening)	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**27**	**0**	**2**	**0**	**0**	**0**	**1**	**2**	**9**	**41**

STATE OF MAINE CRASH REPORT

FIRST PAGE

F I R S T

Reporting Agency	Report Number	Crash Date	Crash Time	At Scene Date	At Scene Time
ME0100700	**14H-00859**	**3/15/2014**	**15:09**	**3/15/2014**	**15:10**

City or Town	Street or Highway	Nearest Intersecting Street	Off Road
Hampden	**COLD BROOK RD**	**Int of COLD BROOK RD, COLDBROOK RD, US HWY 202**	☐ Off Road

Direction FROM Nearest Intersection to Crash Site	Distance From Nearest Inter.	Latitude	Longitude
☑ At Intersection ☐ North ☐ South ☐ East ☐ West	☐ Feet ☐ Miles	**44.754270**	**-68.839410**

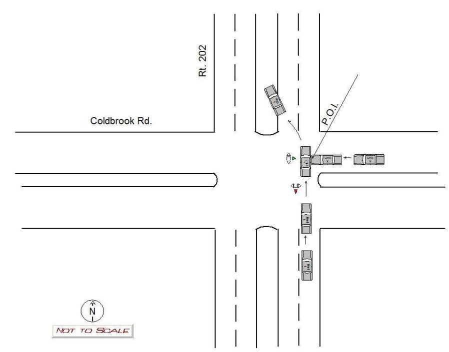
Node 1	Node 2	Measurement Node	Distance to Scene	Posted Speed Limit	
39612	**0**		Miles **0** Tenths	Miles Per Hour **45**	☐ Unknown ☐ N/A ☐ Not Posted 25 ☐ Not Posted 45

(F1) Type of Crash **4 - Intersection Movement**	(F2) Type of Location **4 - Four Leg Intersection**
(F3) Weather Condition **1 - Clear**	(F4) Light Condition **1 - Daylight**
(F5) Road Grade **1 - Level**	(F6) Road Surface Condition **1 - Dry**
(F7) Traffic Control Device **1 - Traffic Signals (Stop & Go)**	Traffic Control Device Operational (pre-crash)? ☑ Yes ☐ No ☐ Unk
(F8) Location of First Harmful Event **1 - On Roadway**	Total Damage over Threshold? ☑ Yes ☐ No
(F9) Contributing Circumstances - Environment 1 **1 - None**	(F9) Contributing Circumstances - Environment 2
(F10) Contributing Circumstances - Road 1 **1 - None**	(F10) Contributing Circumstances -Road 2
In or Near a Construction, Maintenance, or Utility Work Zone? ☐ Yes ☑ No ☐ Unk	Work Zone Workers Present? ☐ Yes ☐ No ☐ Unk
(F11) Location of the Crash related to Work Zone	(F12) Type of Work Zone
Law Enforcement Present at Work Zone? ☐ Officer Present ☐ Law Enforcement Vehicle Only ☐ No	School Bus Related? ☐ Yes, Directly Involved ☐ Yes, Indirectly Involved ☑ No

NARRATIVE

Unit 1 was traveling north on Rt. 202. Unit 2 was traveling west through the intersection on the Cold Brook Rd. Unit 1 ran a red light and struck unit 2.

CRASH DIAGRAM



Witness Last Name	First	MI	Address	City	State	Zip
*			* ME*			
Witness Last Name	First	MI	Address	City	State	Zip

Non Vehicle Property Damage Description ☐ State ☐ City or Town ☐ Utilities ☐ Private

Property Owner Name	Address	City	State	Zip

Non Vehicle Property Damage Description ☐ State ☐ City or Town ☐ Utilities ☐ Private

Property Owner Name	Address	City	State	Zip

Reporting Officer	Badge#	Report Date	Approved By	Approved Date
Officer Shawn Devine	**307**	**3/16/2014**	**Sergeant Christian Bailey**	**3/30/2014**

Last Modified: 3/30/2014 16:34

STATE OF MAINE CRASH REPORT

UNIT PAGE

Report Number: **14H-00859**

UNIT

Unit ID	**1**
Hit Run?	☐
VIN	**KMHWF25S54A998205**
License Plate	*
State	**ME**
(U1) Unit Type	**1 - Passenger Car**
No Insurance	☐
NAIC	**11770**
Insurance Company Name	*
Insurance Policy Number	*
(U2) Vehicle Make	**27 - HYUNDAI**
Vehicle Year	**2004**
(U3) Vehicle Color	**11 - Maroon**
(U4)Vehicle Configuration	
GVWR or GCWR	☐ < 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ > than 26,000 lbs.
Vehicle Has 9 or More Seats ?	☐ Yes ☑ No
HAZMAT Placarded ?	☐ Yes ☑ No
Vehicle Travel Direction	☑ Northbound ☐ Southbound ☐ Eastbound ☐ Westbound ☐ Not on Roadway ☐ Unknown
(U5) Special Function Vehicle	**1 - No Special Function** ☐ Exempt Vehicle
Emergency Vehicle Responding to Scene ?	☐ Yes ☐ No
Extent of Damage	☐ No Damage Observed ☐ Minor Damage ☐ Functional Damage ☑ Towed Due to Disabling Damage
(U6) Most Damaged Area	**3 - Center Passenger Side**
(U7) Most Harmful Event	**13 - Motor Vehicle in Transport**
(U8) Pre Crash Actions	**1 - Following roadway**
(U9) Contributing Circumstances - Vehicle	**2 - Brakes**
(U10) Sequence of Events 1	**21 - Motor Vehicle In Transport**
(U10) Sequence of Events 2	
(U10) Sequence of Events 3	
(U10) Sequence of Events 4	

DRIVER

☑ Driver ☐ Bicycle ☐ Pedestrian ☐ Last Known Operator	
License Number	*
☑ Active ☐ No License ☐ Permit ☐ Suspended	
State	**ME**
License Class	**C**
Endorsements	**0**
Restrictions	**0**
DRIVER Last Name, First Name, MI	*
DRIVER Address, City, State, Zip	* **ME***
Citation Number	Pending ☐
Violation 1	
Violation 2	
OWNER Last Name (skip if same as Driver) First Name, MI	*
OWNER Address, City, State, Zip	* **ME***
(D1) Driver Distracted By	**1 - Not Distracted**
(D2) Condition at Time of Crash	**1 - Apparently Normal**
(D3) Driver Actions at Time of Crash 1	**4 - Ran Red Light**
(D3) Driver Actions at Time of Crash 2	
Alcohol Test	☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Breath ☐ Urine ☐ Other Chemical Test (Not Field Sobriety or PBT)
☐ Alcohol Test Result Pending	
Alcohol BAC Result	
Drug Test	☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Urine ☐ Other
Drug Test Result	☐ Positive ☐ Negative ☐ Pending
(D4) Non Motorist Location at Time of Crash	
(D5) Non Motorist Action Prior to Crash	
(D6) Non Motorist Action at Time of Crash 1	
(D6) Non Motorist Action at Time of Crash 2	
(D7) Pedestrian Maneuvers	
(D8) Bicyclist Maneuvers	

OCCUPANT

PERSON TYPE 1-Driver, 2-Passenger, 3-Pedestrian, 6-Driver/Owner, 7-Bicycle, 8-Passenger/Owner, 24-Last Known Operator 25-Last Known Operator/Owner

SEAT ROW: 1-Front Row, 2-Second Row, 3-Third Row, 4-Fourth Row, 5-Other Row, 6-Unknown

SEAT POSITION: 1-Left (driver), 2-Middle, 3-Right, 4-Other, 5-Unknown

SEAT POSITION OTHER: 1-Sleeper Section of Cab (truck), 2-Other Enclosed Cargo Area, 3- Unenclosed Cargo Area, 4-Trailing Unit, 5-Riding on Motor Vehicle Ext (non-trailing unit), 6- Unknown

AIRBAG DEPLOYED: 1-Not Applicable, 2-Not Deployed, 3-Deployed - Front, 4-Deployed - Side, 5-Deployed - Other (knee, air belt,...), 6-Deployed - Combination, 7-Deployment - Curtain

RESTRAINT SYSTEM: 1-Not Applicable, 2-None Used - Motor Vehicle Occupant, 3-Shoulder and Lap Belt Used, 4-Shoulder Belt Only Used, 5-Lap Belt Only Used, 6-Restraint Used - Other, 7-Child Restraint - Forward Facing, 8-Child Restraint - Rear Facing, 9-Child Restraint - Used Incorrectly, 10-Booster Seat, 11-Child Restraint - Other

INJURY TYPE: 1-Amputation, 2-Bleeding, 3-Broken Bones, 4-Burns, 5-Concussion, 6-Shock, 7-Dizziness, 8-Abrasion/Bruises, 9-Complaint of Pain, 10-Other

INJURY AREA: 1-Face, 2-Head, 3-Neck, 4-Back, 5-Arm(s), 6-Leg(s), 7-Chest Stomach, 8-Internal, 9-Entire Body, 10-Other

INJURY DEGREE: 1-Fatal, 2-Incapacitating, 3-NonIncapacitating, 4-Possible Injury, 5-No Injury

EJECTED: 1-Not Ejected, 2-Ejected Partially, 3-Ejected Totally

HELMET USE: 1-DOT-Compliant Motorcycle Helmet, 2-Other Helmet, 3-No Helmet

INJURY INFO SOURCE: 1-Officer Observation, 2-Individual Statement, 3-Medical, Paramedical Observation

AMB CODES - see code sheet

Person Type	Include Driver, Passengers, Bicyclist, and Pedestrians — Last Name, First Name, Mi	Sex (M,F,U)	DOB	Seat Pos Row	Seat Pos	Seat Pos Other	Air Bag Deployed	Ejected	Restraint System	Helmet Use	Injury Degree	Injury Type	Injury Area	Inj Info Source	Amb Code
1	*	M	06/21/89	1	1		2	1	3		5			2	1

Report Number
14H-00859

STATE OF MAINE CRASH REPORT

UNIT PAGE

U N I T

Unit ID	Hit Run?	VIN	License Plate	State	(U1) Unit Type
2	☐	**4S3BL616657213183**	*	**ME**	**1 - Passenger Car**

No Insurance	NAIC	Insurance Company Name	Insurance Policy Number
☐	**22055**	*	*

(U2) Vehicle Make: **65 - SUBARU**
Vehicle Year: **2005**
(U3) Vehicle Color: **4 - Blue**

(U4)Vehicle Configuration:

GVWR or GCWR: ☐ < 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ > than 26,000 lbs.

Vehicle Has 9 or More Seats ? ☐ Yes ☑ No
HAZMAT Placarded ? ☐ Yes ☑ No
Vehicle Travel Direction: ☐ Northbound ☐ Southbound ☐ Eastbound ☑ Westbound ☐ Not on Roadway ☐ Unknown

(U5) Special Function Vehicle: **1 - No Special Function**
☐ Exempt Vehicle
Emergency Vehicle Responding to Scene ? ☐ Yes ☐ No

Extent of Damage: ☐ No Damage Observed ☐ Minor Damage ☐ Functional Damage ☑ Towed Due to Disabling Damage

(U6) Most Damaged Area: **12 - Front**
(U7) Most Harmful Event: **13 - Motor Vehicle in Transport**
(U8) Pre Crash Actions: **1 - Following roadway**
(U9) Contributing Circumstances - Vehicle: **1 - None**
(U10) Sequence of Events 1: **21 - Motor Vehicle In Transport**
(U10) Sequence of Events 2:
(U10) Sequence of Events 3:
(U10) Sequence of Events 4:

D R I V E R

☑ Driver ☐ Bicycle ☐ Pedestrian ☐ Last Known Operator
License Number: *
☑ Active ☐ No License ☐ Permit ☐ Suspended
State: **ME**
License Class: **C**
Endorsements: **0**
Restrictions: **0**

DRIVER Last Name First Name MI: *
DRIVER Address City State Zip: *** ME***

Citation Number: Pending ☐
Violation 1:
Violation 2:

OWNER Last Name (skip if same as Driver) First Name MI: *
OWNER Address City State Zip: *** ME***

(D1) Driver Distracted By: **1 - Not Distracted**
(D2) Condition at Time of Crash: **1 - Apparently Normal**
(D3) Driver Actions at Time of Crash 1: **1 - No Contributing Action**
(D3) Driver Actions at Time of Crash 2:

Alcohol Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Breath ☐ Urine ☐ Other Chemical Test (Not Field Sobriety or PBT)
☐ Alcohol Test Result Pending
Alcohol BAC Result:

Drug Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Urine ☐ Other
Drug Test Result: ☐ Positive ☐ Negative ☐ Pending

(D4) Non Motorist Location at Time of Crash:
(D5) Non Motorist Action Prior to Crash:
(D6) Non Motorist Action at Time of Crash 1:
(D6) Non Motorist Action at Time of Crash 2:
(D7) Pedestrian Maneuvers:
(D8) Bicyclist Maneuvers:

O C C U P A N T

PERSON TYPE 1-Driver, 2-Passenger, 3-Pedestrian, 6-Driver/Owner, 7-Bicycle, 8-Passenger/Owner, 24-Last Known Operator 25-Last Known Operator/Owner

SEAT ROW
1-Front Row
2-Second Row
3-Third Row
4-Fourth Row
5-Other Row
6-Unknown

SEAT POSITION
1-Left (driver)
2-Middle
3-Right
4-Other
5-Unknown

SEAT POSITION OTHER
1-Sleeper Section of Cab (truck)
2-Other Enclosed Cargo Area
3- Unenclosed Cargo Area
4-Trailing Unit
5-Riding on Motor Vehicle Ext (non-trailing unit)
6- Unknown

AIRBAG DEPLOYED
1-Not Applicable
2-Not Deployed
3-Deployed - Front
4-Deployed - Side
5-Deployed - Other (knee, air belt,...)
6-Deployed - Combination
7-Deployment - Curtain

RESTRAINT SYSTEM
1-Not Applicable
2-None Used - Motor Vehicle Occupant
3-Shoulder and Lap Belt Used
4-Shoulder Belt Only Used
5-Lap Belt Only Used
6-Restraint Used - Other
7-Child Restraint - Forward Facing
8-Child Restraint - Rear Facing
9-Child Restraint - Used Incorrectly
10-Booster Seat
11-Child Restraint - Other

INJURY TYPE
1-Amputation
2-Bleeding
3-Broken Bones
4-Burns
5-Concussion
6-Shock
7-Dizziness
8-Abrasion/Bruises
9-Complaint of Pain
10-Other

INJURY AREA
1-Face
2-Head
3-Neck
4-Back
5-Arm(s)
6-Leg(s)
7-Chest Stomach
8-Internal
9-Entire Body
10-Other

INJURY DEGREE
1-Fatal
2-Incapacitating
3-NonIncapacitating
4-Possible Injury
5-No Injury

INJURY INFO SOURCE
1-Officer Observation
2-Individual Statement
3-Medical, Paramedical Observation

EJECTED
1-Not Ejected
2-Ejected Partially
3-Ejected Totally

HELMET USE
1-DOT-Compliant Motorcycle Helmet
2-Other Helmet
3-No Helmet

AMB CODES - see code sheet

Person Type	Include Driver, Passengers, Bicyclist, and Pedestrians Last Name, First Name, Mi	Sex (M,F,U)	DOB	Seat Pos Row	Seat Pos	Seat Pos Other	Air Bag Deployed	Ejected	Restraint System	Helmet Use	Injury Degree	Injury Type	Injury Area	Inj Info Source	Amb Code
1	*	F	11/10/92	1	1		2	1	3		5			2	1

STATE OF MAINE CRASH REPORT

F I R S T

Reporting Agency	Report Number	Crash Date	Crash Time	At Scene Date	At Scene Time
ME0100700	12H-02349	6/28/2012	14:35	6/28/2012	14:49

City or Town: **Hampden**
Street or Highway: **COLDBROOK RD**
Nearest Intersecting Street: **Int of COLD BROOK RD, COLDBROOK RD, US HWY 202**
☐ Off Road

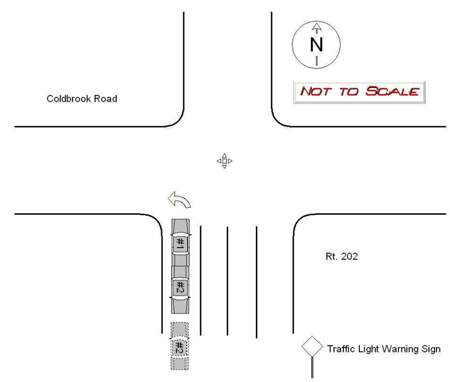
Direction FROM Nearest Intersection to Crash Site: ☑ At Intersection ☐ North ☐ South ☐ East ☐ West
Distance From Nearest Inter.: ☐ Feet ☐ Miles
Latitude: **44.754270**
Longitude: **-68.839410**

Node 1: **39612**
Node 2: **0**
Measurement Node:
Distance to Scene: **0** Miles | Tenths
Posted Speed Limit: **45** Miles Per Hour
☐ Unknown ☐ N/A ☐ Not Posted 25 ☐ Not Posted 45

(F1) Type of Crash: **2 - Rear End / Sideswipe**
(F2) Type of Location: **4 - Four Leg Intersection**
(F3) Weather Condition: **4 - Rain**
(F4) Light Condition: **1 - Daylight**
(F5) Road Grade: **1 - Level**
(F6) Road Surface Condition: **2 - Wet**
(F7) Traffic Control Device: **1 - Traffic Signals (Stop & Go)**
Traffic Control Device Operational (pre-crash)? ☑ Yes ☐ No ☐ Unk
(F8) Location of First Harmful Event: **1 - On Roadway**
Total Damage over Threshold? ☑ Yes ☐ No
(F9) Contributing Circumstances - Environment 1: **1 - None**
(F9) Contributing Circumstances - Environment 2:
(F10) Contributing Circumstances - Road 1: **2 - Road Surface Condition (Wet, Icy, Snow, Slush, etc.)**
(F10) Contributing Circumstances -Road 2:
In or Near a Construction, Maintenance, or Utility Work Zone? ☐ Yes ☑ No ☐ Unk
Work Zone Workers Present? ☐ Yes ☐ No ☐ Unk
(F11) Location of the Crash related to Work Zone:
(F12) Type of Work Zone:
Law Enforcement Present at Work Zone? ☐ Officer Present ☐ Law Enforcement Vehicle Only ☐ No
School Bus Related? ☐ Yes, Directly Involved ☐ Yes, Indirectly Involved ☑ No

NARRATIVE
Vehicle #1 was stopped at the intersection of Rt. 202 and Coldbrook Road in the left turn lane. Vehicle #2, traveling north on Rt. 202, collided with Vehicle #1.

CRASH DIAGRAM



Witness Last Name	First	MI	Address	City	State	Zip

Non Vehicle Property Damage Description: ☐ State ☐ City or Town ☐ Utilities ☐ Private
Property Owner Name | Address | City | State | Zip
Non Vehicle Property Damage Description: ☐ State ☐ City or Town ☐ Utilities ☐ Private
Property Owner Name | Address | City | State | Zip

Reporting Officer	Badge#	Report Date	Approved By	Approved Date
Sergeant Christian Bailey	303	7/3/2012	Sergeant Scott Webber	7/5/2012

Last Modified: 7/5/2012 13:55

Report Number
12H-02349

STATE OF MAINE CRASH REPORT

UNIT PAGE

U N I T

Unit ID	Hit Run?	VIN	License Plate	State	(U1) Unit Type
1	☐	1G1JF52F247199754	*	ME	1 - Passenger Car

☐ No Insurance	NAIC	Insurance Company Name	Insurance Policy Number
		*	*

(U2) Vehicle Make	Vehicle Year	(U3) Vehicle Color
11 - CHEVROLET	2004	1 - Black

(U4)Vehicle Configuration

GVWR or GCWR ☐ < 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ > than 26,000 lbs.

Vehicle Has 9 or More Seats ? ☐ Yes ☐ No

HAZMAT Placarded ? ☐ Yes ☑ No

Vehicle Travel Direction ☑ Northbound ☐ Southbound ☐ Eastbound ☐ Westbound ☐ Not on Roadway ☐ Unknown

(U5) Special Function Vehicle: 1 - No Special Function ☐ Exempt Vehicle

Emergency Vehicle Responding to Scene ? ☐ Yes ☐ No

Extent of Damage ☐ No Damage Observed ☐ Minor Damage ☑ Functional Damage ☐ Towed Due to Disabling Damage

(U6) Most Damaged Area: 6 - Rear	(U7) Most Harmful Event: 13 - Motor Vehicle in Transport
(U8) Pre Crash Actions: 11 - Stopped in traffic	(U9) Contributing Circumstances - Vehicle: 1 - None
(U10) Sequence of Events 1: 21 - Motor Vehicle In Transport	(U10) Sequence of Events 2: 50 - No Other Events
(U10) Sequence of Events 3:	(U10) Sequence of Events 4:

D R I V E R

☑ Driver ☐ Bicycle ☐ Pedestrian ☐ Last Known Operator

License Number	Status	State	License Class	Endorsements	Restrictions
*	☑ Active ☐ No License ☐ Permit ☐ Suspended	ME	C	0	A,E

DRIVER Last Name, First Name, MI	DRIVER Address, City, State, Zip
*	* ME*

Citation Number — Pending ☐

Violation 1 — Violation 2

OWNER Last Name (skip if same as Driver) First Name MI	OWNER Address, City, State, Zip
*	* ME*

(D1) Driver Distracted By: 1 - Not Distracted	(D2) Condition at Time of Crash: 1 - Apparently Normal
(D3) Driver Actions at Time of Crash 1: 1 - No Contributing Action	(D3) Driver Actions at Time of Crash 2:

Alcohol Test ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Breath ☐ Urine ☐ Other Chemical Test (Not Field Sobriety or PBT)

☐ Alcohol Test Result Pending — Alcohol BAC Result

Drug Test ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Urine ☐ Other

Drug Test Result ☐ Positive ☐ Negative ☐ Pending

(D4) Non Motorist Location at Time of Crash	(D5) Non Motorist Action Prior to Crash
(D6) Non Motorist Action at Time of Crash 1	(D6) Non Motorist Action at Time of Crash 2
(D7) Pedestrian Maneuvers	(D8) Bicyclist Maneuvers

O C C U P A N T

PERSON TYPE 1-Driver, 2-Passenger, 3-Pedestrian, 6-Driver/Owner, 7-Bicycle, 8-Passenger/Owner, 24-Last Known Operator 25-Last Known Operator/Owner

SEAT ROW: 1-Front Row, 2-Second Row, 3-Third Row, 4-Fourth Row, 5-Other Row, 6-Unknown

SEAT POSITION: 1-Left (driver), 2-Middle, 3-Right, 4-Other, 5-Unknown

SEAT POSITION OTHER: 1-Sleeper Section of Cab (truck), 2-Other Enclosed Cargo Area, 3- Unenclosed Cargo Area, 4-Trailing Unit, 5-Riding on Motor Vehicle Ext (non-trailing unit), 6- Unknown

AIRBAG DEPLOYED: 1-Not Applicable, 2-Not Deployed, 3-Deployed - Front, 4-Deployed - Side, 5-Deployed - Other (knee, air belt,...), 6-Deployed - Combination, 7-Deployment - Curtain

RESTRAINT SYSTEM: 1-Not Applicable, 2-None Used - Motor Vehicle Occupant, 3-Shoulder and Lap Belt Used, 4-Shoulder Belt Only Used, 5-Lap Belt Only Used, 6-Restraint Used - Other, 7-Child Restraint - Forward Facing, 8-Child Restraint - Rear Facing, 9-Child Restraint - Used Incorrectly, 10-Booster Seat, 11-Child Restraint - Other

INJURY TYPE: 1-Amputation, 2-Bleeding, 3-Broken Bones, 4-Burns, 5-Concussion, 6-Shock, 7-Dizziness, 8-Abrasion/Bruises, 9-Complaint of Pain, 10-Other

INJURY AREA: 1-Face, 2-Head, 3-Neck, 4-Back, 5-Arm(s), 6-Leg(s), 7-Chest Stomach, 8-Internal, 9-Entire Body, 10-Other

INJURY DEGREE: 1-Fatal, 2-Incapacitating, 3-NonIncapacitating, 4-Possible Injury, 5-No Injury

EJECTED: 1-Not Ejected, 2-Ejected Partially, 3-Ejected Totally

HELMET USE: 1-DOT-Compliant Motorcycle Helmet, 2-Other Helmet, 3-No Helmet

INJURY INFO SOURCE: 1-Officer Observation, 2-Individual Statement, 3-Medical, Paramedical Observation

AMB CODES - see code sheet

Person Type	Include Driver, Passengers, Bicyclist, and Pedestrians — Last Name, First Name, Mi	Sex (M,F,U)	DOB	Seat Pos Row	Seat Pos	Seat Pos Other	Air Bag Deployed	Ejected	Restraint System	Helmet Use	Injury Degree	Injury Type	Injury Area	Inj Info Source	Amb Code
1	*	F	07/25/91	1	1		2	1	3		4	9	3	2	1

STATE OF MAINE CRASH REPORT

UNIT PAGE

Report Number: **12H-02349**

UNIT

Unit ID	**2**
Hit Run?	☐
VIN	**1C3EL56R14N378714**
License Plate	*****
State	**ME**
(U1) Unit Type	**1 - Passenger Car**
No Insurance	☐
NAIC	
Insurance Company Name	*****
Insurance Policy Number	*****
(U2) Vehicle Make	**12 - CHRYSLER**
Vehicle Year	**2004**
(U3) Vehicle Color	**8 - Grey, Silver**
(U4)Vehicle Configuration	
GVWR or GCWR	☐ < 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ > than 26,000 lbs.
Vehicle Has 9 or More Seats ?	☐ Yes ☑ No
HAZMAT Placarded ?	☐ Yes ☑ No
Vehicle Travel Direction	☑ Northbound ☐ Southbound ☐ Eastbound ☐ Westbound ☐ Not on Roadway ☐ Unknown
(U5) Special Function Vehicle	**1 - No Special Function** ☐ Exempt Vehicle
Emergency Vehicle Responding to Scene ?	☐ Yes ☐ No
Extent of Damage	☐ No Damage Observed ☑ Minor Damage ☐ Functional Damage ☐ Towed Due to Disabling Damage
(U6) Most Damaged Area	**12 - Front**
(U7) Most Harmful Event	**13 - Motor Vehicle in Transport**
(U8) Pre Crash Actions	**1 - Following roadway**
(U9) Contributing Circumstances - Vehicle	**1 - None**
(U10) Sequence of Events 1	**21 - Motor Vehicle In Transport**
(U10) Sequence of Events 2	**50 - No Other Events**
(U10) Sequence of Events 3	
(U10) Sequence of Events 4	

DRIVER

☑ Driver ☐ Bicycle ☐ Pedestrian ☐ Last Known Operator	
License Number	*****
☑ Active ☐ No License ☐ Permit ☐ Suspended	
State	**ME**
License Class	**C**
Endorsements	**0**
Restrictions	**0**
DRIVER Last Name, First Name, MI	*****
DRIVER Address, City, State, Zip	*** ME***
Citation Number	Pending ☐
Violation 1	
Violation 2	
OWNER Last Name (skip if same as Driver) First Name MI	*****
OWNER Address, City, State, Zip	*** ME***
(D1) Driver Distracted By	**6 - Unkown**
(D2) Condition at Time of Crash	**2 - Physically Impaired or Handicapped**
(D3) Driver Actions at Time of Crash 1	**19 - Other Contributing Action**
(D3) Driver Actions at Time of Crash 2	
Alcohol Test	☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Breath ☐ Urine ☐ Other Chemical Test (Not Field Sobriety or PBT)
☐ Alcohol Test Result Pending	
Alcohol BAC Result	
Drug Test	☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Urine ☐ Other
Drug Test Result	☐ Positive ☐ Negative ☐ Pending
(D4) Non Motorist Location at Time of Crash	
(D5) Non Motorist Action Prior to Crash	
(D6) Non Motorist Action at Time of Crash 1	
(D6) Non Motorist Action at Time of Crash 2	
(D7) Pedestrian Maneuvers	
(D8) Bicyclist Maneuvers	

OCCUPANT

PERSON TYPE 1-Driver, 2-Passenger, 3-Pedestrian, 6-Driver/Owner, 7-Bicycle, 8-Passenger/Owner, 24-Last Known Operator 25-Last Known Operator/Owner

SEAT ROW: 1-Front Row, 2-Second Row, 3-Third Row, 4-Fourth Row, 5-Other Row, 6-Unknown

SEAT POSITION: 1-Left (driver), 2-Middle, 3-Right, 4-Other, 5-Unknown

SEAT POSITION OTHER: 1-Sleeper Section of Cab (truck), 2-Other Enclosed Cargo Area, 3- Unenclosed Cargo Area, 4-Trailing Unit, 5-Riding on Motor Vehicle Ext (non-trailing unit), 6- Unknown

AIRBAG DEPLOYED: 1-Not Applicable, 2-Not Deployed, 3-Deployed - Front, 4-Deployed - Side, 5-Deployed - Other (knee, air belt,...), 6-Deployed - Combination, 7-Deployment - Curtain

RESTRAINT SYSTEM: 1-Not Applicable, 2-None Used - Motor Vehicle Occupant, 3-Shoulder and Lap Belt Used, 4-Shoulder Belt Only Used, 5-Lap Belt Only Used, 6-Restraint Used - Other, 7-Child Restraint - Forward Facing, 8-Child Restraint - Rear Facing, 9-Child Restraint - Used Incorrectly, 10-Booster Seat, 11-Child Restraint - Other

INJURY TYPE: 1-Amputation, 2-Bleeding, 3-Broken Bones, 4-Burns, 5-Concussion, 6-Shock, 7-Dizziness, 8-Abrasion/Bruises, 9-Complaint of Pain, 10-Other

INJURY AREA: 1-Face, 2-Head, 3-Neck, 4-Back, 5-Arm(s), 6-Leg(s), 7-Chest Stomach, 8-Internal, 9-Entire Body, 10-Other

INJURY DEGREE: 1-Fatal, 2-Incapacitating, 3-NonIncapacitating, 4-Possible Injury, 5-No Injury

EJECTED: 1-Not Ejected, 2-Ejected Partially, 3-Ejected Totally

HELMET USE: 1-DOT-Compliant Motorcycle Helmet, 2-Other Helmet, 3-No Helmet

INJURY INFO SOURCE: 1-Officer Observation, 2-Individual Statement, 3-Medical, Paramedical Observation

AMB CODES - see code sheet

Person Type	Include Driver, Passengers, Bicyclist, and Pedestrians — Last Name, First Name, Mi	Sex (M,F,U)	DOB	Seat Pos Row	Seat Pos	Seat Pos Other	Air Bag Deployed	Ejected	Restraint System	Helmet Use	Injury Degree	Injury Type	Injury Area	Inj Info Source	Amb Code
1	*	F	09/24/79	1	1		2	1	3		5			2	1

2012-34240 # STATE OF MAINE CRASH REPORT **FIRST PAGE**

F I R S T

Reporting Agency	Report Number	Crash Date	Crash Time	At Scene Date	At Scene Time
ME0100700	**12H-02782**	**7/29/2012**	**16:40**	**7/29/2012**	**16:44**

City or Town	Street or Highway	Nearest Intersecting Street	Off Road
Hampden	**COLDBROOK RD**	**Int of COLDBROOK RD, COLDBROOK RD, US HWY 202**	☐ Off Road

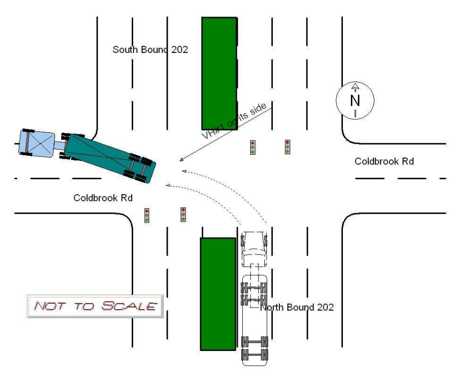
Direction FROM Nearest Intersection to Crash Site: ☑ At Intersection ☐ North ☐ South ☐ East ☐ West
Distance From Nearest Inter.: ☐ Feet ☐ Miles
Latitude: **44.754270**
Longitude: **-68.839410**

Node 1	Node 2	Measurement Node	Distance to Scene	Posted Speed Limit	
39612	**0**		Miles **0** Tenths	Miles Per Hour **45**	☐ Unknown ☐ N/A ☐ Not Posted 25 ☐ Not Posted 45

(F1) Type of Crash **12 - Rollover**	(F2) Type of Location **4 - Four Leg Intersection**
(F3) Weather Condition **1 - Clear**	(F4) Light Condition **1 - Daylight**
(F5) Road Grade **1 - Level**	(F6) Road Surface Condition **1 - Dry**
(F7) Traffic Control Device **1 - Traffic Signals (Stop & Go)**	Traffic Control Device Operational (pre-crash)? ☑ Yes ☐ No ☐ Unk
(F8) Location of First Harmful Event **1 - On Roadway**	Total Damage over Threshold? ☑ Yes ☐ No
(F9) Contributing Circumstances - Environment 1 **1 - None**	(F9) Contributing Circumstances - Environment 2
(F10) Contributing Circumstances - Road 1 **1 - None**	(F10) Contributing Circumstances -Road 2
In or Near a Construction, Maintenance, or Utility Work Zone? ☐ Yes ☑ No ☐ Unk	Work Zone Workers Present? ☐ Yes ☐ No ☐ Unk
(F11) Location of the Crash related to Work Zone	(F12) Type of Work Zone
Law Enforcement Present at Work Zone? ☐ Officer Present ☐ Law Enforcement Vehicle Only ☐ No	School Bus Related? ☐ Yes, Directly Involved ☐ Yes, Indirectly Involved ☑ No

NARRATIVE
VH#1 was turning from North Bound Route 202 onto West Bound Coldbrook Rd. As VH#1 was turning the cargo onboard shifted. VH#1 then rolled onto its side.

CRASH DIAGRAM



Witness Last Name	First	MI	Address	City	State	Zip
*			* ME*			
Witness Last Name	First	MI	Address	City	State	Zip

Non Vehicle Property Damage Description ☐ State ☐ City or Town ☐ Utilities ☐ Private

Property Owner Name	Address	City	State	Zip

Non Vehicle Property Damage Description ☐ State ☐ City or Town ☐ Utilities ☐ Private

Property Owner Name	Address	City	State	Zip

Reporting Officer	Badge#	Report Date	Approved By	Approved Date
Officer Benson Eyles	**306**	**7/30/2012**	**Sergeant Scott Webber**	**7/30/2012**

STATE OF MAINE CRASH REPORT

UNIT PAGE

Report Number: **12H-02782**

U N I T

Unit ID	**1**
Hit Run?	☐
VIN	**1FUJGLCK08LZ82243**
License Plate	*****
State	**ME**
(U1) Unit Type	**17 - Medium/Heavy Trucks (More than 10,000 lbs)**
No Insurance	☐
NAIC	
Insurance Company Name	*****
Insurance Policy Number	*****
(U2) Vehicle Make	**19 - FREIGHTLINER**
Vehicle Year	**2008**
(U3) Vehicle Color	**4 - Blue**
(U4)Vehicle Configuration	**11 - Tractor/Semi-Trailer (one trailer - 5 axles)**
GVWR or GCWR	☐ < 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☑ > than 26,000 lbs.
Vehicle Has 9 or More Seats ?	☐ Yes ☑ No
HAZMAT Placarded ?	☐ Yes ☑ No
Vehicle Travel Direction	☐ Northbound ☐ Southbound ☐ Eastbound ☑ Westbound ☐ Not on Roadway ☐ Unknown
(U5) Special Function Vehicle	**1 - No Special Function** ☐ Exempt Vehicle
Emergency Vehicle Responding to Scene ?	☐ Yes ☐ No
Extent of Damage	☐ No Damage Observed ☐ Minor Damage ☐ Functional Damage ☑ Towed Due to Disabling Damage
(U6) Most Damaged Area	**3 - Center Passenger Side**
(U7) Most Harmful Event	**1 - Overturn / Rollover**
(U8) Pre Crash Actions	**1 - Following roadway**
(U9) Contributing Circumstances - Vehicle	**1 - None**
(U10) Sequence of Events 1	**5 - Cargo / Equipment Loss or Shift**
(U10) Sequence of Events 2	**1 - Overturn / Rollover**
(U10) Sequence of Events 3	
(U10) Sequence of Events 4	

D R I V E R

☑ Driver Bicycle ☐ Pedestrian ☐ ☐ Last Known Operator	
License Number	*****
☑ Active ☐ No License ☐ Permit ☐ Suspended	
State	**ME**
License Class	**A**
Endorsements	**N,P**
Restrictions	**0**
DRIVER Last Name, First Name, MI	*****
DRIVER Address, City, State, Zip	*** ME***
Citation Number	
Pending	☐
Violation 1	
Violation 2	
OWNER Last Name (skip if same as Driver) First Name MI	*****
OWNER Address, City, State, Zip	*** ME***
(D1) Driver Distracted By	**1 - Not Distracted**
(D2) Condition at Time of Crash	**1 - Apparently Normal**
(D3) Driver Actions at Time of Crash 1	**1 - No Contributing Action**
(D3) Driver Actions at Time of Crash 2	
Alcohol Test	☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Breath ☐ Urine ☐ Other Chemical Test (Not Field Sobriety or PBT)
Alcohol Test Result Pending	☐
Alcohol BAC Result	
Drug Test	☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Urine ☐ Other
Drug Test Result	☐ Positive ☐ Negative ☐ Pending
(D4) Non Motorist Location at Time of Crash	
(D5) Non Motorist Action Prior to Crash	
(D6) Non Motorist Action at Time of Crash 1	
(D6) Non Motorist Action at Time of Crash 2	
(D7) Pedestrian Maneuvers	
(D8) Bicyclist Maneuvers	

O C C U P A N T

PERSON TYPE 1-Driver, 2-Passenger, 3-Pedestrian, 6-Driver/Owner, 7-Bicycle, 8-Passenger/Owner, 24-Last Known Operator 25-Last Known Operator/Owner

SEAT ROW
1-Front Row
2-Second Row
3-Third Row
4-Fourth Row
5-Other Row
6-Unknown

SEAT POSITION
1-Left (driver)
2-Middle
3-Right
4-Other
5-Unknown

SEAT POSITION OTHER
1-Sleeper Section of Cab (truck)
2-Other Enclosed Cargo Area
3- Unenclosed Cargo Area
4-Trailing Unit
5-Riding on Motor Vehicle Ext (non-trailing unit)
6- Unknown

AIRBAG DEPLOYED
1-Not Applicable
2-Not Deployed
3-Deployed - Front
4-Deployed - Side
5-Deployed - Other (knee, air belt,...)
6-Deployed - Combination
7-Deployment - Curtain

RESTRAINT SYSTEM
1-Not Applicable
2-None Used - Motor Vehicle Occupant
3-Shoulder and Lap Belt Used
4-Shoulder Belt Only Used
5-Lap Belt Only Used
6-Restraint Used - Other
7-Child Restraint - Forward Facing
8-Child Restraint - Rear Facing
9-Child Restraint - Used Incorrectly
10-Booster Seat
11-Child Restraint - Other

INJURY TYPE
1-Amputation
2-Bleeding
3-Broken Bones
4-Burns
5-Concussion
6-Shock
7-Dizziness
8-Abrasion/Bruises
9-Complaint of Pain
10-Other

INJURY AREA
1-Face
2-Head
3-Neck
4-Back
5-Arm(s)
6-Leg(s)
7-Chest Stomach
8-Internal
9-Entire Body
10-Other

INJURY DEGREE
1-Fatal
2-Incapacitating
3-NonIncapacitating
4-Possible Injury
5-No Injury

INJURY INFO SOURCE
1-Officer Observation
2-Individual Statement
3-Medical, Paramedical Observation

EJECTED
1-Not Ejected
2-Ejected Partially
3-Ejected Totally

HELMET USE
1-DOT-Compliant Motorcycle Helmet
2-Other Helmet
3-No Helmet

AMB CODES - see code sheet

Person Type	Include Driver, Passengers, Bicyclist, and Pedestrians Last Name, First Name, Mi	Sex (M,F,U)	DOB	Seat Pos Row	Seat Pos	Seat Pos Other	Air Bag Deployed	Ejected	Restraint System	Helmet Use	Injury Degree	Injury Type	Injury Area	Inj Info Source	Amb Code
1	*****	**F**	**06/17/72**	**1**	**1**		**2**	**1**	**3**		**5**			**3**	**1**

STATE OF MAINE CRASH REPORT

Report Number	Commercial Vehicle Supplemental	No Carrier Identification Numbers ☐
12H-02782		

Unit ID	USDOT Number	MC/MX Number	State Number	MCSAP Number
1	**288676**	**230595**		

☑ Interstate Carrier ☐ Intrastate Carrier ☐ Not in Commerce-Government ☐ Not in Commerce-Other Trucks (Over 10,000 lbs. GVWR/GCWR)

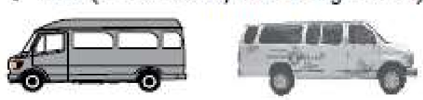
Carrier Name	Carrier Phone
*****	**(207) 832-7300**

Address	City	State	Zip
***, WALDOBORO ME 04572**			

☐ Oversize Permit Weight ☐ Oversize Permit Length ☐ Oversize Permit Height ☐ Oversize Permit Width

3 Cargo Body Type (enter one code from below) ☐ Unloaded ☐ Partially Loaded ☑ Loaded

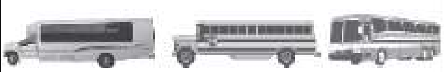
1 Bus (9-15 Seats, Including Driver)



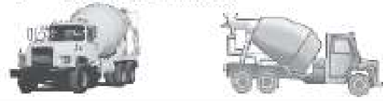
6 Dump

11 Pole

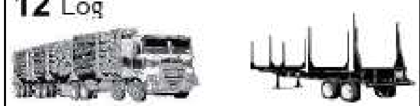
2 Bus (16 or More Seats, Including Driver)



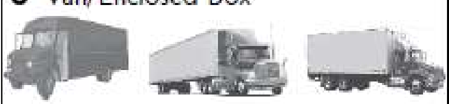
7 Concrete Mixer



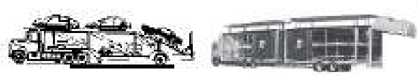
12 Log



3 Van/Enclosed Box

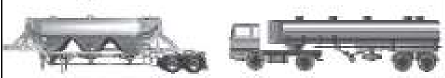


8 Auto Transporter



13 Intermodal Chassis

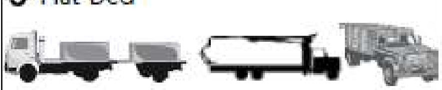
4 Cargo Tank



9 Garbage/Refuse

14 Vehicle Towing Motor Vehicle

5 Flat Bed



10 Grain, Chips, Gravel

15 No Cargo Body

98 Other Cargo Body (not listed above)

W Commodity Code (enter one code from below)

A General Freight
B Household Goods
C Metal: Sheets, Coils, Rolls
D Motor Vehicles
E DriveAway / TowAway
F Forest Products
G Building Products
H Mobile Homes
I Machinery, Large Objects
J Fresh Produce
K Liquids / Gases in Cargo Tank
L Intermodal
M Passengers
N Oil Field Equipment
0 Livestock
P Grain, Feed, Hay
Q Coal / Coke
R Meat
S Garbage, Refuse, Trash
T U.S. Mail
U Chemicals
V Commodities, Dry Bulk
W Refrigerated Foods
X Beverage
Y Paper Products
Z Other

0 Bus Use (enter one code from below)

0 Not a Bus
1 School (Public or Private)
2 Transit
3 Intercity
4 Charter
5 Other

***** HAZMAT Class Number (enter one code from below)

1 Explosives
2 Gases - Compressed, Dissolved or Refrigerated
3 Flammable Liquids
4 Flammable Solids-Combustible, Water Reactive
5 Oxidizing Substances-Organic Peroxides
6 Poisonous (Toxic) and Infectious Substances
7 Radioactive Material
8 Corrosives
9 Miscellaneous Dangerous Goods, or Blank

***** HAZMAT 4 Digit Number — Was HAZMAT released from THIS vehicle's cargo? ☐ YES ☑ NO ☐ UNK

F I R S T

Reporting Agency	Report Number	Crash Date	Crash Time	At Scene Date	At Scene Time
ME0100700	**13H-00140**	**1/16/2013**	**09:20**	**1/16/2013**	**09:23**

City or Town	Street or Highway	Nearest Intersecting Street	
Hampden	**COLDBROOK RD**	**Int of COLDBROOK RD, COLDBROOK RD, US HWY 202**	☐ Off Road

Direction FROM Nearest Intersection to Crash Site	Distance From Nearest Inter.	Latitude	Longitude
☑ At Intersection ☐ North ☐ South ☐ East ☐ West	☐ Feet ☐ Miles	**44.754270**	**-68.839410**

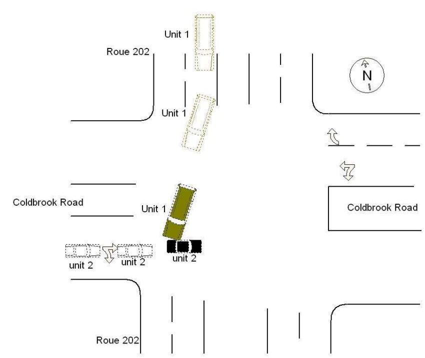
Node 1	Node 2	Measurement Node	Distance to Scene	Posted Speed Limit	
39612	**0**		Miles **0** Tenths	Miles Per Hour **40**	☐ Unknown ☐ N/A ☐ Not Posted 25 ☐ Not Posted 45

(F1) Type of Crash **4 - Intersection Movement**	(F2) Type of Location **4 - Four Leg Intersection**
(F3) Weather Condition **6 - Snow**	(F4) Light Condition **1 - Daylight**
(F5) Road Grade **1 - Level**	(F6) Road Surface Condition **3 - Snow**
(F7) Traffic Control Device **1 - Traffic Signals (Stop & Go)**	Traffic Control Device Operational (pre-crash)? ☑ Yes ☐ No ☐ Unk
(F8) Location of First Harmful Event **1 - On Roadway**	Total Damage over Threshold? ☑ Yes ☐ No
(F9) Contributing Circumstances - Environment 1 **1 - None**	(F9) Contributing Circumstances - Environment 2
(F10) Contributing Circumstances - Road 1 **2 - Road Surface Condition (Wet, Icy, Snow, Slush, etc.)**	(F10) Contributing Circumstances -Road 2
In or Near a Construction, Maintenance, or Utility Work Zone? ☐ Yes ☑ No ☐ Unk	Work Zone Workers Present? ☐ Yes ☐ No ☐ Unk
(F11) Location of the Crash related to Work Zone	(F12) Type of Work Zone
Law Enforcement Present at Work Zone? ☐ Officer Present ☐ Law Enforcement Vehicle Only ☐ No	School Bus Related? ☐ Yes, Directly Involved ☐ Yes, Indirectly Involved ☑ No

NARRATIVE

Unit 1 was traveling South on route 202 approaching Coldbrook Road intersection. Unit 1 attempted to go through the intersection and had a green light. Unit 2 was traveling east on Coldbrook Road approaching the Route 202 intersection and failed to stop for the red light.
Unit 1 then struck the drivers side back of Unit 2.

CRASH DIAGRAM



Witness Last Name	First	MI	Address	City	State	Zip

Witness Last Name	First	MI	Address	City	State	Zip

Non Vehicle Property Damage Description ☐ State ☐ City or Town ☐ Utilities ☐ Private

Property Owner Name	Address	City	State	Zip

Non Vehicle Property Damage Description ☐ State ☐ City or Town ☐ Utilities ☐ Private

Property Owner Name	Address	City	State	Zip

Reporting Officer	Badge#	Report Date	Approved By	Approved Date
Officer Joel Small	**304**	**1/16/2013**	**Sergeant Christian Bailey**	**1/18/2013**

Last Modified: 1/18/2013 20:53

Report Number
13H-00140

STATE OF MAINE CRASH REPORT

UNIT PAGE

U N I T

Unit ID 1	☐ Hit Run?	VIN 5GTEN13L488140254	License Plate *	State ME	(U1) Unit Type 2 - (Sport) Utility Vehicle
☐ No Insurance	NAIC	Insurance Company Name *		Insurance Policy Number *	

(U2) Vehicle Make 23 - GMC	Vehicle Year 2008	(U3) Vehicle Color 8 - Grey, Silver

(U4)Vehicle Configuration

GVWR or GCWR ☐ < 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ > than 26,000 lbs.

Vehicle Has 9 or More Seats ? ☐ Yes ☑ No

HAZMAT Placarded ? ☐ Yes ☑ No

Vehicle Travel Direction ☐ Northbound ☑ Southbound ☐ Eastbound ☐ Westbound ☐ Not on Roadway ☐ Unknown

(U5) Special Function Vehicle **1 - No Special Function** ☐ Exempt Vehicle

Emergency Vehicle Responding to Scene ? ☐ Yes ☐ No

Extent of Damage ☐ No Damage Observed ☑ Minor Damage ☐ Functional Damage ☐ Towed Due to Disabling Damage

(U6) Most Damaged Area **12 - Front**	(U7) Most Harmful Event **13 - Motor Vehicle in Transport**
(U8) Pre Crash Actions **1 - Following roadway**	(U9) Contributing Circumstances - Vehicle **1 - None**
(U10) Sequence of Events 1 **21 - Motor Vehicle In Transport**	(U10) Sequence of Events 2
(U10) Sequence of Events 3	(U10) Sequence of Events 4

D R I V E R

☑ Driver Bicycle ☐ Pedestrian ☐ ☐ Last Known Operator

License Number * ☑ Active ☐ No License ☐ Permit ☐ Suspended

State ME | License Class | Endorsements | Restrictions

DRIVER Last Name First Name MI *	DRIVER Address City State Zip * ME*
Citation Number Pending ☐	Violation 1 / Violation 2
OWNER Last Name (skip if same as Driver) First Name MI *	OWNER Address City State Zip * ME*
(D1) Driver Distracted By **1 - Not Distracted**	(D2) Condition at Time of Crash **1 - Apparently Normal**
(D3) Driver Actions at Time of Crash 1 **1 - No Contributing Action**	(D3) Driver Actions at Time of Crash 2

Alcohol Test ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Breath ☐ Urine ☐ Other Chemical Test (Not Field Sobriety or PBT)

☐ Alcohol Test Result Pending | Alcohol BAC Result

Drug Test ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Urine ☐ Other

Drug Test Result ☐ Positive ☐ Negative ☐ Pending

(D4) Non Motorist Location at Time of Crash	(D5) Non Motorist Action Prior to Crash
(D6) Non Motorist Action at Time of Crash 1	(D6) Non Motorist Action at Time of Crash 2
(D7) Pedestrian Maneuvers	(D8) Bicyclist Maneuvers

O C C U P A N T

PERSON TYPE 1-Driver, 2-Passenger, 3-Pedestrian, 6-Driver/Owner, 7-Bicycle, 8-Passenger/Owner, 24-Last Known Operator 25-Last Known Operator/Owner

SEAT ROW
1-Front Row
2-Second Row
3-Third Row
4-Fourth Row
5-Other Row
6-Unknown

SEAT POSITION
1-Left (driver)
2-Middle
3-Right
4-Other
5-Unknown

SEAT POSITION OTHER
1-Sleeper Section of Cab (truck)
2-Other Enclosed Cargo Area
3- Unenclosed Cargo Area
4-Trailing Unit
5-Riding on Motor Vehicle Ext (non-trailing unit)
6- Unknown

AIRBAG DEPLOYED
1-Not Applicable
2-Not Deployed
3-Deployed - Front
4-Deployed - Side
5-Deployed - Other (knee, air belt,...)
6-Deployed - Combination
7-Deployment - Curtain

RESTRAINT SYSTEM
1-Not Applicable
2-None Used - Motor Vehicle Occupant
3-Shoulder and Lap Belt Used
4-Shoulder Belt Only Used
5-Lap Belt Only Used
6-Restraint Used - Other
7-Child Restraint - Forward Facing
8-Child Restraint - Rear Facing
9-Child Restraint - Used Incorrectly
10-Booster Seat
11-Child Restraint - Other

INJURY TYPE
1-Amputation
2-Bleeding
3-Broken Bones
4-Burns
5-Concussion
6-Shock
7-Dizziness
8-Abrasion/Bruises
9-Complaint of Pain
10-Other

INJURY AREA
1-Face
2-Head
3-Neck
4-Back
5-Arm(s)
6-Leg(s)
7-Chest Stomach
8-Internal
9-Entire Body
10-Other

INJURY DEGREE
1-Fatal
2-Incapacitating
3-NonIncapacitating
4-Possible Injury
5-No Injury

INJURY INFO SOURCE
1-Officer Observation
2-Individual Statement
3-Medical, Paramedical Observation

EJECTED
1-Not Ejected
2-Ejected Partially
3-Ejected Totally

HELMET USE
1-DOT-Compliant Motorcycle Helmet
2-Other Helmet
3-No Helmet

AMB CODES - see code sheet

Person Type	Include Driver, Passengers, Bicyclist, and Pedestrians Last Name, First Name, Mi	Sex (M,F,U)	DOB	Seat Pos Row	Seat Pos	Seat Pos Other	Air Bag Deployed	Ejected	Restraint System	Helmet Use	Injury Degree	Injury Type	Injury Area	Inj Info Source	Amb Code
6	*	F	12/14/71	1	1		2	1	3		5			1	1

STATE OF MAINE CRASH REPORT

UNIT PAGE

Report Number: **13H-00140**

UNIT

Unit ID	**2**
Hit Run?	☐
VIN	**1FAFP55SOYG19049B**
License Plate	*
State	**ME**
(U1) Unit Type	**1 - Passenger Car**
No Insurance	☐
NAIC	
Insurance Company Name	*
Insurance Policy Number	*
(U2) Vehicle Make	**18 - FORD**
Vehicle Year	**2000**
(U3) Vehicle Color	**1 - Black**
(U4)Vehicle Configuration	
GVWR or GCWR	☐ < 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ > than 26,000 lbs.
Vehicle Has 9 or More Seats ?	☐ Yes ☐ No
HAZMAT Placarded ?	☐ Yes ☑ No
Vehicle Travel Direction	☐ Northbound ☐ Southbound ☑ Eastbound ☐ Westbound ☐ Not on Roadway ☐ Unknown
(U5) Special Function Vehicle	**1 - No Special Function** ☐ Exempt Vehicle
Emergency Vehicle Responding to Scene ?	☐ Yes ☐ No
Extent of Damage	☐ No Damage Observed ☐ Minor Damage ☐ Functional Damage ☑ Towed Due to Disabling Damage
(U6) Most Damaged Area	**8 - Rear Driver Quarter Panel**
(U7) Most Harmful Event	**13 - Motor Vehicle in Transport**
(U8) Pre Crash Actions	**16 - Skidding**
(U9) Contributing Circumstances - Vehicle	**1 - None**
(U10) Sequence of Events 1	**21 - Motor Vehicle In Transport**
(U10) Sequence of Events 2	
(U10) Sequence of Events 3	
(U10) Sequence of Events 4	

DRIVER

☑ Driver ☐ Bicycle ☐ Pedestrian ☐ Last Known Operator	
License Number	*
☑ Active ☐ No License ☐ Permit ☐ Suspended	
State	**ME**
License Class	**C**
Endorsements	
Restrictions	
DRIVER Last Name, First Name, MI	*
DRIVER Address, City, State, Zip	*** ME***
Citation Number	Pending ☐
Violation 1	
Violation 2	
OWNER Last Name (skip if same as Driver) First Name MI	*
OWNER Address, City, State, Zip	*** ME***
(D1) Driver Distracted By	**1 - Not Distracted**
(D2) Condition at Time of Crash	**1 - Apparently Normal**
(D3) Driver Actions at Time of Crash 1	**9 - Drove Too Fast For Conditions**
(D3) Driver Actions at Time of Crash 2	
Alcohol Test	☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Breath ☐ Urine ☐ Other Chemical Test (Not Field Sobriety or PBT)
☐ Alcohol Test Result Pending	
Alcohol BAC Result	
Drug Test	☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Urine ☐ Other
Drug Test Result	☐ Positive ☐ Negative ☐ Pending
(D4) Non Motorist Location at Time of Crash	
(D5) Non Motorist Action Prior to Crash	
(D6) Non Motorist Action at Time of Crash 1	
(D6) Non Motorist Action at Time of Crash 2	
(D7) Pedestrian Maneuvers	
(D8) Bicyclist Maneuvers	

OCCUPANT

PERSON TYPE 1-Driver, 2-Passenger, 3-Pedestrian, 6-Driver/Owner, 7-Bicycle, 8-Passenger/Owner, 24-Last Known Operator 25-Last Known Operator/Owner

SEAT ROW: 1-Front Row, 2-Second Row, 3-Third Row, 4-Fourth Row, 5-Other Row, 6-Unknown

SEAT POSITION: 1-Left (driver), 2-Middle, 3-Right, 4-Other, 5-Unknown

SEAT POSITION OTHER: 1-Sleeper Section of Cab (truck), 2-Other Enclosed Cargo Area, 3- Unenclosed Cargo Area, 4-Trailing Unit, 5-Riding on Motor Vehicle Ext (non-trailing unit), 6- Unknown

AIRBAG DEPLOYED: 1-Not Applicable, 2-Not Deployed, 3-Deployed - Front, 4-Deployed - Side, 5-Deployed - Other (knee, air belt,...), 6-Deployed - Combination, 7-Deployment - Curtain

RESTRAINT SYSTEM: 1-Not Applicable, 2-None Used - Motor Vehicle Occupant, 3-Shoulder and Lap Belt Used, 4-Shoulder Belt Only Used, 5-Lap Belt Only Used, 6-Restraint Used - Other, 7-Child Restraint - Forward Facing, 8-Child Restraint - Rear Facing, 9-Child Restraint - Used Incorrectly, 10-Booster Seat, 11-Child Restraint - Other

INJURY TYPE: 1-Amputation, 2-Bleeding, 3-Broken Bones, 4-Burns, 5-Concussion, 6-Shock, 7-Dizziness, 8-Abrasion/Bruises, 9-Complaint of Pain, 10-Other

INJURY AREA: 1-Face, 2-Head, 3-Neck, 4-Back, 5-Arm(s), 6-Leg(s), 7-Chest Stomach, 8-Internal, 9-Entire Body, 10-Other

INJURY DEGREE: 1-Fatal, 2-Incapacitating, 3-NonIncapacitating, 4-Possible Injury, 5-No Injury

EJECTED: 1-Not Ejected, 2-Ejected Partially, 3-Ejected Totally

HELMET USE: 1-DOT-Compliant Motorcycle Helmet, 2-Other Helmet, 3-No Helmet

INJURY INFO SOURCE: 1-Officer Observation, 2-Individual Statement, 3-Medical, Paramedical Observation

AMB CODES - see code sheet

Person Type	Include Driver, Passengers, Bicyclist, and Pedestrians Last Name, First Name, Mi	Sex (M,F,U)	DOB	Seat Pos Row	Seat Pos	Seat Pos Other	Air Bag Deployed	Ejected	Restraint System	Helmet Use	Injury Degree	Injury Type	Injury Area	Inj Info Source	Amb Code
6	*	**F**	**03/27/53**	**1**	**1**		**2**	**1**	**3**		**5**			**2**	**1**

2012-39456

STATE OF MAINE CRASH REPORT

FIRST PAGE

FIRST

Reporting Agency	Report Number	Crash Date	Crash Time	At Scene Date	At Scene Time
ME0100700	**12H-03523**	**9/22/2012**	**19:46**	**9/22/2012**	**19:46**

City or Town	Street or Highway	Nearest Intersecting Street	Off Road
Hampden	**US HWY 202**	**Int of COLD BROOK RD, COLDBROOK RD, US HWY 202**	☐ Off Road

Direction FROM Nearest Intersection to Crash Site	Distance From Nearest Inter.	Latitude	Longitude
☑ At Intersection ☐ North ☐ South ☐ East ☐ West	☐ Feet ☐ Miles	**44.754270**	**-68.839410**

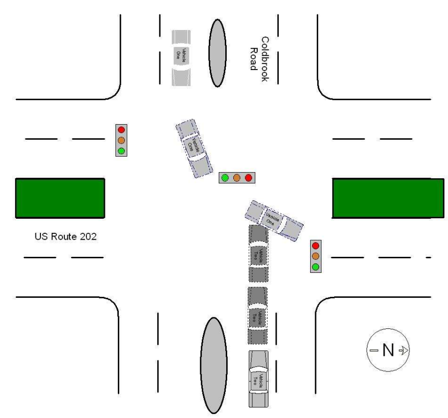
Node 1	Node 2	Measurement Node	Distance to Scene	Posted Speed Limit	
39612	**0**		Miles **0** Tenths	Miles Per Hour **35**	☐ Unknown ☐ Not Posted 25 ☐ N/A ☐ Not Posted 45

(F1) Type of Crash **4 - Intersection Movement**	(F2) Type of Location **4 - Four Leg Intersection**
(F3) Weather Condition **2 - Cloudy**	(F4) Light Condition **4 - Dark - Lighted**
(F5) Road Grade **1 - Level**	(F6) Road Surface Condition **1 - Dry**
(F7) Traffic Control Device **1 - Traffic Signals (Stop & Go)**	Traffic Control Device Operational (pre-crash)? ☑ Yes ☐ No ☐ Unk
(F8) Location of First Harmful Event **1 - On Roadway**	Total Damage over Threshold? ☑ Yes ☐ No
(F9) Contributing Circumstances - Environment 1 **1 - None**	(F9) Contributing Circumstances - Environment 2
(F10) Contributing Circumstances - Road 1 **1 - None**	(F10) Contributing Circumstances -Road 2 **1 - None**
In or Near a Construction, Maintenance, or Utility Work Zone? ☐ Yes ☑ No ☐ Unk	Work Zone Workers Present? ☐ Yes ☐ No ☐ Unk
(F11) Location of the Crash related to Work Zone	(F12) Type of Work Zone
Law Enforcement Present at Work Zone? ☐ Officer Present ☐ Law Enforcement Vehicle Only ☐ No	School Bus Related? ☐ Yes, Directly Involved ☐ Yes, Indirectly Involved ☑ No

NARRATIVE

Unit one was traveling EB on Coldbrook road turning onto US Rt 202 to go north. Unit two was traveling WB from lower Coldbrook road going straight. The light turned green, unit two had the right of way and unit one turned into the path of unit two.

CRASH DIAGRAM



Witness Last Name	First	MI	Address	City	State	Zip

Witness Last Name	First	MI	Address	City	State	Zip

Non Vehicle Property Damage Description ☐ State ☐ City or Town ☐ Utilities ☐ Private

Property Owner Name	Address	City	State	Zip

Non Vehicle Property Damage Description ☐ State ☐ City or Town ☐ Utilities ☐ Private

Property Owner Name	Address	City	State	Zip

Reporting Officer	Badge#	Report Date	Approved By	Approved Date
Officer James E Ryan, Jr.	**316**	**9/22/2012**	**Sergeant Scott Webber**	**9/23/2012**

Report Number
12H-03523

STATE OF MAINE CRASH REPORT

UNIT PAGE

UNIT

Unit ID	Hit Run?	VIN	License Plate	State	(U1) Unit Type
1	☐	1G1AK15F177382132	*	ME	1 - Passenger Car

No Insurance	NAIC	Insurance Company Name	Insurance Policy Number
☐		*	*

(U2) Vehicle Make	Vehicle Year	(U3) Vehicle Color
11 - CHEVROLET	2007	14 - White

(U4)Vehicle Configuration

GVWR or GCWR: ☐ < 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ > than 26,000 lbs.

Vehicle Has 9 or More Seats ? ☐ Yes ☑ No

HAZMAT Placarded ? ☐ Yes ☑ No

Vehicle Travel Direction: ☐ Northbound ☐ Southbound ☑ Eastbound ☐ Westbound ☐ Not on Roadway ☐ Unknown

(U5) Special Function Vehicle
1 - No Special Function
☐ Exempt Vehicle

Emergency Vehicle Responding to Scene ? ☐ Yes ☐ No

Extent of Damage: ☐ No Damage Observed ☐ Minor Damage ☐ Functional Damage ☑ Towed Due to Disabling Damage

(U6) Most Damaged Area **5 - Rear Passenger Corner**	(U7) Most Harmful Event **13 - Motor Vehicle in Transport**
(U8) Pre Crash Actions **6 - Making left turn**	(U9) Contributing Circumstances - Vehicle **1 - None**
(U10) Sequence of Events 1 **21 - Motor Vehicle In Transport**	(U10) Sequence of Events 2
(U10) Sequence of Events 3	(U10) Sequence of Events 4

DRIVER

☑ Driver ☐ Bicycle ☐ Pedestrian ☐ Last Known Operator

License Number		State	License Class	Endorsements	Restrictions
*	☑ Active ☐ No License ☐ Permit ☐ Suspended	ME	C	0	0

DRIVER Last Name First Name MI	DRIVER Address City State Zip
*	* ME*

Citation Number Pending ☐	Violation 1	Violation 2

OWNER Last Name (skip if same as Driver) First Name MI	OWNER Address City State Zip
*	* ME*

(D1) Driver Distracted By **1 - Not Distracted**	(D2) Condition at Time of Crash **1 - Apparently Normal**
(D3) Driver Actions at Time of Crash 1 **3 - Failed to Yield Right-of-Way**	(D3) Driver Actions at Time of Crash 2

Alcohol Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Breath ☐ Urine ☐ Other Chemical Test (Not Field Sobriety or PBT)

☐ Alcohol Test Result Pending — Alcohol BAC Result

Drug Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Urine ☐ Other

Drug Test Result: ☐ Positive ☐ Negative ☐ Pending

(D4) Non Motorist Location at Time of Crash	(D5) Non Motorist Action Prior to Crash
(D6) Non Motorist Action at Time of Crash 1	(D6) Non Motorist Action at Time of Crash 2
(D7) Pedestrian Maneuvers	(D8) Bicyclist Maneuvers

OCCUPANT

PERSON TYPE 1-Driver, 2-Passenger, 3-Pedestrian, 6-Driver/Owner, 7-Bicycle, 8-Passenger/Owner, 24-Last Known Operator 25-Last Known Operator/Owner

SEAT ROW: 1-Front Row, 2-Second Row, 3-Third Row, 4-Fourth Row, 5-Other Row, 6-Unknown

SEAT POSITION: 1-Left (driver), 2-Middle, 3-Right, 4-Other, 5-Unknown

SEAT POSITION OTHER: 1-Sleeper Section of Cab (truck), 2-Other Enclosed Cargo Area, 3- Unenclosed Cargo Area, 4-Trailing Unit, 5-Riding on Motor Vehicle Ext (non-trailing unit), 6- Unknown

AIRBAG DEPLOYED: 1-Not Applicable, 2-Not Deployed, 3-Deployed - Front, 4-Deployed - Side, 5-Deployed - Other (knee, air belt,...), 6-Deployed - Combination, 7-Deployment - Curtain

RESTRAINT SYSTEM: 1-Not Applicable, 2-None Used - Motor Vehicle Occupant, 3-Shoulder and Lap Belt Used, 4-Shoulder Belt Only Used, 5-Lap Belt Only Used, 6-Restraint Used - Other, 7-Child Restraint - Forward Facing, 8-Child Restraint - Rear Facing, 9-Child Restraint - Used Incorrectly, 10-Booster Seat, 11-Child Restraint - Other

INJURY TYPE: 1-Amputation, 2-Bleeding, 3-Broken Bones, 4-Burns, 5-Concussion, 6-Shock, 7-Dizziness, 8-Abrasion/Bruises, 9-Complaint of Pain, 10-Other

INJURY AREA: 1-Face, 2-Head, 3-Neck, 4-Back, 5-Arm(s), 6-Leg(s), 7-Chest Stomach, 8-Internal, 9-Entire Body, 10-Other

INJURY DEGREE: 1-Fatal, 2-Incapacitating, 3-NonIncapacitating, 4-Possible Injury, 5-No Injury

EJECTED: 1-Not Ejected, 2-Ejected Partially, 3-Ejected Totally

HELMET USE: 1-DOT-Compliant Motorcycle Helmet, 2-Other Helmet, 3-No Helmet

INJURY INFO SOURCE: 1-Officer Observation, 2-Individual Statement, 3-Medical, Paramedical Observation

AMB CODES - see code sheet

Person Type	Include Driver, Passengers, Bicyclist, and Pedestrians Last Name, First Name, Mi	Sex (M,F,U)	DOB	Seat Pos Row	Seat Pos	Seat Pos Other	Air Bag Deployed	Ejected	Restraint System	Helmet Use	Injury Degree	Injury Type	Injury Area	Inj Info Source	Amb Code
1	*	F	05/08/89	1	1		2	1	3		5			2	1

Report Number
12H-03523

STATE OF MAINE CRASH REPORT

UNIT PAGE

UNIT

Unit ID	Hit Run?	VIN	License Plate	State	(U1) Unit Type
2	☐	JF1SG63607H741435	*	ME	1 - Passenger Car

No Insurance	NAIC	Insurance Company Name	Insurance Policy Number
☐	25178	*	*

(U2) Vehicle Make	Vehicle Year	(U3) Vehicle Color
65 - SUBARU	2007	8 - Grey, Silver

(U4)Vehicle Configuration

GVWR or GCWR: ☐ < 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ > than 26,000 lbs.

Vehicle Has 9 or More Seats ? ☐ Yes ☐ No

HAZMAT Placarded ? ☐ Yes ☑ No

Vehicle Travel Direction: ☐ Northbound ☐ Southbound ☐ Eastbound ☑ Westbound ☐ Not on Roadway ☐ Unknown

(U5) Special Function Vehicle: **1 - No Special Function** ☐ Exempt Vehicle

Emergency Vehicle Responding to Scene ? ☐ Yes ☐ No

Extent of Damage: ☐ No Damage Observed ☐ Minor Damage ☐ Functional Damage ☑ Towed Due to Disabling Damage

(U6) Most Damaged Area: **12 - Front**

(U7) Most Harmful Event: **13 - Motor Vehicle in Transport**

(U8) Pre Crash Actions: **1 - Following roadway**

(U9) Contributing Circumstances - Vehicle: **1 - None**

(U10) Sequence of Events 1: **21 - Motor Vehicle In Transport**

(U10) Sequence of Events 2

(U10) Sequence of Events 3

(U10) Sequence of Events 4

DRIVER

☑ Driver ☐ Bicycle ☐ Pedestrian ☐ Last Known Operator

License Number	Status	State	License Class	Endorsements	Restrictions
*	☑ Active ☐ No License ☐ Permit ☐ Suspended	ME	C	0	0

DRIVER Last Name	First Name	MI	DRIVER Address	City	State	Zip
*			* ME*			

Citation Number | Pending ☐ | Violation 1 | Violation 2

OWNER Last Name (skip if same as Driver)	First Name	MI	OWNER Address	City	State	Zip
*			* ME*			

(D1) Driver Distracted By: **1 - Not Distracted**

(D2) Condition at Time of Crash: **1 - Apparently Normal**

(D3) Driver Actions at Time of Crash 1: **1 - No Contributing Action**

(D3) Driver Actions at Time of Crash 2

Alcohol Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Breath ☐ Urine ☐ Other Chemical Test (Not Field Sobriety or PBT)

☐ Alcohol Test Result Pending

Alcohol BAC Result

Drug Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Urine ☐ Other

Drug Test Result: ☐ Positive ☐ Negative ☐ Pending

(D4) Non Motorist Location at Time of Crash

(D5) Non Motorist Action Prior to Crash

(D6) Non Motorist Action at Time of Crash 1

(D6) Non Motorist Action at Time of Crash 2

(D7) Pedestrian Maneuvers

(D8) Bicyclist Maneuvers

OCCUPANT

PERSON TYPE 1-Driver, 2-Passenger, 3-Pedestrian, 6-Driver/Owner, 7-Bicycle, 8-Passenger/Owner, 24-Last Known Operator 25-Last Known Operator/Owner

SEAT ROW: 1-Front Row, 2-Second Row, 3-Third Row, 4-Fourth Row, 5-Other Row, 6-Unknown

SEAT POSITION: 1-Left (driver), 2-Middle, 3-Right, 4-Other, 5-Unknown

SEAT POSITION OTHER: 1-Sleeper Section of Cab (truck), 2-Other Enclosed Cargo Area, 3- Unenclosed Cargo Area, 4-Trailing Unit, 5-Riding on Motor Vehicle Ext (non-trailing unit), 6- Unknown

AIRBAG DEPLOYED: 1-Not Applicable, 2-Not Deployed, 3-Deployed - Front, 4-Deployed - Side, 5-Deployed - Other (knee, air belt,...), 6-Deployed - Combination, 7-Deployment - Curtain

RESTRAINT SYSTEM: 1-Not Applicable, 2-None Used - Motor Vehicle Occupant, 3-Shoulder and Lap Belt Used, 4-Shoulder Belt Only Used, 5-Lap Belt Only Used, 6-Restraint Used - Other, 7-Child Restraint - Forward Facing, 8-Child Restraint - Rear Facing, 9-Child Restraint - Used Incorrectly, 10-Booster Seat, 11-Child Restraint - Other

INJURY TYPE: 1-Amputation, 2-Bleeding, 3-Broken Bones, 4-Burns, 5-Concussion, 6-Shock, 7-Dizziness, 8-Abrasion/Bruises, 9-Complaint of Pain, 10-Other

INJURY AREA: 1-Face, 2-Head, 3-Neck, 4-Back, 5-Arm(s), 6-Leg(s), 7-Chest Stomach, 8-Internal, 9-Entire Body, 10-Other

INJURY DEGREE: 1-Fatal, 2-Incapacitating, 3-NonIncapacitating, 4-Possible Injury, 5-No Injury

EJECTED: 1-Not Ejected, 2-Ejected Partially, 3-Ejected Totally

HELMET USE: 1-DOT-Compliant Motorcycle Helmet, 2-Other Helmet, 3-No Helmet

INJURY INFO SOURCE: 1-Officer Observation, 2-Individual Statement, 3-Medical, Paramedical Observation

AMB CODES - see code sheet

Person Type	Include Driver, Passengers, Bicyclist, and Pedestrians — Last Name, First Name, Mi	Sex (M,F,U)	DOB	Seat Pos Row	Seat Pos	Seat Pos Other	Air Bag Deployed	Ejected	Restraint System	Helmet Use	Injury Degree	Injury Type	Injury Area	Inj Info Source	Amb Code
6	*	M	05/27/77	1	1		2	1	3		5			2	1

2013-3151

STATE OF MAINE CRASH REPORT

FIRST PAGE

F I R S T

Reporting Agency	Report Number	Crash Date	Crash Time	At Scene Date	At Scene Time
ME0100700	**13H-00157**	**1/17/2013**	**12:00**	**1/17/2013**	**12:04**

City or Town	Street or Highway	Nearest Intersecting Street	
Hampden	**US HWY 202**	**Int of COLDBROOK RD, COLDBROOK RD, US HWY 202**	[ ] Off Road

Direction FROM Nearest Intersection to Crash Site	Distance From Nearest Inter.	Latitude	Longitude
[x] At Intersection [ ] North [ ] South [ ] East [ ] West	[ ] Feet [ ] Miles	**44.754270**	**-68.839410**

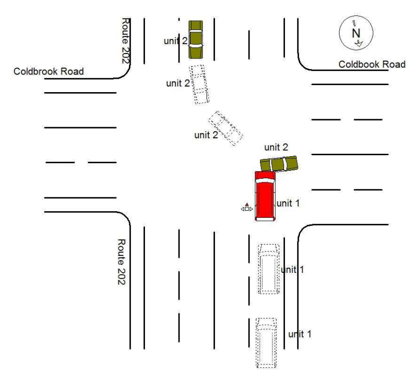
Node 1	Node 2	Measurement Node	Distance to Scene	Posted Speed Limit	
39612	**0**		Miles **0** Tenths	Miles Per Hour **40**	[ ] Unknown [ ] N/A [ ] Not Posted 25 [ ] Not Posted 45

(F1) Type of Crash **4 - Intersection Movement**	(F2) Type of Location **4 - Four Leg Intersection**
(F3) Weather Condition **1 - Clear**	(F4) Light Condition **1 - Daylight**
(F5) Road Grade **1 - Level**	(F6) Road Surface Condition **1 - Dry**
(F7) Traffic Control Device **1 - Traffic Signals (Stop & Go)**	Traffic Control Device Operational (pre-crash)? [x] Yes [ ] No [ ] Unk
(F8) Location of First Harmful Event **1 - On Roadway**	Total Damage over Threshold? [x] Yes [ ] No
(F9) Contributing Circumstances - Environment 1 **3 - Physical Obstructions**	(F9) Contributing Circumstances - Environment 2
(F10) Contributing Circumstances - Road 1 **1 - None**	(F10) Contributing Circumstances -Road 2
In or Near a Construction, Maintenance, or Utility Work Zone? [ ] Yes [x] No [ ] Unk	Work Zone Workers Present? [ ] Yes [ ] No [ ] Unk
(F11) Location of the Crash related to Work Zone	(F12) Type of Work Zone
Law Enforcement Present at Work Zone? [ ] Officer Present [ ] Law Enforcement Vehicle Only [ ] No	School Bus Related? [ ] Yes, Directly Involved [ ] Yes, Indirectly Involved [x] No

NARRATIVE

Unit 1 was traveling West on Route 202 approaching the intersection of Coldbrook Road. Unit 1 operator vision was affected by the sun and proceeded through the intersection. Unit 2 was traveling north on Route 202 and positioned the vehicle in the left lane to prepare to make a left turn on to Coldbrook Road. Unit 2 operator was forced to stop for the red light. The light turned green and unit 2 operator began to proceed through the intersection and was struck by Unit 1.

CRASH DIAGRAM



Witness Last Name	First	MI	Address	City	State	Zip

Witness Last Name	First	MI	Address	City	State	Zip

Non Vehicle Property Damage Description [ ] State [ ] City or Town [ ] Utilities [ ] Private

Property Owner Name	Address	City	State	Zip

Non Vehicle Property Damage Description [ ] State [ ] City or Town [ ] Utilities [ ] Private

Property Owner Name	Address	City	State	Zip

Reporting Officer	Badge#	Report Date	Approved By	Approved Date
Officer Joel Small	**304**	**2/7/2013**	**Sergeant Christian Bailey**	**2/7/2013**

STATE OF MAINE CRASH REPORT

UNIT PAGE

Report Number: **13H-00157**

UNIT

Unit ID	Hit Run?	VIN	License Plate	State	(U1) Unit Type
1	☐	1GCHG35K981230474	*	ME	4 - Cargo Van (10K lbs or Less)

No Insurance	NAIC	Insurance Company Name	Insurance Policy Number
☐		*	*

(U2) Vehicle Make	Vehicle Year	(U3) Vehicle Color
11 - CHEVROLET	2008	10 - Red

(U4)Vehicle Configuration:

GVWR or GCWR: ☐ < 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ > than 26,000 lbs.

Vehicle Has 9 or More Seats ? ☐ Yes ☑ No

HAZMAT Placarded ? ☐ Yes ☑ No

Vehicle Travel Direction: ☐ Northbound ☑ Southbound ☐ Eastbound ☐ Westbound ☐ Not on Roadway ☐ Unknown

(U5) Special Function Vehicle: **1 - No Special Function** ☐ Exempt Vehicle

Emergency Vehicle Responding to Scene ? ☐ Yes ☐ No

Extent of Damage: ☐ No Damage Observed ☑ Minor Damage ☐ Functional Damage ☐ Towed Due to Disabling Damage

(U6) Most Damaged Area: **11 - Front Driver Corner**	(U7) Most Harmful Event: **13 - Motor Vehicle in Transport**
(U8) Pre Crash Actions: **1 - Following roadway**	(U9) Contributing Circumstances - Vehicle: **1 - None**
(U10) Sequence of Events 1: **21 - Motor Vehicle In Transport**	(U10) Sequence of Events 2:
(U10) Sequence of Events 3:	(U10) Sequence of Events 4:

DRIVER

☑ Driver ☐ Bicycle ☐ Pedestrian ☐ Last Known Operator

License Number: * ☑ Active ☐ No License ☐ Permit ☐ Suspended

State	License Class	Endorsements	Restrictions
ME			

DRIVER Last Name / First Name / MI	DRIVER Address / City / State / Zip
*	* ME*

Citation Number	Pending	Violation 1	Violation 2
2497706	☐	29-A-2057-1C1	

OWNER Last Name (skip if same as Driver) First Name MI	OWNER Address City State Zip
*	* ME*

(D1) Driver Distracted By: **1 - Not Distracted**	(D2) Condition at Time of Crash: **1 - Apparently Normal**
(D3) Driver Actions at Time of Crash 1: **4 - Ran Red Light**	(D3) Driver Actions at Time of Crash 2:

Alcohol Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Breath ☐ Urine ☐ Other Chemical Test (Not Field Sobriety or PBT)

☐ Alcohol Test Result Pending — Alcohol BAC Result:

Drug Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Urine ☐ Other

Drug Test Result: ☐ Positive ☐ Negative ☐ Pending

(D4) Non Motorist Location at Time of Crash:	(D5) Non Motorist Action Prior to Crash:
(D6) Non Motorist Action at Time of Crash 1:	(D6) Non Motorist Action at Time of Crash 2:
(D7) Pedestrian Maneuvers:	(D8) Bicyclist Maneuvers:

OCCUPANT

PERSON TYPE 1-Driver, 2-Passenger, 3-Pedestrian, 6-Driver/Owner, 7-Bicycle, 8-Passenger/Owner, 24-Last Known Operator 25-Last Known Operator/Owner

SEAT ROW: 1-Front Row, 2-Second Row, 3-Third Row, 4-Fourth Row, 5-Other Row, 6-Unknown

SEAT POSITION: 1-Left (driver), 2-Middle, 3-Right, 4-Other, 5-Unknown

SEAT POSITION OTHER: 1-Sleeper Section of Cab (truck), 2-Other Enclosed Cargo Area, 3- Unenclosed Cargo Area, 4-Trailing Unit, 5-Riding on Motor Vehicle Ext (non-trailing unit), 6- Unknown

AIRBAG DEPLOYED: 1-Not Applicable, 2-Not Deployed, 3-Deployed - Front, 4-Deployed - Side, 5-Deployed - Other (knee, air belt,...), 6-Deployed - Combination, 7-Deployment - Curtain

RESTRAINT SYSTEM: 1-Not Applicable, 2-None Used - Motor Vehicle Occupant, 3-Shoulder and Lap Belt Used, 4-Shoulder Belt Only Used, 5-Lap Belt Only Used, 6-Restraint Used - Other, 7-Child Restraint - Forward Facing, 8-Child Restraint - Rear Facing, 9-Child Restraint - Used Incorrectly, 10-Booster Seat, 11-Child Restraint - Other

INJURY TYPE: 1-Amputation, 2-Bleeding, 3-Broken Bones, 4-Burns, 5-Concussion, 6-Shock, 7-Dizziness, 8-Abrasion/Bruises, 9-Complaint of Pain, 10-Other

INJURY AREA: 1-Face, 2-Head, 3-Neck, 4-Back, 5-Arm(s), 6-Leg(s), 7-Chest Stomach, 8-Internal, 9-Entire Body, 10-Other

INJURY DEGREE: 1-Fatal, 2-Incapacitating, 3-NonIncapacitating, 4-Possible Injury, 5-No Injury

EJECTED: 1-Not Ejected, 2-Ejected Partially, 3-Ejected Totally

HELMET USE: 1-DOT-Compliant Motorcycle Helmet, 2-Other Helmet, 3-No Helmet

INJURY INFO SOURCE: 1-Officer Observation, 2-Individual Statement, 3-Medical, Paramedical Observation

AMB CODES - see code sheet

Person Type	Include Driver, Passengers, Bicyclist, and Pedestrians Last Name, First Name, Mi	Sex (M,F,U)	DOB	Seat Pos Row	Seat Pos	Seat Pos Other	Air Bag Deployed	Ejected	Restraint System	Helmet Use	Injury Degree	Injury Type	Injury Area	Inj Info Source	Amb Code
1	*	M	07/04/44	1	1		2	1	3		5			1	1

STATE OF MAINE CRASH REPORT

UNIT PAGE

Report Number: **13H-00157**

UNIT

Unit ID	Hit Run?	VIN	License Plate	State	(U1) Unit Type
2	☐	**4S3BH675217606754**	*****	**ME**	**1 - Passenger Car**

No Insurance	NAIC	Insurance Company Name	Insurance Policy Number
☐		*****	*****

(U2) Vehicle Make	Vehicle Year	(U3) Vehicle Color
65 - SUBARU	**2001**	**5 - Green**

(U4)Vehicle Configuration

GVWR or GCWR: ☐ < 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ > than 26,000 lbs.

Vehicle Has 9 or More Seats ? ☐ Yes ☐ No

HAZMAT Placarded ? ☐ Yes ☑ No

Vehicle Travel Direction: ☐ Northbound ☐ Southbound ☐ Eastbound ☑ Westbound ☐ Not on Roadway ☐ Unknown

(U5) Special Function Vehicle: **1 - No Special Function** ☐ Exempt Vehicle

Emergency Vehicle Responding to Scene ? ☐ Yes ☐ No

Extent of Damage: ☐ No Damage Observed ☐ Minor Damage ☑ Functional Damage ☐ Towed Due to Disabling Damage

(U6) Most Damaged Area **4 - Rear Passenger Quarter Panel**	(U7) Most Harmful Event **13 - Motor Vehicle in Transport**
(U8) Pre Crash Actions **6 - Making left turn**	(U9) Contributing Circumstances - Vehicle **1 - None**
(U10) Sequence of Events 1 **21 - Motor Vehicle In Transport**	(U10) Sequence of Events 2
(U10) Sequence of Events 3	(U10) Sequence of Events 4

DRIVER

☑ Driver ☐ Bicycle ☐ Pedestrian ☐ Last Known Operator

License Number: ***** ☑ Active ☐ No License ☐ Permit ☐ Suspended

State: **ME** | License Class | Endorsements | Restrictions

DRIVER Last Name / First Name / MI	DRIVER Address / City / State / Zip
*****	*** ME***

Citation Number | Pending ☐ | Violation 1 | Violation 2

OWNER Last Name (skip if same as Driver) First Name MI	OWNER Address / City / State / Zip
*****	*** ME***

(D1) Driver Distracted By **1 - Not Distracted**	(D2) Condition at Time of Crash **1 - Apparently Normal**
(D3) Driver Actions at Time of Crash 1 **1 - No Contributing Action**	(D3) Driver Actions at Time of Crash 2

Alcohol Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Breath ☐ Urine ☐ Other Chemical Test (Not Field Sobriety or PBT)

☐ Alcohol Test Result Pending | Alcohol BAC Result

Drug Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Urine ☐ Other

Drug Test Result: ☐ Positive ☐ Negative ☐ Pending

(D4) Non Motorist Location at Time of Crash	(D5) Non Motorist Action Prior to Crash
(D6) Non Motorist Action at Time of Crash 1	(D6) Non Motorist Action at Time of Crash 2
(D7) Pedestrian Maneuvers	(D8) Bicyclist Maneuvers

OCCUPANT

PERSON TYPE 1-Driver, 2-Passenger, 3-Pedestrian, 6-Driver/Owner, 7-Bicycle, 8-Passenger/Owner, 24-Last Known Operator 25-Last Known Operator/Owner

SEAT ROW: 1-Front Row, 2-Second Row, 3-Third Row, 4-Fourth Row, 5-Other Row, 6-Unknown

SEAT POSITION: 1-Left (driver), 2-Middle, 3-Right, 4-Other, 5-Unknown

SEAT POSITION OTHER: 1-Sleeper Section of Cab (truck), 2-Other Enclosed Cargo Area, 3- Unenclosed Cargo Area, 4-Trailing Unit, 5-Riding on Motor Vehicle Ext (non-trailing unit), 6- Unknown

AIRBAG DEPLOYED: 1-Not Applicable, 2-Not Deployed, 3-Deployed - Front, 4-Deployed - Side, 5-Deployed - Other (knee, air belt,...), 6-Deployed - Combination, 7-Deployment - Curtain

RESTRAINT SYSTEM: 1-Not Applicable, 2-None Used - Motor Vehicle Occupant, 3-Shoulder and Lap Belt Used, 4-Shoulder Belt Only Used, 5-Lap Belt Only Used, 6-Restraint Used - Other, 7-Child Restraint - Forward Facing, 8-Child Restraint - Rear Facing, 9-Child Restraint - Used Incorrectly, 10-Booster Seat, 11-Child Restraint - Other

INJURY TYPE: 1-Amputation, 2-Bleeding, 3-Broken Bones, 4-Burns, 5-Concussion, 6-Shock, 7-Dizziness, 8-Abrasion/Bruises, 9-Complaint of Pain, 10-Other

INJURY AREA: 1-Face, 2-Head, 3-Neck, 4-Back, 5-Arm(s), 6-Leg(s), 7-Chest Stomach, 8-Internal, 9-Entire Body, 10-Other

INJURY DEGREE: 1-Fatal, 2-Incapacitating, 3-NonIncapacitating, 4-Possible Injury, 5-No Injury

EJECTED: 1-Not Ejected, 2-Ejected Partially, 3-Ejected Totally

HELMET USE: 1-DOT-Compliant Motorcycle Helmet, 2-Other Helmet, 3-No Helmet

INJURY INFO SOURCE: 1-Officer Observation, 2-Individual Statement, 3-Medical, Paramedical Observation

AMB CODES - see code sheet

Person Type	Include Driver, Passengers, Bicyclist, and Pedestrians — Last Name, First Name, Mi	Sex (M,F,U)	DOB	Seat Pos Row	Seat Pos	Seat Pos Other	Air Bag Deployed	Ejected	Restraint System	Helmet Use	Injury Degree	Injury Type	Injury Area	Inj Info Source	Amb Code
6	*****	**F**	**07/12/73**	**1**	**1**		**2**	**1**	**3**		**5**			**1**	**1**

STATE OF MAINE CRASH REPORT

F I R S T

Reporting Agency	Report Number	Crash Date	Crash Time	At Scene Date	At Scene Time
ME0100700	13H-00937	3/30/2013	17:45	3/30/2013	17:50

City or Town	Street or Highway	Nearest Intersecting Street	Off Road
Hampden	US HWY 202	Int of COLDBROOK RD, COLDBROOK RD, US HWY 202	☐ Off Road

Direction FROM Nearest Intersection to Crash Site	Distance From Nearest Inter.	Latitude	Longitude
☑ At Intersection ☐ North ☐ South ☐ East ☐ West	☐ Feet ☐ Miles	44.754270	-68.839410

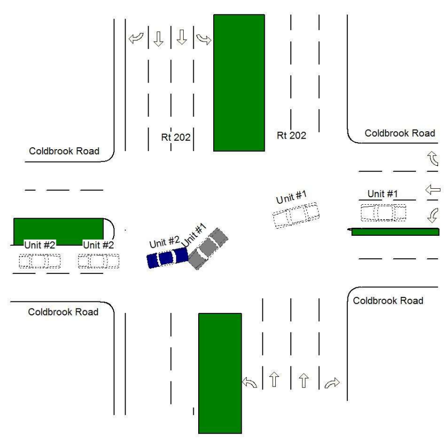
Node 1	Node 2	Measurement Node	Distance to Scene	Posted Speed Limit		
39612	0		Miles 0 Tenths	Miles Per Hour 30	☐ Unknown ☐ N/A	☐ Not Posted 25 ☐ Not Posted 45

(F1) Type of Crash **4 - Intersection Movement**	(F2) Type of Location **4 - Four Leg Intersection**
(F3) Weather Condition **1 - Clear**	(F4) Light Condition **1 - Daylight**
(F5) Road Grade **1 - Level**	(F6) Road Surface Condition **1 - Dry**
(F7) Traffic Control Device **1 - Traffic Signals (Stop & Go)**	Traffic Control Device Operational (pre-crash)? ☑ Yes ☐ No ☐ Unk
(F8) Location of First Harmful Event **1 - On Roadway**	Total Damage over Threshold? ☑ Yes ☐ No
(F9) Contributing Circumstances - Environment 1 **1 - None**	(F9) Contributing Circumstances - Environment 2
(F10) Contributing Circumstances - Road 1 **1 - None**	(F10) Contributing Circumstances -Road 2
In or Near a Construction, Maintenance, or Utility Work Zone? ☐ Yes ☑ No ☐ Unk	Work Zone Workers Present? ☐ Yes ☐ No ☐ Unk
(F11) Location of the Crash related to Work Zone	(F12) Type of Work Zone
Law Enforcement Present at Work Zone? ☐ Officer Present ☐ Law Enforcement Vehicle Only ☐ No	School Bus Related? ☐ Yes, Directly Involved ☐ Yes, Indirectly Involved ☑ No

NARRATIVE

Unit #2 was traveling east on Coldbrook Road proceeding straight through the intersection of Coldbrook Road and Rt 202. Unit #1 was traveling west on Coldbrook Road turning left onto Rt 202 south. Unit #1 turned into the path of Unit #2 causing a collision.

CRASH DIAGRAM



Witness Last Name	First	MI	Address	City	State	Zip

Witness Last Name	First	MI	Address	City	State	Zip

Non Vehicle Property Damage Description ☐ State ☐ City or Town ☐ Utilities ☐ Private

Property Owner Name	Address	City	State	Zip

Non Vehicle Property Damage Description ☐ State ☐ City or Town ☐ Utilities ☐ Private

Property Owner Name	Address	City	State	Zip

Reporting Officer	Badge#	Report Date	Approved By	Approved Date
Sergeant Scott Webber	302	3/31/2013	Sergeant Christian Bailey	4/13/2013

Last Modified: 4/13/2013 17:51

Report Number
13H-00937

STATE OF MAINE CRASH REPORT

UNIT PAGE

U N I T

Unit ID	Hit Run?	VIN	License Plate	State	(U1) Unit Type
1	☐	1G8JU54F53Y547592	*	ME	1 - Passenger Car

No Insurance	NAIC	Insurance Company Name	Insurance Policy Number
☐		*	*

(U2) Vehicle Make	Vehicle Year	(U3) Vehicle Color
62 - SATURN	2003	8 - Grey, Silver

(U4)Vehicle Configuration

GVWR or GCWR: ☐ < 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ > than 26,000 lbs.

Vehicle Has 9 or More Seats ? ☐ Yes ☑ No

HAZMAT Placarded ? ☐ Yes ☑ No

Vehicle Travel Direction: ☐ Northbound ☐ Southbound ☐ Eastbound ☑ Westbound ☐ Not on Roadway ☐ Unknown

(U5) Special Function Vehicle: 1 - No Special Function ☐ Exempt Vehicle

Emergency Vehicle Responding to Scene ? ☐ Yes ☐ No

Extent of Damage: ☐ No Damage Observed ☐ Minor Damage ☑ Functional Damage ☐ Towed Due to Disabling Damage

(U6) Most Damaged Area: 1 - Front Passenger Corner	(U7) Most Harmful Event: 13 - Motor Vehicle in Transport
(U8) Pre Crash Actions: 6 - Making left turn	(U9) Contributing Circumstances - Vehicle: 1 - None
(U10) Sequence of Events 1: 11 - Cross Centerline	(U10) Sequence of Events 2: 21 - Motor Vehicle In Transport
(U10) Sequence of Events 3:	(U10) Sequence of Events 4:

D R I V E R

☑ Driver ☐ Bicycle ☐ Pedestrian ☐ Last Known Operator

License Number	Status	State	License Class	Endorsements	Restrictions
*	☑ Active ☐ No License ☐ Permit ☐ Suspended	ME	C	0	A

DRIVER Last Name First Name MI	DRIVER Address City State Zip
*	* ME*

Citation Number Pending ☐ | Violation 1 | Violation 2

OWNER Last Name (skip if same as Driver) First Name MI	OWNER Address City State Zip
*	* ME*

(D1) Driver Distracted By: 6 - Unkown	(D2) Condition at Time of Crash: 1 - Apparently Normal
(D3) Driver Actions at Time of Crash 1: 3 - Failed to Yield Right-of-Way	(D3) Driver Actions at Time of Crash 2: 10 - Improper Turn

Alcohol Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Breath ☐ Urine ☐ Other Chemical Test (Not Field Sobriety or PBT)

☐ Alcohol Test Result Pending | Alcohol BAC Result

Drug Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Urine ☐ Other

Drug Test Result: ☐ Positive ☐ Negative ☐ Pending

(D4) Non Motorist Location at Time of Crash	(D5) Non Motorist Action Prior to Crash
(D6) Non Motorist Action at Time of Crash 1	(D6) Non Motorist Action at Time of Crash 2
(D7) Pedestrian Maneuvers	(D8) Bicyclist Maneuvers

O C C U P A N T

PERSON TYPE 1-Driver, 2-Passenger, 3-Pedestrian, 6-Driver/Owner, 7-Bicycle, 8-Passenger/Owner, 24-Last Known Operator 25-Last Known Operator/Owner

SEAT ROW: 1-Front Row, 2-Second Row, 3-Third Row, 4-Fourth Row, 5-Other Row, 6-Unknown

SEAT POSITION: 1-Left (driver), 2-Middle, 3-Right, 4-Other, 5-Unknown

SEAT POSITION OTHER: 1-Sleeper Section of Cab (truck), 2-Other Enclosed Cargo Area, 3- Unenclosed Cargo Area, 4-Trailing Unit, 5-Riding on Motor Vehicle Ext (non-trailing unit), 6- Unknown

AIRBAG DEPLOYED: 1-Not Applicable, 2-Not Deployed, 3-Deployed - Front, 4-Deployed - Side, 5-Deployed - Other (knee, air belt,...), 6-Deployed - Combination, 7-Deployment - Curtain

RESTRAINT SYSTEM: 1-Not Applicable, 2-None Used - Motor Vehicle Occupant, 3-Shoulder and Lap Belt Used, 4-Shoulder Belt Only Used, 5-Lap Belt Only Used, 6-Restraint Used - Other, 7-Child Restraint - Forward Facing, 8-Child Restraint - Rear Facing, 9-Child Restraint - Used Incorrectly, 10-Booster Seat, 11-Child Restraint - Other

INJURY TYPE: 1-Amputation, 2-Bleeding, 3-Broken Bones, 4-Burns, 5-Concussion, 6-Shock, 7-Dizziness, 8-Abrasion/Bruises, 9-Complaint of Pain, 10-Other

INJURY AREA: 1-Face, 2-Head, 3-Neck, 4-Back, 5-Arm(s), 6-Leg(s), 7-Chest Stomach, 8-Internal, 9-Entire Body, 10-Other

INJURY DEGREE: 1-Fatal, 2-Incapacitating, 3-NonIncapacitating, 4-Possible Injury, 5-No Injury

EJECTED: 1-Not Ejected, 2-Ejected Partially, 3-Ejected Totally

HELMET USE: 1-DOT-Compliant Motorcycle Helmet, 2-Other Helmet, 3-No Helmet

INJURY INFO SOURCE: 1-Officer Observation, 2-Individual Statement, 3-Medical, Paramedical Observation

AMB CODES - see code sheet

Person Type	Include Driver, Passengers, Bicyclist, and Pedestrians Last Name, First Name, Mi	Sex (M,F,U)	DOB	Seat Pos Row	Seat Pos	Seat Pos Other	Air Bag Deployed	Ejected	Restraint System	Helmet Use	Injury Degree	Injury Type	Injury Area	Inj Info Source	Amb Code
6	*	F	05/12/20	1	1		2	1	3		5			2	1

STATE OF MAINE CRASH REPORT

UNIT PAGE

Report Number	
13H-00937	

UNIT

Unit ID	Hit Run?	VIN	License Plate	State	(U1) Unit Type
2	☐	4S4BP61C396322363	*	CT	1 - Passenger Car

No Insurance	NAIC	Insurance Company Name	Insurance Policy Number
☐		*	*

(U2) Vehicle Make	Vehicle Year	(U3) Vehicle Color
65 - SUBARU	2009	4 - Blue

(U4)Vehicle Configuration

GVWR or GCWR: ☐ < 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ > than 26,000 lbs.

Vehicle Has 9 or More Seats ? ☐ Yes ☑ No

HAZMAT Placarded ? ☐ Yes ☑ No

Vehicle Travel Direction: ☐ Northbound ☐ Southbound ☑ Eastbound ☐ Westbound ☐ Not on Roadway ☐ Unknown

(U5) Special Function Vehicle: **1 - No Special Function** ☐ Exempt Vehicle

Emergency Vehicle Responding to Scene ? ☐ Yes ☐ No

Extent of Damage: ☐ No Damage Observed ☐ Minor Damage ☑ Functional Damage ☐ Towed Due to Disabling Damage

(U6) Most Damaged Area: **1 - Front Passenger Corner**	(U7) Most Harmful Event: **13 - Motor Vehicle in Transport**
(U8) Pre Crash Actions: **1 - Following roadway**	(U9) Contributing Circumstances - Vehicle: **1 - None**
(U10) Sequence of Events 1: **21 - Motor Vehicle In Transport**	(U10) Sequence of Events 2
(U10) Sequence of Events 3	(U10) Sequence of Events 4

DRIVER

☑ Driver ☐ Bicycle ☐ Pedestrian ☐ Last Known Operator

License Number	Active / No License / Permit / Suspended	State	License Class	Endorsements	Restrictions
*	☑ Active ☐ No License ☐ Permit ☐ Suspended	CT	O	0	A

DRIVER Last Name, First Name, MI	DRIVER Address, City, State, Zip
*	* CT*

Citation Number — Pending ☐ | Violation 1 | Violation 2

OWNER Last Name (skip if same as Driver) First Name MI	OWNER Address, City, State, Zip
*	* CT*

(D1) Driver Distracted By: **1 - Not Distracted**	(D2) Condition at Time of Crash: **1 - Apparently Normal**
(D3) Driver Actions at Time of Crash 1: **1 - No Contributing Action**	(D3) Driver Actions at Time of Crash 2

Alcohol Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Breath ☐ Urine ☐ Other Chemical Test (Not Field Sobriety or PBT)

☐ Alcohol Test Result Pending — Alcohol BAC Result

Drug Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Urine ☐ Other

Drug Test Result: ☐ Positive ☐ Negative ☐ Pending

(D4) Non Motorist Location at Time of Crash	(D5) Non Motorist Action Prior to Crash
(D6) Non Motorist Action at Time of Crash 1	(D6) Non Motorist Action at Time of Crash 2
(D7) Pedestrian Maneuvers	(D8) Bicyclist Maneuvers

OCCUPANT

PERSON TYPE 1-Driver, 2-Passenger, 3-Pedestrian, 6-Driver/Owner, 7-Bicycle, 8-Passenger/Owner, 24-Last Known Operator 25-Last Known Operator/Owner

SEAT ROW: 1-Front Row, 2-Second Row, 3-Third Row, 4-Fourth Row, 5-Other Row, 6-Unknown

SEAT POSITION: 1-Left (driver), 2-Middle, 3-Right, 4-Other, 5-Unknown

SEAT POSITION OTHER: 1-Sleeper Section of Cab (truck), 2-Other Enclosed Cargo Area, 3- Unenclosed Cargo Area, 4-Trailing Unit, 5-Riding on Motor Vehicle Ext (non-trailing unit), 6- Unknown

AIRBAG DEPLOYED: 1-Not Applicable, 2-Not Deployed, 3-Deployed - Front, 4-Deployed - Side, 5-Deployed - Other (knee, air belt,...), 6-Deployed - Combination, 7-Deployment - Curtain

RESTRAINT SYSTEM: 1-Not Applicable, 2-None Used - Motor Vehicle Occupant, 3-Shoulder and Lap Belt Used, 4-Shoulder Belt Only Used, 5-Lap Belt Only Used, 6-Restraint Used - Other, 7-Child Restraint - Forward Facing, 8-Child Restraint - Rear Facing, 9-Child Restraint - Used Incorrectly, 10-Booster Seat, 11-Child Restraint - Other

INJURY TYPE: 1-Amputation, 2-Bleeding, 3-Broken Bones, 4-Burns, 5-Concussion, 6-Shock, 7-Dizziness, 8-Abrasion/Bruises, 9-Complaint of Pain, 10-Other

INJURY AREA: 1-Face, 2-Head, 3-Neck, 4-Back, 5-Arm(s), 6-Leg(s), 7-Chest Stomach, 8-Internal, 9-Entire Body, 10-Other

INJURY DEGREE: 1-Fatal, 2-Incapacitating, 3-NonIncapacitating, 4-Possible Injury, 5-No Injury

EJECTED: 1-Not Ejected, 2-Ejected Partially, 3-Ejected Totally

HELMET USE: 1-DOT-Compliant Motorcycle Helmet, 2-Other Helmet, 3-No Helmet

INJURY INFO SOURCE: 1-Officer Observation, 2-Individual Statement, 3-Medical, Paramedical Observation

AMB CODES - see code sheet

Person Type	Include Driver, Passengers, Bicyclist, and Pedestrians — Last Name, First Name, Mi	Sex (M,F,U)	DOB	Seat Pos Row	Seat Pos	Seat Pos Other	Air Bag Deployed	Ejected	Restraint System	Helmet Use	Injury Degree	Injury Type	Injury Area	Inj Info Source	Amb Code
6	*	M	05/18/85	1	1		2	1	3		5			2	1
2	*	F	08/27/84	1	3		2	1	3		5			1	1
2	*	M	03/25/12	2	3		2	1	7		5			1	1

2014-9798

STATE OF MAINE CRASH REPORT

FIRST PAGE

F I R S T

Reporting Agency	Report Number	Crash Date	Crash Time	At Scene Date	At Scene Time
ME0100700	**14H-00974**	**3/26/2014**	**18:35**	**3/26/2014**	**18:45**

City or Town	Street or Highway	Nearest Intersecting Street	Off Road
Hampden	**US HWY 202**	**Int of COLD BROOK RD, COLDBROOK RD, US HWY 202**	☐ Off Road

Direction FROM Nearest Intersection to Crash Site	Distance From Nearest Inter.	Latitude	Longitude
☑ At Intersection ☐ North ☐ South ☐ East ☐ West	☐ Feet ☐ Miles	**44.754270**	**-68.839410**

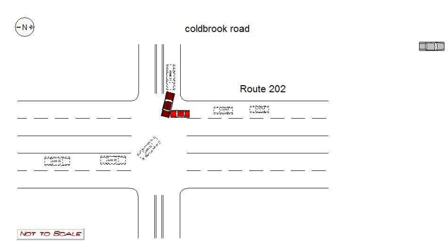
Node 1	Node 2	Measurement Node	Distance to Scene (Miles / Tenths)	Posted Speed Limit (Miles Per Hour)	
39612	**0**		**0**	**45**	☐ Unknown ☐ N/A ☐ Not Posted 25 ☐ Not Posted 45

(F1) Type of Crash **4 - Intersection Movement**	(F2) Type of Location **4 - Four Leg Intersection**
(F3) Weather Condition **2 - Cloudy**	(F4) Light Condition **1 - Daylight**
(F5) Road Grade **1 - Level**	(F6) Road Surface Condition **1 - Dry**
(F7) Traffic Control Device **1 - Traffic Signals (Stop & Go)**	Traffic Control Device Operational (pre-crash)? ☑ Yes ☐ No ☐ Unk
(F8) Location of First Harmful Event **1 - On Roadway**	Total Damage over Threshold? ☑ Yes ☐ No
(F9) Contributing Circumstances - Environment 1 **1 - None**	(F9) Contributing Circumstances - Environment 2
(F10) Contributing Circumstances - Road 1 **1 - None**	(F10) Contributing Circumstances -Road 2
In or Near a Construction, Maintenance, or Utility Work Zone? ☐ Yes ☑ No ☐ Unk	Work Zone Workers Present? ☐ Yes ☐ No ☐ Unk
(F11) Location of the Crash related to Work Zone	(F12) Type of Work Zone
Law Enforcement Present at Work Zone? ☐ Officer Present ☐ Law Enforcement Vehicle Only ☐ No	School Bus Related? ☐ Yes, Directly Involved ☐ Yes, Indirectly Involved ☑ No

NARRATIVE

Unit 2 was travelling north of Route 202. Unit 1 was travelling south on route 202. Unit 2 came to the intersection of route 202 and coldbrook road. Unit 2 had a green light and began turning left on to coldbrook road. Unit 1 had a red light and ran the light and struck Unit 2 in the rear passengers side. Unit 1 operator admitted to running the red light.

CRASH DIAGRAM



Witness Last Name	First	MI	Address	City	State	Zip
Witness Last Name	First	MI	Address	City	State	Zip

Non Vehicle Property Damage Description ☐ State ☐ City or Town ☐ Utilities ☐ Private

Property Owner Name	Address	City	State	Zip

Non Vehicle Property Damage Description ☐ State ☐ City or Town ☐ Utilities ☐ Private

Property Owner Name	Address	City	State	Zip

Reporting Officer	Badge#	Report Date	Approved By	Approved Date
Officer Marc Egan	**308**	**3/27/2014**	**Sergeant Christian Bailey**	**3/30/2014**

Report Number
14H-00974

STATE OF MAINE CRASH REPORT

UNIT PAGE

UNIT

Unit ID: 1 | ☐ Hit Run? | VIN: 1G2NF12E41M662620 | License Plate: * | State: ME | (U1) Unit Type: 1 - Passenger Car

☐ No Insurance | NAIC: | Insurance Company Name: * | Insurance Policy Number: *

(U2) Vehicle Make: 58 - PONTIAC | Vehicle Year: 2001 | (U3) Vehicle Color: 10 - Red

(U4)Vehicle Configuration: | GVWR or GCWR: ☐ < 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ > than 26,000 lbs.

Vehicle Has 9 or More Seats ? ☐ Yes ☐ No | HAZMAT Placarded ? ☐ Yes ☑ No | Vehicle Travel Direction: ☐ Northbound ☑ Southbound ☐ Eastbound ☐ Westbound ☐ Not on Roadway ☐ Unknown

(U5) Special Function Vehicle: 1 - No Special Function | ☐ Exempt Vehicle | Emergency Vehicle Responding to Scene ? ☐ Yes ☐ No

Extent of Damage: ☐ No Damage Observed ☐ Minor Damage ☐ Functional Damage ☑ Towed Due to Disabling Damage

(U6) Most Damaged Area: 12 - Front | (U7) Most Harmful Event: 13 - Motor Vehicle in Transport

(U8) Pre Crash Actions: 1 - Following roadway | (U9) Contributing Circumstances - Vehicle: 1 - None

(U10) Sequence of Events 1: 21 - Motor Vehicle In Transport | (U10) Sequence of Events 2:

(U10) Sequence of Events 3: | (U10) Sequence of Events 4:

DRIVER

☑ Driver ☐ Bicycle ☐ Pedestrian ☐ Last Known Operator | License Number: * | ☑ Active ☐ No License ☐ Permit ☐ Suspended | State: ME | License Class: C | Endorsements: 0 | Restrictions: 0

DRIVER Last Name, First Name, MI: * | DRIVER Address, City, State, Zip: * ME*

Citation Number: 2498198 | Pending ☐ | Violation 1: 29-A-2057-1C-1 | Violation 2:

OWNER Last Name (skip if same as Driver) First Name MI: * | OWNER Address, City, State, Zip: * ME*

(D1) Driver Distracted By: 6 - Unkown | (D2) Condition at Time of Crash: 1 - Apparently Normal

(D3) Driver Actions at Time of Crash 1: 4 - Ran Red Light | (D3) Driver Actions at Time of Crash 2:

Alcohol Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Breath ☐ Urine ☐ Other Chemical Test (Not Field Sobriety or PBT) | ☐ Alcohol Test Result Pending | Alcohol BAC Result:

Drug Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Urine ☐ Other | Drug Test Result: ☐ Positive ☐ Negative ☐ Pending

(D4) Non Motorist Location at Time of Crash: | (D5) Non Motorist Action Prior to Crash:

(D6) Non Motorist Action at Time of Crash 1: | (D6) Non Motorist Action at Time of Crash 2:

(D7) Pedestrian Maneuvers: | (D8) Bicyclist Maneuvers:

OCCUPANT

PERSON TYPE 1-Driver, 2-Passenger, 3-Pedestrian, 6-Driver/Owner, 7-Bicycle, 8-Passenger/Owner, 24-Last Known Operator 25-Last Known Operator/Owner

SEAT ROW: 1-Front Row, 2-Second Row, 3-Third Row, 4-Fourth Row, 5-Other Row, 6-Unknown

SEAT POSITION: 1-Left (driver), 2-Middle, 3-Right, 4-Other, 5-Unknown

SEAT POSITION OTHER: 1-Sleeper Section of Cab (truck), 2-Other Enclosed Cargo Area, 3- Unenclosed Cargo Area, 4-Trailing Unit, 5-Riding on Motor Vehicle Ext (non-trailing unit), 6- Unknown

AIRBAG DEPLOYED: 1-Not Applicable, 2-Not Deployed, 3-Deployed - Front, 4-Deployed - Side, 5-Deployed - Other (knee, air belt,...), 6-Deployed - Combination, 7-Deployment - Curtain

RESTRAINT SYSTEM: 1-Not Applicable, 2-None Used - Motor Vehicle Occupant, 3-Shoulder and Lap Belt Used, 4-Shoulder Belt Only Used, 5-Lap Belt Only Used, 6-Restraint Used - Other, 7-Child Restraint - Forward Facing, 8-Child Restraint - Rear Facing, 9-Child Restraint - Used Incorrectly, 10-Booster Seat, 11-Child Restraint - Other

INJURY TYPE: 1-Amputation, 2-Bleeding, 3-Broken Bones, 4-Burns, 5-Concussion, 6-Shock, 7-Dizziness, 8-Abrasion/Bruises, 9-Complaint of Pain, 10-Other

INJURY AREA: 1-Face, 2-Head, 3-Neck, 4-Back, 5-Arm(s), 6-Leg(s), 7-Chest Stomach, 8-Internal, 9-Entire Body, 10-Other

INJURY DEGREE: 1-Fatal, 2-Incapacitating, 3-NonIncapacitating, 4-Possible Injury, 5-No Injury

EJECTED: 1-Not Ejected, 2-Ejected Partially, 3-Ejected Totally

HELMET USE: 1-DOT-Compliant Motorcycle Helmet, 2-Other Helmet, 3-No Helmet

INJURY INFO SOURCE: 1-Officer Observation, 2-Individual Statement, 3-Medical, Paramedical Observation

AMB CODES - see code sheet

Person Type	Include Driver, Passengers, Bicyclist, and Pedestrians — Last Name, First Name, Mi	Sex (M,F,U)	DOB	Seat Pos Row	Seat Pos	Seat Pos Other	Air Bag Deployed	Ejected	Restraint System	Helmet Use	Injury Degree	Injury Type	Injury Area	Inj Info Source	Amb Code
6	*	F	10/23/64	1	1		3	1	3		5			2	1

STATE OF MAINE CRASH REPORT

UNIT PAGE

Report Number: **14H-00974**

UNIT

Unit ID	Hit Run?	VIN	License Plate	State	(U1) Unit Type
2	☐	**3FAHP0HA0BR170413**	*	**SD**	**1 - Passenger Car**

No Insurance	NAIC	Insurance Company Name	Insurance Policy Number
☐		*	*

(U2) Vehicle Make	Vehicle Year	(U3) Vehicle Color
18 - FORD	**2013**	**10 - Red**

(U4) Vehicle Configuration:

GVWR or GCWR: ☐ < 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ > than 26,000 lbs.

Vehicle Has 9 or More Seats ? ☐ Yes ☐ No

HAZMAT Placarded ? ☐ Yes ☑ No

Vehicle Travel Direction: ☑ Northbound ☐ Southbound ☐ Eastbound ☐ Westbound ☐ Not on Roadway ☐ Unknown

(U5) Special Function Vehicle: **1 - No Special Function** ☐ Exempt Vehicle

Emergency Vehicle Responding to Scene ? ☐ Yes ☐ No

Extent of Damage: ☐ No Damage Observed ☐ Minor Damage ☐ Functional Damage ☑ Towed Due to Disabling Damage

(U6) Most Damaged Area **4 - Rear Passenger Quarter Panel**	(U7) Most Harmful Event **13 - Motor Vehicle in Transport**
(U8) Pre Crash Actions **6 - Making left turn**	(U9) Contributing Circumstances - Vehicle **1 - None**
(U10) Sequence of Events 1 **21 - Motor Vehicle In Transport**	(U10) Sequence of Events 2
(U10) Sequence of Events 3	(U10) Sequence of Events 4

DRIVER

☑ Driver ☐ Bicycle ☐ Pedestrian ☐ Last Known Operator

License Number	Status	State	License Class	Endorsements	Restrictions
*	☑ Active ☐ No License ☐ Permit ☐ Suspended	**ME**	**C**	**0**	**A**

DRIVER Last Name / First Name / MI	DRIVER Address / City / State / Zip
*	* **ME***

Citation Number	Pending	Violation 1	Violation 2
	☐		

OWNER Last Name (skip if same as Driver) First Name MI	OWNER Address / City / State / Zip
*	* **SD***

(D1) Driver Distracted By **1 - Not Distracted**	(D2) Condition at Time of Crash **1 - Apparently Normal**
(D3) Driver Actions at Time of Crash 1 **1 - No Contributing Action**	(D3) Driver Actions at Time of Crash 2

Alcohol Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Breath ☐ Urine ☐ Other Chemical Test (Not Field Sobriety or PBT)

☐ Alcohol Test Result Pending — Alcohol BAC Result:

Drug Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Urine ☐ Other

Drug Test Result: ☐ Positive ☐ Negative ☐ Pending

(D4) Non Motorist Location at Time of Crash	(D5) Non Motorist Action Prior to Crash
(D6) Non Motorist Action at Time of Crash 1	(D6) Non Motorist Action at Time of Crash 2
(D7) Pedestrian Maneuvers	(D8) Bicyclist Maneuvers

OCCUPANT

PERSON TYPE 1-Driver, 2-Passenger, 3-Pedestrian, 6-Driver/Owner, 7-Bicycle, 8-Passenger/Owner, 24-Last Known Operator 25-Last Known Operator/Owner

SEAT ROW: 1-Front Row, 2-Second Row, 3-Third Row, 4-Fourth Row, 5-Other Row, 6-Unknown

SEAT POSITION: 1-Left (driver), 2-Middle, 3-Right, 4-Other, 5-Unknown

SEAT POSITION OTHER: 1-Sleeper Section of Cab (truck), 2-Other Enclosed Cargo Area, 3- Unenclosed Cargo Area, 4-Trailing Unit, 5-Riding on Motor Vehicle Ext (non-trailing unit), 6- Unknown

AIRBAG DEPLOYED: 1-Not Applicable, 2-Not Deployed, 3-Deployed - Front, 4-Deployed - Side, 5-Deployed - Other (knee, air belt,...), 6-Deployed - Combination, 7-Deployment - Curtain

RESTRAINT SYSTEM: 1-Not Applicable, 2-None Used - Motor Vehicle Occupant, 3-Shoulder and Lap Belt Used, 4-Shoulder Belt Only Used, 5-Lap Belt Only Used, 6-Restraint Used - Other, 7-Child Restraint - Forward Facing, 8-Child Restraint - Rear Facing, 9-Child Restraint - Used Incorrectly, 10-Booster Seat, 11-Child Restraint - Other

INJURY TYPE: 1-Amputation, 2-Bleeding, 3-Broken Bones, 4-Burns, 5-Concussion, 6-Shock, 7-Dizziness, 8-Abrasion/Bruises, 9-Complaint of Pain, 10-Other

INJURY AREA: 1-Face, 2-Head, 3-Neck, 4-Back, 5-Arm(s), 6-Leg(s), 7-Chest Stomach, 8-Internal, 9-Entire Body, 10-Other

INJURY DEGREE: 1-Fatal, 2-Incapacitating, 3-NonIncapacitating, 4-Possible Injury, 5-No Injury

INJURY INFO SOURCE: 1-Officer Observation, 2-Individual Statement, 3-Medical, Paramedical Observation

EJECTED: 1-Not Ejected, 2-Ejected Partially, 3-Ejected Totally

HELMET USE: 1-DOT-Compliant Motorcycle Helmet, 2-Other Helmet, 3-No Helmet

AMB CODES - see code sheet

Person Type	Include Driver, Passengers, Bicyclist, and Pedestrians Last Name, First Name, Mi	Sex (M,F,U)	DOB	Seat Pos Row	Seat Pos	Seat Pos Other	Air Bag Deployed	Ejected	Restraint System	Helmet Use	Injury Degree	Injury Type	Injury Area	Inj Info Source	Amb Code
1	*	**F**	**01/13/87**	**1**	**1**		**4**	**1**	**3**		**5**			**2**	**1**

STATE OF MAINE CRASH REPORT

F I R S T

Reporting Agency	Report Number	Crash Date	Crash Time	At Scene Date	At Scene Time
ME0100700	14H-01811	6/6/2014	14:15	6/6/2014	14:20

City or Town	Street or Highway	Nearest Intersecting Street	Off Road
Hampden	US HWY 202	Int of COLD BROOK RD, COLDBROOK RD, US HWY 202	☐

Direction FROM Nearest Intersection to Crash Site	Distance From Nearest Inter.	Latitude	Longitude
☑ At Intersection ☐ North ☐ South ☐ East ☐ West	☐ Feet ☐ Miles	44.754270	-68.839410

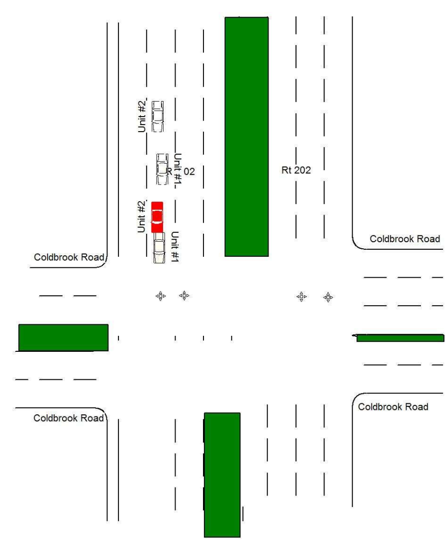
Node 1	Node 2	Measurement Node	Distance to Scene	Posted Speed Limit	
39612	0		Miles 0 Tenths	Miles Per Hour 45	☐ Unknown ☐ N/A ☐ Not Posted 25 ☐ Not Posted 45

(F1) Type of Crash **2 - Rear End / Sideswipe**	(F2) Type of Location **4 - Four Leg Intersection**
(F3) Weather Condition **1 - Clear**	(F4) Light Condition **1 - Daylight**
(F5) Road Grade **1 - Level**	(F6) Road Surface Condition **1 - Dry**
(F7) Traffic Control Device **1 - Traffic Signals (Stop & Go)**	Traffic Control Device Operational (pre-crash)? ☑ Yes ☐ No ☐ Unk
(F8) Location of First Harmful Event **1 - On Roadway**	Total Damage over Threshold? ☑ Yes ☐ No
(F9) Contributing Circumstances - Environment 1 **1 - None**	(F9) Contributing Circumstances - Environment 2
(F10) Contributing Circumstances - Road 1 **1 - None**	(F10) Contributing Circumstances -Road 2
In or Near a Construction, Maintenance, or Utility Work Zone? ☐ Yes ☑ No ☐ Unk	Work Zone Workers Present? ☐ Yes ☐ No ☐ Unk
(F11) Location of the Crash related to Work Zone	(F12) Type of Work Zone
Law Enforcement Present at Work Zone? ☐ Officer Present ☐ Law Enforcement Vehicle Only ☐ No	School Bus Related? ☐ Yes, Directly Involved ☐ Yes, Indirectly Involved ☑ No

NARRATIVE

Both units were traveling south on Rt 202. As they approached the intersection of 202 and Coldbrook Road #1 slowed rapidly due to the traffic signal change from green to yellow. Unit #2 was traveling behind #1 and failed to slow for the yellow light and struck #1 from the rear.

CRASH DIAGRAM



Witness Last Name	First	MI	Address	City	State	Zip
Witness Last Name	First	MI	Address	City	State	Zip

Non Vehicle Property Damage Description ☐ State ☐ City or Town ☐ Utilities ☐ Private

Property Owner Name	Address	City	State	Zip

Non Vehicle Property Damage Description ☐ State ☐ City or Town ☐ Utilities ☐ Private

Property Owner Name	Address	City	State	Zip

Reporting Officer	Badge#	Report Date	Approved By	Approved Date
Sergeant Scott Webber	302	6/7/2014	Sergeant Christian Bailey	6/11/2014

Last Modified: 6/11/2014 01:53

STATE OF MAINE CRASH REPORT

UNIT PAGE

Report Number: **14H-01811**

UNIT

Unit ID	Hit Run?	VIN	License Plate	State	(U1) Unit Type
1	☐	1HGES16344L003786	*	ME	1 - Passenger Car

No Insurance	NAIC	Insurance Company Name	Insurance Policy Number
☐	25143	*	*

(U2) Vehicle Make	Vehicle Year	(U3) Vehicle Color
26 - HONDA	2009	14 - White

(U4)Vehicle Configuration

GVWR or GCWR: ☐ < 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ > than 26,000 lbs.

Vehicle Has 9 or More Seats ? ☐ Yes ☐ No

HAZMAT Placarded ? ☐ Yes ☑ No

Vehicle Travel Direction: ☐ Northbound ☑ Southbound ☐ Eastbound ☐ Westbound ☐ Not on Roadway ☐ Unknown

(U5) Special Function Vehicle: **1 - No Special Function** ☐ Exempt Vehicle

Emergency Vehicle Responding to Scene ? ☐ Yes ☐ No

Extent of Damage: ☐ No Damage Observed ☐ Minor Damage ☐ Functional Damage ☑ Towed Due to Disabling Damage

(U6) Most Damaged Area: **6 - Rear**	(U7) Most Harmful Event: **13 - Motor Vehicle in Transport**
(U8) Pre Crash Actions: **11 - Stopped in traffic**	(U9) Contributing Circumstances - Vehicle: **1 - None**
(U10) Sequence of Events 1: **21 - Motor Vehicle In Transport**	(U10) Sequence of Events 2
(U10) Sequence of Events 3	(U10) Sequence of Events 4

DRIVER

☑ Driver ☐ Bicycle ☐ Pedestrian ☐ Last Known Operator

License Number	Active	No License	Permit	Suspended	State	License Class	Endorsements	Restrictions
*	☑	☐	☐	☐	ME	C	0	0

DRIVER Last Name / First Name / MI: *

DRIVER Address / City / State / Zip: * ME*

Citation Number — Pending ☐

Violation 1 / Violation 2

OWNER Last Name (skip if same as Driver) First Name MI: *

OWNER Address / City / State / Zip: * ME*

(D1) Driver Distracted By: **1 - Not Distracted**	(D2) Condition at Time of Crash: **1 - Apparently Normal**
(D3) Driver Actions at Time of Crash 1: **1 - No Contributing Action**	(D3) Driver Actions at Time of Crash 2

Alcohol Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Breath ☐ Urine ☐ Other Chemical Test (Not Field Sobriety or PBT)

☐ Alcohol Test Result Pending — Alcohol BAC Result

Drug Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Urine ☐ Other

Drug Test Result: ☐ Positive ☐ Negative ☐ Pending

(D4) Non Motorist Location at Time of Crash	(D5) Non Motorist Action Prior to Crash
(D6) Non Motorist Action at Time of Crash 1	(D6) Non Motorist Action at Time of Crash 2
(D7) Pedestrian Maneuvers	(D8) Bicyclist Maneuvers

OCCUPANT

PERSON TYPE 1-Driver, 2-Passenger, 3-Pedestrian, 6-Driver/Owner, 7-Bicycle, 8-Passenger/Owner, 24-Last Known Operator 25-Last Known Operator/Owner

SEAT ROW: 1-Front Row, 2-Second Row, 3-Third Row, 4-Fourth Row, 5-Other Row, 6-Unknown

SEAT POSITION: 1-Left (driver), 2-Middle, 3-Right, 4-Other, 5-Unknown

SEAT POSITION OTHER: 1-Sleeper Section of Cab (truck), 2-Other Enclosed Cargo Area, 3- Unenclosed Cargo Area, 4-Trailing Unit, 5-Riding on Motor Vehicle Ext (non-trailing unit), 6- Unknown

AIRBAG DEPLOYED: 1-Not Applicable, 2-Not Deployed, 3-Deployed - Front, 4-Deployed - Side, 5-Deployed - Other (knee, air belt,...), 6-Deployed - Combination, 7-Deployment - Curtain

RESTRAINT SYSTEM: 1-Not Applicable, 2-None Used - Motor Vehicle Occupant, 3-Shoulder and Lap Belt Used, 4-Shoulder Belt Only Used, 5-Lap Belt Only Used, 6-Restraint Used - Other, 7-Child Restraint - Forward Facing, 8-Child Restraint - Rear Facing, 9-Child Restraint - Used Incorrectly, 10-Booster Seat, 11-Child Restraint - Other

INJURY TYPE: 1-Amputation, 2-Bleeding, 3-Broken Bones, 4-Burns, 5-Concussion, 6-Shock, 7-Dizziness, 8-Abrasion/Bruises, 9-Complaint of Pain, 10-Other

INJURY AREA: 1-Face, 2-Head, 3-Neck, 4-Back, 5-Arm(s), 6-Leg(s), 7-Chest Stomach, 8-Internal, 9-Entire Body, 10-Other

INJURY DEGREE: 1-Fatal, 2-Incapacitating, 3-NonIncapacitating, 4-Possible Injury, 5-No Injury

EJECTED: 1-Not Ejected, 2-Ejected Partially, 3-Ejected Totally

HELMET USE: 1-DOT-Compliant Motorcycle Helmet, 2-Other Helmet, 3-No Helmet

INJURY INFO SOURCE: 1-Officer Observation, 2-Individual Statement, 3-Medical, Paramedical Observation

AMB CODES - see code sheet

Person Type	Include Driver, Passengers, Bicyclist, and Pedestrians — Last Name, First Name, Mi	Sex (M,F,U)	DOB	Seat Pos Row	Seat Pos	Seat Pos Other	Air Bag Deployed	Ejected	Restraint System	Helmet Use	Injury Degree	Injury Type	Injury Area	Inj Info Source	Amb Code
1	*	F	07/07/94	1	1		2	1	3		4	7	2	2	9999

STATE OF MAINE CRASH REPORT

UNIT PAGE

Report Number: **14H-01811**

UNIT

Unit ID	Hit Run?	VIN	License Plate	State	(U1) Unit Type
2	☐	**KNAGE123085260973**	*****	**ME**	**1 - Passenger Car**

No Insurance	NAIC	Insurance Company Name	Insurance Policy Number
☐		*****	*****

(U2) Vehicle Make	Vehicle Year	(U3) Vehicle Color
37 - KIA	**2008**	**10 - Red**

(U4)Vehicle Configuration:

GVWR or GCWR: ☐ < 10,000 lbs. ☐ 10,001 - 26,000 lbs. ☐ > than 26,000 lbs.

Vehicle Has 9 or More Seats ? ☐ Yes ☑ No

HAZMAT Placarded ? ☐ Yes ☑ No

Vehicle Travel Direction: ☐ Northbound ☑ Southbound ☐ Eastbound ☐ Westbound ☐ Not on Roadway ☐ Unknown

(U5) Special Function Vehicle: **1 - No Special Function** ☐ Exempt Vehicle

Emergency Vehicle Responding to Scene ? ☐ Yes ☐ No

Extent of Damage: ☐ No Damage Observed ☐ Minor Damage ☐ Functional Damage ☑ Towed Due to Disabling Damage

(U6) Most Damaged Area: **12 - Front**	(U7) Most Harmful Event: **13 - Motor Vehicle in Transport**
(U8) Pre Crash Actions: **1 - Following roadway**	(U9) Contributing Circumstances - Vehicle: **1 - None**
(U10) Sequence of Events 1: **21 - Motor Vehicle In Transport**	(U10) Sequence of Events 2:
(U10) Sequence of Events 3:	(U10) Sequence of Events 4:

DRIVER

☑ Driver ☐ Bicycle ☐ Pedestrian ☐ Last Known Operator

License Number		State	License Class	Endorsements	Restrictions
*****	☑ Active ☐ No License ☐ Permit ☐ Suspended	**ME**	**C**	**0**	**A**

DRIVER Last Name, First Name, MI	DRIVER Address, City, State, Zip
*****	*** ME***

Citation Number	Pending	Violation 1	Violation 2
	☐		

OWNER Last Name (skip if same as Driver) First Name MI	OWNER Address, City, State, Zip
*****	*** ME***

(D1) Driver Distracted By: **6 - Unkown**	(D2) Condition at Time of Crash: **1 - Apparently Normal**
(D3) Driver Actions at Time of Crash 1: **14 - Followed Too Closely**	(D3) Driver Actions at Time of Crash 2:

Alcohol Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Breath ☐ Urine ☐ Other Chemical Test (Not Field Sobriety or PBT)

☐ Alcohol Test Result Pending | Alcohol BAC Result:

Drug Test: ☑ Test Not Given ☐ Test Refused ☐ Blood ☐ Urine ☐ Other

Drug Test Result: ☐ Positive ☐ Negative ☐ Pending

(D4) Non Motorist Location at Time of Crash:	(D5) Non Motorist Action Prior to Crash:
(D6) Non Motorist Action at Time of Crash 1:	(D6) Non Motorist Action at Time of Crash 2:
(D7) Pedestrian Maneuvers:	(D8) Bicyclist Maneuvers:

OCCUPANT

PERSON TYPE 1-Driver, 2-Passenger, 3-Pedestrian, 6-Driver/Owner, 7-Bicycle, 8-Passenger/Owner, 24-Last Known Operator 25-Last Known Operator/Owner

SEAT ROW: 1-Front Row, 2-Second Row, 3-Third Row, 4-Fourth Row, 5-Other Row, 6-Unknown

SEAT POSITION: 1-Left (driver), 2-Middle, 3-Right, 4-Other, 5-Unknown

SEAT POSITION OTHER: 1-Sleeper Section of Cab (truck), 2-Other Enclosed Cargo Area, 3- Unenclosed Cargo Area, 4-Trailing Unit, 5-Riding on Motor Vehicle Ext (non-trailing unit), 6- Unknown

AIRBAG DEPLOYED: 1-Not Applicable, 2-Not Deployed, 3-Deployed - Front, 4-Deployed - Side, 5-Deployed - Other (knee, air belt,...), 6-Deployed - Combination, 7-Deployment - Curtain

RESTRAINT SYSTEM: 1-Not Applicable, 2-None Used - Motor Vehicle Occupant, 3-Shoulder and Lap Belt Used, 4-Shoulder Belt Only Used, 5-Lap Belt Only Used, 6-Restraint Used - Other, 7-Child Restraint - Forward Facing, 8-Child Restraint - Rear Facing, 9-Child Restraint - Used Incorrectly, 10-Booster Seat, 11-Child Restraint - Other

INJURY TYPE: 1-Amputation, 2-Bleeding, 3-Broken Bones, 4-Burns, 5-Concussion, 6-Shock, 7-Dizziness, 8-Abrasion/Bruises, 9-Complaint of Pain, 10-Other

INJURY AREA: 1-Face, 2-Head, 3-Neck, 4-Back, 5-Arm(s), 6-Leg(s), 7-Chest Stomach, 8-Internal, 9-Entire Body, 10-Other

INJURY DEGREE: 1-Fatal, 2-Incapacitating, 3-NonIncapacitating, 4-Possible Injury, 5-No Injury

EJECTED: 1-Not Ejected, 2-Ejected Partially, 3-Ejected Totally

HELMET USE: 1-DOT-Compliant Motorcycle Helmet, 2-Other Helmet, 3-No Helmet

INJURY INFO SOURCE: 1-Officer Observation, 2-Individual Statement, 3-Medical, Paramedical Observation

AMB CODES - see code sheet

Person Type	Include Driver, Passengers, Bicyclist, and Pedestrians — Last Name, First Name, Mi	Sex (M,F,U)	DOB	Seat Pos Row	Seat Pos	Seat Pos Other	Air Bag Deployed	Ejected	Restraint System	Helmet Use	Injury Degree	Injury Type	Injury Area	Inj Info Source	Amb Code
6	*****	**F**	**06/11/78**	**1**	**1**		**3**	**1**	**3**		**5**			**2**	**1**
2	*****	**M**	**06/05/05**	**1**	**3**		**3**	**1**	**3**		**5**			**2**	**1**
2	*****	**M**	**09/27/07**	**2**	**3**		**3**	**1**	**3**		**5**			**2**	**1**

Identified Haul Routes

N
W E
S

20 10 0 20
Miles

Legend

- Proposed Facility Location
- Transfer Locations
- Identified Haul Route Changes
- Existing Haul Routes
- Major Roadways
- MRC Charter Communities

MAP NOTES:

1: SITE DATA DEVELOPED BY CES, INC., DECEMBER, 2015.

2: BASE MAPPING LAYERS ARE SERVER-BASED DATA LAYERS COURTESY OF ESRI. ACQUIRED MAY 2015.

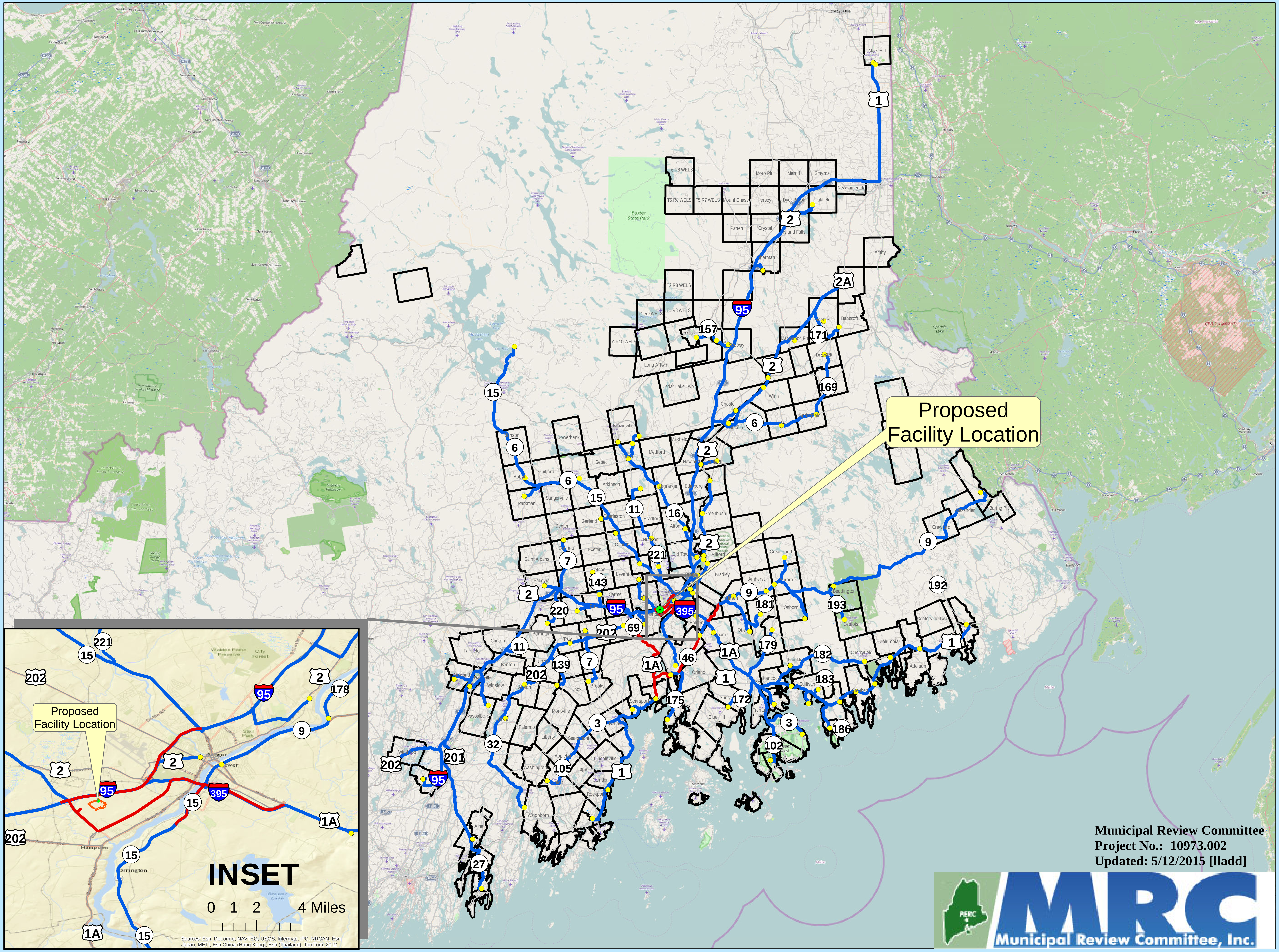
3: MAP IS PROJECTED USING THE UNIVERSAL TRANSVERSE MERCATOR (UTM) PROJECTION, ZONE 19 NORTH, METERS AND REFERENCES THE NORTH AMERICAN DATUM OF 1983 (NAD83).

4: NORTH ARROW IS REFERENCED TO GRID NORTH.

5: INTENDED FOR REFERENCE PURPOSES ONLY. THE MRC & CES, INC. AND THEIR AFFILIATES ARE NOT RESPONSIBLE FOR THE MISUSE OF THIS MAP OR DATA DEPICTED HEREIN.

CES INC
Engineers • Environmental Scientists • Surveyors

MXD: P:\10973-MRC-Municipal-Review-Committee\003-Processing Facility-DSP07-GIS_Data\MXD\HaulRouteChanges_24x36_050415n.mxd



Municipal Review Committee
Project No.: 10973.002
Updated: 5/12/2015 [lladd]

MRC
Municipal Review Committee, Inc.

Maine Truck Delivery/Queuing Assumptions

Material	MSW Volume Processed	Delivery Days	Average Daily Delivery	Daily Peak Delivery Factor	Design Basis	% of MSW Delivered in Transfer Trailers	% of MSW Delivered in Packer Trucks	Transfer Trailer Deliveries	Average Walking Floor Transfer Trailer Payload	Packer Truck Deliveries	Average Packer Truck Payload
	TPD	Days	TPD	%	TPD	%	%	TPD	Tons	TPD	Tons
MSW	**650**	**5.5**	827	**15**	951	**40**	**60**	381	**18.0**	571	**7.5**

Walking Floor Transfer Trailer Movements						Packer Truck Movements					
Scale In Time	Travel to Offload Position	Open Tailgate and Offload	Close Tailgate & Return to Scale	Scale to Scale Turaround Time		Scale In Time	Travel to Offload Position	Offload	Return to Scale	Scale to Scale Turaround Time	
Min	Min	Min	Min	Min		Min	Min	Min	Min	Min	
3	**4**	**10**	**6**	23		**3**	**3**	**5**	**4**	15	

Morning Peak Transfer Trailer Deliveries	Afternoon Peak Transfer Trailer Deliveries	Morning Peak Transfer Trailer Deliveries	Afternoon Peak Transfer Trailer Deliveries	Morning Peak Time Duration	Afternoon Peak Time Duration	Morning Peak Transfer Trailers Per Hour	Afternoon Peak Transfer Trailers Per Hour	Design Number of Transfer Trailers Per Hour	Number of Trailers Offloading at Same Time	Number of Trailers Queuing Before Scale	Number of Trailers Queuing After Scale
%	%	Tons	Tons	Hour(s)	Hour(s)	No.	No.	No.	No.		
60	**40**	228	152	**2.5**	**2.0**	5	4	5	**1**	**1**	**2**

Morning Peak Packer Truck Deliveries	Afternoon Peak Packer Truck Deliveries	Morning Peak Packer Truck Deliveries	Afternoon Peak Packer Truck Deliveries	Morning Peak Time Duration	Afternoon Peak Time Duration	Morning Peak Packer Trucks Per Hour	Afternoon Peak Packer Trucks Per Hour	Design Number of Packer Trucks Per Hour	Number of Packers Offloading at Same Time	Number of Packers Queuing Before Scale	Number of Packers Queuing After Scale
%	%	Tons	Tons	Hour(s)	Hour(s)	No.	No.	No.	No.		
60	**40**	342	228	**2.5**	**2.0**	18	15	18	**2**	**3**	**8**

Single Lane Queuing Space Required Before Scale						Single Lane Queuing Space Required After Scale					
Queing Space Required Per Transfer Trailer	Queing Space Required Per Packer Truck	Queing Space Required for Transfer Trailers	Queing Space Required for Packer Trucks	**Total Queing Space Required for All Trucks**		Queing Space Required Per Transfer Trailer	Queing Space Required Per Packer Truck	Queing Space Required for Transfer Trailers	Queing Space Required for Packer Trucks	**Total Queing Space Required for All Trucks**	
Feet	Feet	Feet	Feet	**Feet**		Feet	Feet	Feet	Feet	**Feet**	
90	**35**	90	105	**195**		90	35	180	280	**460**	

CES INC

ATTACHMENT 16

EXISTING USES AND SCENIC CHARACTER

ATTACHMENT 16

EXISTING USES AND SCENIC CHARACTER

Buffers & Visual Screens

The site is located on a large 90+/- acre wooded parcel of land that has been designated as industrial zoning by the Town of Hampden. The proposed facility will be located approximately 0.25 miles from I-95 to the north, 0.8 miles from the Coldbrook Road to the west, 0.7 miles from Ammo Industrial Park to the east, and one mile from Route 202 to the south. The site will be 4 to 5 feet lower than the surrounding grade to the west of the facility. The remainder of the site is surrounded by a natural wooded buffer to the north, east, and south. This buffer will be retained and will provide a visual screen to the north, east, and south. *See Site Design Information in Attachment 12*.

Existing Land Uses

As discussed above, the existing land has been designated as industrial zoning by the Town of Hampden. No airport runways are located within 10,000 feet of the facility. Included in this section are letters to and responses from the Maine Inland Fisheries and Wildlife, the Maine Natural Areas Program, and the Maine Historic Preservation Commission. Based on these responses, the proposed facility will not have any adverse impacts on surrounding airports, fisheries and wildlife, protected locations, or historic properties.

Established Public Viewing Areas

Established Public Viewing Areas in the State of Maine include: 10 Maine Scenic Byways; three National Scenic Byways; one All-American Road; Acadia National Park; the Appalachian National Scenic Trail; three International Parks and Historic Sites; 36 State Parks; and eight National Wildlife Refuges. According to maps provided by the State of Maine Department of Agriculture, Conservation, and Forestry, and the National Parks Service, the proposed facility is located greater than 2,000 feet from the nearest established public viewing area.

Noise

According to the Noise Standards in Chapter 400 the noise generated from the routine operation of the proposed solid waste processing facility must be less than or equal to 70 dBA for daytime and 60 dBA for nighttime hours at the facility property boundary. Additionally, there are no protected locations as defined in Ch. 400, § (1) Ii within or in the vicinity of the facility property boundary.

As it relates to this submission, the applicable noises in the thresholds are limited to routine operations of the solid waste facility. See 06-096 Ch. 400, § 4.F(2); see also 06-096 Ch. 400, § 4.F(2)(e) (listing exempt sounds). As a result, all applicable noise generating equipment will be located inside the proposed building, and at no time will processing activities take place outside. We do not expect any significant impact to the noise levels at the property boundary or surrounding areas.

Existing Uses of Neighboring Properties

The proposed Facility parcel is surrounded by Interstate 95 to the north, the Coldbrook Road to the west, Route 202 to the south, and Ammo Industrial Park to the east. Currently the existing and contemplated uses of the neighboring properties to the north, east, and a portion to the northwest of the proposed Facility are designated and zoned by the Town of Hampden as Industrial. A portion of neighboring property from the southwest to southeast is currently zoned as Rural in the Town of Hampden. Two residential subdivisions, although not abutting the proposed Facility are located approximately 3,500 feet to the south of the proposed Facility. These subdivisions are located off Route 202 on Main Trail, and off the Coldbrook Road on Lindsay Way and Emerson Road

STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
284 STATE STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041

PAUL R. LEPAGE
GOVERNOR

CHANDLER E. WOODCOCK
COMMISSIONER

March 18, 2015

Roger St. Amand
CES, Inc.
465 South Main Street, PO Box 639
Brewer, ME 04412

RE: Information Request - Proposed Waste Processing Facility, Hampden

Dear Roger:

Per your request received March 09, 2015, we have reviewed current Maine Department of Inland Fisheries and Wildlife (MDIFW) information for known locations of Endangered, Threatened, and Special Concern species; designated Essential and Significant Wildlife Habitats; and fisheries habitat concerns within the vicinity of the *Proposed Waste Processing Facility Project* in Hampden.

Our Department has not mapped any Essential Habitats or fisheries habitats that would be directly affected by your project.

Endangered, Threatened, and Special Concern Species

Bats

Seven out of eight species of bats in Maine are currently listed as Species of Special Concern by MDIFW: eastern small-footed bat (*Myotis leibii*), little brown bat (*Myotis lucifugus*), northern long-eared bat (*Myotis septentrionalis*), red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), silver-haired bat (*Lasionycteris noctivagans*), and tri-colored bat (*Perimyotis subflavus*). However, the three species of *Myotis* are currently being considered through the legislative process for protection under Maine's list of Threatened and Endangered species. While a comprehensive statewide inventory for bats has not been completed, it is likely that several of these species occur within the project area during migration and/or the breeding season. MDIFW is currently considering guidelines to avoid or minimize impacts to habitat and habitat components (e.g. maternity roosts) for these species, particularly from large forestry clearing operations associated with the construction of projects; however, as of this writing these guidelines have not been finalized. Therefore, we will defer to guidance and recommendations provided from the U.S. Fish and Wildlife Service Maine Field Office (Wende Mahaney, 207-866-3344), as the northern long-eared bat is being proposed for listing as an Endangered or Threatened Species under the Federal Endangered Species Act.

Significant Wildlife Habitat

Deer Wintering Areas

As you know, there is a large mapped Deer Wintering Area (DWA) within the project search area. Site visits with regional wildlife biologist Keep Kemper revealed that portion of the DWA that is proposed for development has been selectively harvested within the last decade, and that a large amount of the softwood cover that characterizes a DWA was removed as a result of these timber management actions. However, the area located east of the proposed development area appears to have better quality habitat conditions, with intact softwood cover and some winter use by deer was observed. Protection of this adjacent area could be easily accomplished through a conservation easement or some other similar instrument. A timber management plan that details the management actions necessary to maintain winter shelter should be drafted and become part of this longer term protection effort. Please continue to work with MDIFW wildlife staff, who remain available to provide technical assistance as you move forward with the development process.

Significant Vernal Pools

At this time, MDIFW Significant Wildlife Habitat (SWH) maps indicate no known presence of Significant Vernal Pools in the project area. However, a comprehensive statewide inventory for Significant Vernal Pools has not been completed. Therefore, surveys for vernal pools will need to be conducted within the project boundary prior to final project design to determine whether there are Significant Vernal Pools, or the critical terrestrial habitat from any adjacent pools, present in the area. Once surveys are completed, our Department will need to verify vernal pool data sheets prior to final determination of significance.

Fisheries Habitat

Without details, it is difficult to know what impacts your project may have on any mapped or unmapped streams within the search area. That being said, MDIFW makes the following general recommendations as they pertain to streams.

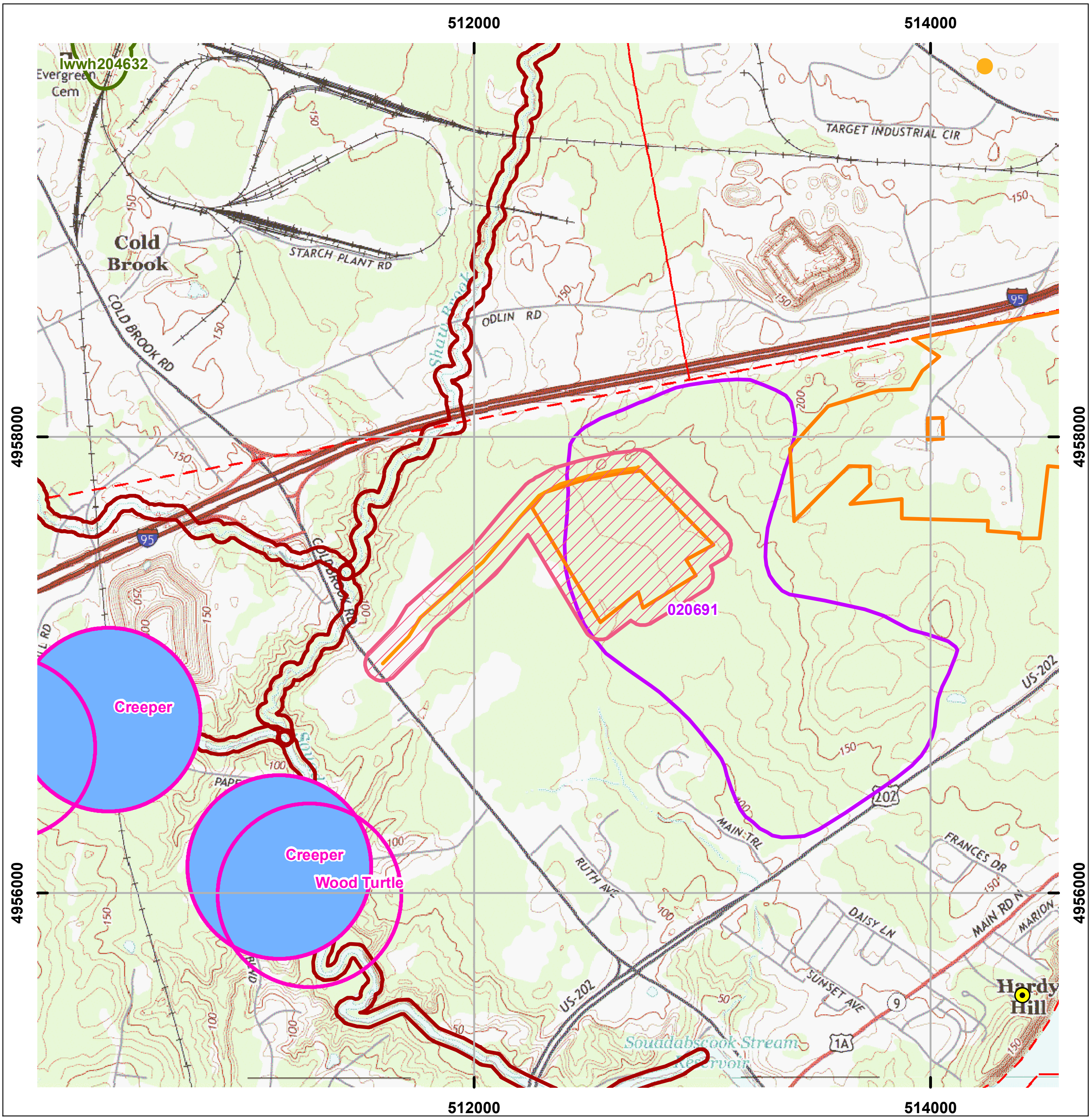
We recommend that a 100-foot undisturbed vegetated buffer be maintained along these streams. Buffers should be measured from the edge of stream or associated fringe and floodplain wetlands. Maintaining buffers along coldwater fisheries is critical to the protection of water temperatures, water quality, and inputs of coarse woody debris necessary to support conditions required by brook trout. Stream crossings should be avoided, but if a stream crossing is necessary, or an existing crossing needs to be modified, it should be designed to provide adequate fish passage. Generally, MDIFW recommends that all new, modified, and replacement stream crossings be sized to span 1.2 times the bankfull width of the stream. We encourage you to contact our Region B Fisheries staff (207-547-5316) for crossing design recommendations that best maintain fish passage. Construction Best Management Practices should be closely followed to avoid erosion, sedimentation, alteration of stream flow, and other impacts to stream habitat. In addition, we recommend that any necessary instream work or work within 100 feet of streams occur between July 15 and October 1.

This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area. Prior to the start of any future site disturbance we recommend additional consultation with the municipality, and other state resource agencies including the Maine Natural Areas Program and Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

John Perry
Environmental Review Coordinator



Environmental Review of Fish and Wildlife Observations and Priority Habitats

Project Name: Hampden, Proposed Waste Processing Facility (Version 1)

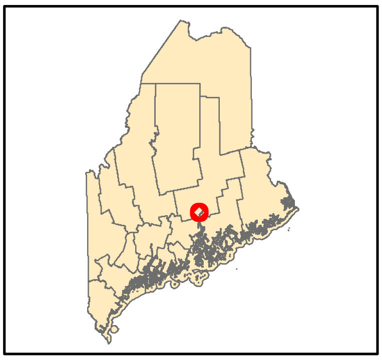
Maine Department of Inland Fisheries and Wildlife

0 0.125 0.25 0.5 0.75 1 Miles

Projection: UTM, NAD83, Zone 19N

Date: 3/11/2015

- ProjectPoints
- ProjectLines
- ProjectPolys
- ProjectSearchAreas
- Deer Winter Area
- LURC p-fw
- Cooperative DWAs
- Seabird Nesting Islands
- Shorebird Areas
- Inland Waterfowl/Wading Bird
- Shoreland Zoning_Iwwh
- Tidal Waterfowl/Wading Bird
- Significant Vernal Pools
- Environmental Review Polygons
- Roseate Tern
- Piping Plover/Least Tern
- Aquatic ETSc (2.5 mi review)
- Rare Mussels (5 mi review)
- Maine Heritage Fish Waters
- Arctic Charr Habitat
- E. Brook Trout Joint Venture Subwatershed Classification
- Redfin Pickerel/Swamp Darter Habitats (buffer100ft)
- Special Concern-occupied habitats(100ft buffer)
- Wild Lake Trout Habitats



STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
284 STATE STREET
41 STATE HOUSE STATION
AUGUSTA, ME 04333-0041
TEL: 207-287-8000

PAUL R. LEPAGE
GOVERNOR

CHANDLER E. WOODCOCK
COMMISSIONER

Roger St. Amand
CES Inc.
465 South Main Street
P.O. Box 639
Brewer, ME 04412

March 16, 2015

RE: Hampden Deer Wintering Area

Dear Roger

I wanted to thank you for meeting with me on March 5, 2015 concerning the mapped deer wintering area (DWA # 020691) that has been identified in association with your proposed project. The purpose of the meeting was to assess habitat conditions within the mapped deer wintering area. This was not a "formal" deer wintering area survey and no effort was made to quantify or qualify the habitat to determine if this wintering area would meet the department's criteria to be considered a deer wintering area of moderate or high value. The deer wintering area still retains its "indeterminate value" status.

As we discussed during our site visit, that portion of the deer wintering area that is proposed for development, has been selectively harvested within the last decade. It appears that a large amount of the softwood cover that characterizes a deer wintering area was removed as a result of these timber management actions. However, once we crossed the brook that is located east of the proposed development area we encountered better habitat conditions. The softwood cover remains intact and some winter use by deer was observed. The mapped deer wintering area is larger than the parcel owned by the applicant but no effort was made to assess the deer wintering area on adjacent property.

MDIFW's primary concern is to maintain in perpetuity the available softwood cover that is associated with this deer wintering area. While the specific location to be developed lacks suitable winter shelter habitat, other portions of the property do provide appropriate winter shelter for deer. MDIFW recommends that the remaining undeveloped portions of the property be protected and managed for winter shelter in perpetuity. This could be easily accomplished through a conservation easement or some other similar instrument. A timber management plan that details the management actions necessary to maintain winter shelter should be drafted and become part of this longer term protection effort. MDIFW remains available to provide technical assistance as you move forward with the development process.

I trust this letter satisfies your request. Should you require additional assistance please feel free to contact me directly at 207-547-5319.

Sincerely,

G. Keel Kemper
Regional Wildlife Biologist

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
93 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0093

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

March 9, 2015

Roger St. Amand
CES, Inc.
465 South Main Street
Brewer, ME 04412

Re: Rare and exemplary botanical features in proximity to: #10973.003, Waste Processing Facility and Access Road, Hampden, Maine

Dear Mr. St. Amand:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request received March 5, 2015 for information on the presence of rare or unique botanical features documented from the vicinity of the project site in Hampden, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as well as recently field-verified information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

The Natural Areas Program is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. The Natural Areas Program welcomes coordination with individuals or organizations proposing environmental alteration, or conducting environmental assessments. If, however, data provided by the Natural Areas Program are to be published in any form, the Program should be informed at the outset and credited as the source.

The Natural Areas Program has instituted a fee structure of $75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for $150.00 for two hours of our services.

Thank you for using the Natural Areas Program in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

Don Cameron
Ecologist
Maine Natural Areas Program
207-287-8041
don.s.cameron@maine.gov

Project: #10973.003, Waste Processing Facility, Hampden, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
Bicknell's Sedge						
	E	S1	G5	1931-06-26	1	Old field/roadside (non-forested, wetland or upland)
Estuary Bur-marigold						
	SC	S3	G4	2004-08-21	11	Tidal wetland (non-forested, wetland)
	SC	S3	G4	2005-09-20	12	Tidal wetland (non-forested, wetland)
	SC	S3	G4	2005-09-19	34	Tidal wetland (non-forested, wetland)
Horned Pondweed						
	SC	S2	G5	2006-08-17	18	Tidal wetland (non-forested, wetland)
Mudwort						
	SC	S3	G4G5	2005-09-20	28	Tidal wetland (non-forested, wetland)
	SC	S3	G4G5	2005-09-19	36	Tidal wetland (non-forested, wetland)
	SC	S3	G4G5	2004-08-21	27	Tidal wetland (non-forested, wetland)
Orono Sedge						
	T	S3	G3	1908-07-07	2	Old field/roadside (non-forested, wetland or upland)
Parker's Pipewort						
	SC	S3	G3	2005-09-20	10	Tidal wetland (non-forested, wetland)
	SC	S3	G3	2005-09-19	36	Tidal wetland (non-forested, wetland)
	SC	S3	G3	1937-08-23	11	Tidal wetland (non-forested, wetland)
	SC	S3	G3	2004-08-21	3	Tidal wetland (non-forested, wetland)
Purple Clematis						
	SC	S3	G5T5	1916-08	14	Non-tidal rivershore (non-forested, seasonally wet),Hardwood to mixed forest (forest, upland)
Pygmyweed						
	SC	S2S3	G5	2005-09-19	26	Open water (non-forested, wetland)
	SC	S2S3	G5	2004-08-21	2	Open water (non-forested, wetland)

Project: #10973.003, Waste Processing Facility, Hampden, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
	SC	S2S3	G5	1990	3	Open water (non-forested, wetland)
Raised Level Bog Ecosystem						
	<null>	S4	GNR	2002	12	Forested wetland,Open wetland, not coastal nor rivershore (non-forested, wetland)
Showy Lady's-slipper						
	T	S3	G4	1906-07-13	25	Forested wetland,Open wetland, not coastal nor rivershore (non-forested, wetland)
Sparse-flowered Sedge						
	SC	S3	G5	1905-06-25	11	Forested wetland,Open wetland, not coastal nor rivershore (non-forested, wetland)
Spongy Arrowhead						
	SC	S3	G5T4	1937-08-16	24	Tidal wetland (non-forested, wetland)
	SC	S3	G5T4	1958-08-20	23	Tidal wetland (non-forested, wetland)
	SC	S3	G5T4	2004-08-21	5	Tidal wetland (non-forested, wetland)
	SC	S3	G5T4	2006-08-17	45	Tidal wetland (non-forested, wetland)
	SC	S3	G5T4	1990	25	Tidal wetland (non-forested, wetland)
Water Pimpernel						
	SC	S3	G5T5	2005-09-20	17	Tidal wetland (non-forested, wetland)
	SC	S3	G5T5	2004-08-21	3	Tidal wetland (non-forested, wetland)

STATE RARITY RANKS

S1 Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.

S2 Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.

S3 Rare in Maine (20-100 occurrences).

S4 Apparently secure in Maine.

S5 Demonstrably secure in Maine.

SU Under consideration for assigning rarity status; more information needed on threats or distribution.

SNR Not yet ranked.

SNA Rank not applicable.

S#? Current occurrence data suggests assigned rank, but lack of survey effort along with amount of potential habitat create uncertainty (e.g. S3?).

Note: **State Rarity Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines State Rarity Ranks for animals.

GLOBAL RARITY RANKS

G1 Critically imperiled globally because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extinction.

G2 Globally imperiled because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.

G3 Globally rare (20-100 occurrences).

G4 Apparently secure globally.

G5 Demonstrably secure globally.

GNR Not yet ranked.

Note: **Global Ranks** are determined by NatureServe.

STATE LEGAL STATUS

Note: State legal status is according to 5 M.R.S.A. § 13076-13079, which mandates the Department of Conservation to produce and biennially update the official list of Maine's **Endangered** and **Threatened** plants. The list is derived by a technical advisory committee of botanists who use data in the Natural Areas Program's database to recommend status changes to the Department of Conservation.

E ENDANGERED; Rare and in danger of being lost from the state in the foreseeable future; or federally listed as Endangered.

T THREATENED; Rare and, with further decline, could become endangered; or federally listed as Threatened.

NON-LEGAL STATUS

SC SPECIAL CONCERN; Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.

PE Potentially Extirpated; Species has not been documented in Maine in past 20 years or loss of last known occurrence has been documented.

ELEMENT OCCURRENCE RANKS - EO RANKS

Element Occurrence ranks are used to describe the quality of a rare plant population or natural community based on three factors:

- **Size**: Size of community or population relative to other known examples in Maine. Community or population's viability, capability to maintain itself.
- **Condition**: For communities, condition includes presence of representative species, maturity of species, and evidence of human-caused disturbance. For plants, factors include species vigor and evidence of human-caused disturbance.
- **Landscape context**: Land uses and/or condition of natural communities surrounding the observed area. Ability of the observed community or population to be protected from effects of adjacent land uses.

These three factors are combined into an overall ranking of the feature of **A**, **B**, **C**, or **D**, where **A** indicates an **excellent** example of the community or population and **D** indicates a **poor** example of the community or population. A rank of **E** indicates that the community or population is **extant** but there is not enough data to assign a quality rank. The Maine Natural Areas Program tracks all occurrences of rare (S1-S3) plants and natural communities as well as A and B ranked common (S4-S5) natural communities.

Note: **Element Occurrence Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines Element Occurrence ranks for animals.

Visit our website for more information on rare, threatened, and endangered species!
http://www.maine.gov/dacf/mnap

CES INC
Engineers ◆ Environmental Scientists ◆ Surveyors

March 5, 2015

RECEIVED
MAR 23 2015
AND SCANNED

RECEIVED
MAR 09 2015
By 0275-15

Mr. Earle G. Shettleworth, Jr., Director
Maine Historic Preservation Commission
55 Capitol Street
65 State House Station
Augusta, ME 04333-0065

Re: Proposed Waste Processing Facility and Access Road | Hampden, Maine

Dear Mr. Shettleworth:

CES, Inc. is assisting with the design and permitting of a proposed waste processing facility and associated access road in Hampden, Maine. We respectfully request your review of the site and its immediate surroundings for the potential presence of structures or areas of historical significance to the Maine Historical Preservation Commission.

The site is located on Cold Brook Road in Hampden, Maine. The site is undeveloped and accessed via a gravel road. There are no buildings or structures on or adjacent the project site greater than 50 years of age. Proposed site improvements consist of the construction of a waste processing facility and improvements to the access road. For your reference, the site location is indicated on the attached portion of the U.S.G.S. 7.5' Bangor, Maine quadrangle map.

Your response can be emailed to rstamand@ces-maine.com), faxed to 207-989-4881, or mailed to CES, Inc., 465 South Main Street, P.O. Box 639 Brewer, Maine 04412. If you have any questions, please do not hesitate to contact us.

Sincerely,
CES, Inc.

Roger St.Amand, CSS, LSE
Project Manager

RSA/gdr
Enc.

Based on the information submitted, I have concluded that there will be no historic properties affected by the proposed undertaking, as defined by Section 106 of the National Historic Preservation Act. Consequently, pursuant to 36 CFR 800.4(d)(1), no further Section 106 consultation is required unless additional resources are discovered during project implementation pursuant to 36 CFR 800.13.

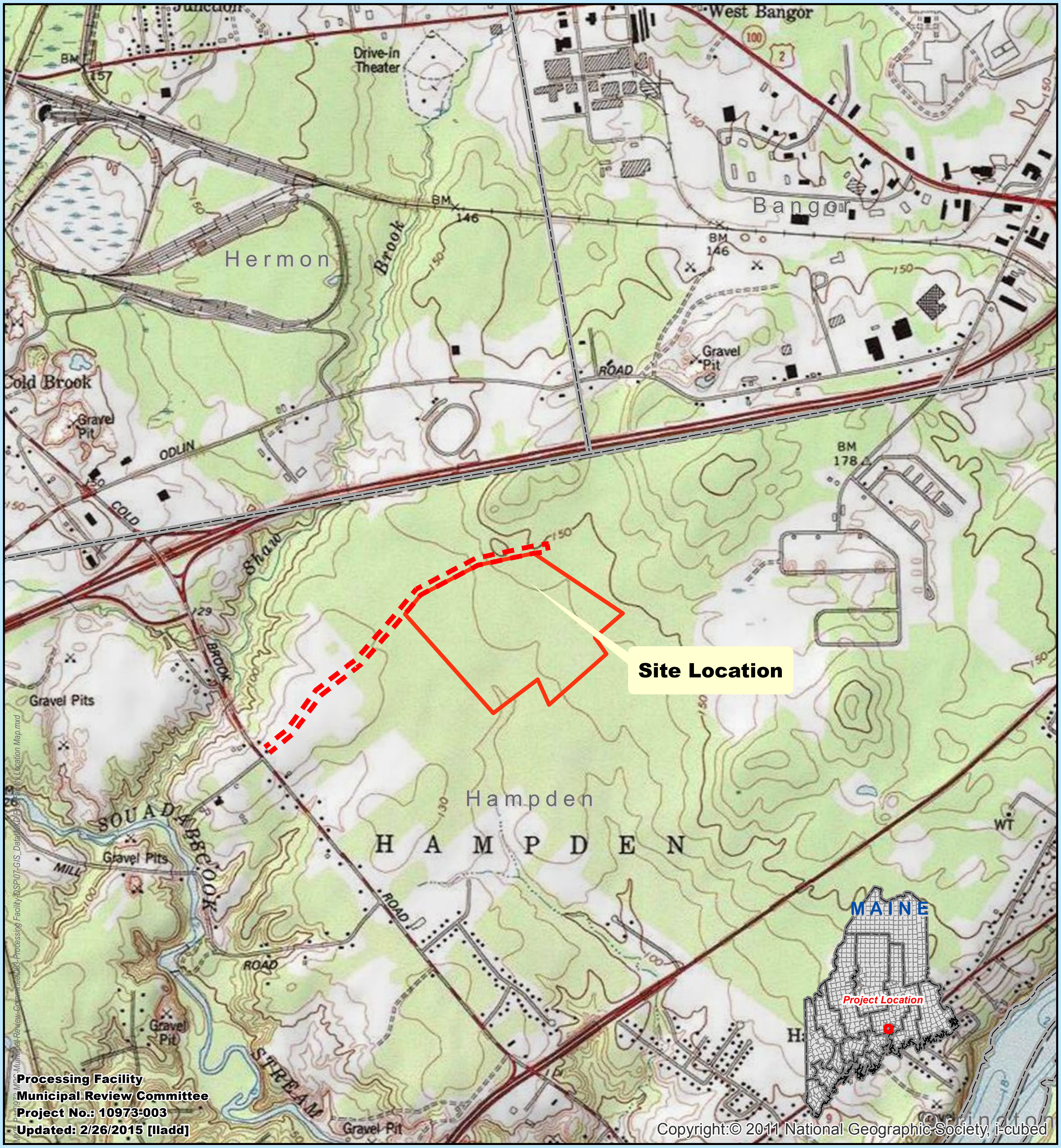
Kirk F. Mohney
Kirk F. Mohney,
Deputy State Historic Preservation Officer
Maine Historic Preservation Commission

3/18/15
Date

Six Locations in Maine | www.ces-maine.com

465 South Main Street
PO Box 639
Brewer, Maine 04412
T 207.989.4824
F 207.989.4881

Location Map



Legend

- Owner-Proposed Road Location
- Proposed Facility Location
- Town Boundaries

N
W E
S

1,000 500 0 1,000
Feet

CES INC
Engineers • Environmental Scientists • Surveyors

MAP NOTES:

1: ADMINISTRATIVE BOUNDARIES COURTESY OF THE MAINE OFFICE OF GIS (MEGIS).

2: BASE MAP COURTESY OF ESRI.

CES INC

ATTACHMENT 17

AIR QUALITY

ATTACHMENT 17

AIR QUALITY

In accordance with the standards for No Unreasonable Adverse Effects on Air Quality stated in 06 096 CMR Chapter 400, Section 4(G)(1)(a)-(c), the facility may not unreasonably affect air quality. The proposed processing facility will address these requirements by demonstrating the site operations will meet the following standards:

a) The applicant must obtain an air emission license if required;
b) The facility must control fugitive dust and nuisance odors; and
c) Open burning of solid waste, other than clean or painted wood waste, is prohibited.

A description of how these standards are to be met is provided in the submission requirements discussed below.

In accordance with 06-096 CMR Chapter 409.3.G(1)(a), this section sets forth information regarding the location, design, and operational procedures of the Facility that collectively demonstrate the facility will not cause an odor nuisance. For ease of reference, information is provided in bold in response to the applicable Section 409.3.G criteria.

G. Odor Control

(1) For facilities other than those that process wastewater treatment sludge from publicly owned treatment works and facilities that process septage: Based upon the location, design, and operational procedures of the proposed facility, the applicant must demonstrate that the facility will not cause an odor nuisance. This demonstration may be done by one or more of the following:

(a) A demonstration that the materials handled at the facility do not generate objectionable odors;

Fiberight has selected a site location and designed the proposed facility with operational and engineering controls to control potential objectionable or nuisance odors. These controls are part of the process design to minimize generation and provide control of objectionable odors and nuisance odors at occupied buildings.

The initial consideration for minimization of nuisance odors at residential occupied buildings was selection of site location and orientation. Abutters to the site are zoned as industrial and rural. The site is buffered by forested area and is approximately 3,400 feet away from the nearest residential occupied building.

All MSW unloading occurs inside the processing building. The eastern end of the building is the designated MSW receiving area. The overhead doors remain closed until trucks are in position to back into the tipping floor. Each overhead door is designed for high-speed and high frequency operation. This allows the doors to be closed for longer intervals than typical steel panel overhead doors. The overhead doors used to access the MSW unloading area will be kept in the closed position to the maximum extent possible and actuated by motion

sensors. Two doors are used to access three off-load positions and will be subject to constant traffic. In order to minimize the number of trucks in the parking lot at any one time the tipping floor is designed to accommodate one transfer trailer and three packers simultaneously.

The primary operational control for nuisance odors is minimization of residence time and quantity of MSW on the tipping floor. The tipping floor is designed with capacity for approximately two days of MSW receipts and two days of primary processed material. The MSW is moved from the tipping floor to the processing line as quickly as possible. Limited time on the tipping floor reduces any potential nuisance and objectionable odors generated by the decomposition of the putrescible waste component of the MSW. In addition, the Facility's operations are designed to process any organics continuously for entry into the wash stage prior to decomposition in order to maintain the Facility's sugar and sugar production efficiency which further reduces any potential nuisance odors. Fiberight will utilize the principle of First-In-First-Out operation to the maximum extent possible to minimize the residence time of waste on the tipping floor.

The tipping floor and processing portion of the facility are maintained under constant negative pressure. The odor control system consists of two air handling fans. The control systems use a fan rated at approximately 50,000 ACFM to draw air from the tipping floor and processing area at all times. When the overhead doors are opened a second fan actuates to draw a total of 100,000 ACFM from the tipping floor and processing areas. The combination of fans maintains the processing area under negative pressure even with the overhead doors in the open position. The designed pressure differential is 0.10 inches of water column. The exhaust from each fan is treated in with an odor scrubbing system. The odors present in the exhaust fan air are captured in the scrubber media and prevented from entering the atmosphere.

In accordance with 06 096 CMR Chapter 400.4.G(2), the following lists the submission requirements specific to "No Unreasonable Adverse Effect On Air Quality". For each of the submission requirements, a response has been provided in bold print.

(2) Submissions. Applications must include evidence that affirmatively demonstrates that the proposed facility will not unreasonably adversely affect air quality, including the following information, when appropriate:

(a) Evidence that an air emission license has been or will be obtained if required;

Fiberight, LLC and MRC have been in contact with Lynn Muzzey of the MDEP Air Bureau and will be submitting an application for a Minor Source Air License as defined in Chapter 115. This license application has been submitted and addresses potential fugitive emissions from on-site vehicle traffic and material handling, the outlet of the fugitive odor scrubber, the exhaust from two (2) boilers, and an open flare.

(b) Description of the actions that the operator will undertake to control fugitive dust from the solid waste facility when a problem attributable to the facility occurs beyond the property boundary;

Fugitive dust attributable to the Fiberight processing facility is not anticipated to occur beyond the property boundary of the facility. All areas that will be subject to vehicle and truck traffic will be paved and no bulk material handling operations will occur outside the processing building. The travel ways and parking areas will be maintained in accordance with the facility's Operations and Maintenance plan. Should fugitive dust emissions occur beyond the property boundary the facility operator will assess the source of the dust and will use a combination of cleaning of travel ways and, if necessary, spray water to control dust.

(c) The identification of any sources of nuisance odors from the facility;

Exposure of MSW to the ambient air is a potential source of nuisance odors as MSW is transported to the facility and initially transferred for processing. The facility's design and operations, however, are planned to prevent any potential nuisance odors from creating unreasonably adverse effects on air quality due to (i) sizing of the facility's tip floor, (ii) minimal queue wait for MSW transport vehicles; and (3) air control measures, such as fans (explained in more detail below).

(d) An estimation of the area that would be affected by the nuisance odor, based on general experience in dealing with the material or process that is the source of the odors;

Based on operations at comparable facilities, the potential nuisance odors are expected to be contained in the processing building. Potential odor from MSW in trucks is expected to be in low concentration and to not cause a nuisance odor at residential occupied buildings beyond the property boundary.

(e) Proposed systems for enclosure of nuisance odor-producing materials and processes, and proposed uses of technology to control, reduce or eliminate odors; and

Fiberight has selected a site location and designed the proposed facility with operational and engineering controls integral to the process design to minimize generation and provide control of objectionable odors and nuisance odors at occupied buildings.

The initial consideration for minimization of nuisance odors at residential occupied buildings was selection of site location and orientation. Abutters to the site are zoned as industrial and rural. The site is buffered by forested area and is approximately 3,400 feet away from the nearest residential occupied building.

All MSW unloading occurs inside the processing building. The eastern end of the building is the designated MSW receiving area. The overhead doors remain closed until trucks are in position to back into the tipping floor. Each overhead door is designed for high-speed and high frequency operation. This allows the doors to be closed for longer intervals than typical steel panel overhead doors. The overhead doors used to access the MSW unloading area will be kept in the closed position to the maximum extent possible and actuated by motion sensors. Two doors are used to access three off-load positions and will be

subject to constant traffic. In order to minimize the number of trucks in the parking lot at any one time the tipping floor is designed to accommodate one transfer trailer and three packers simultaneously.

The primary operational control for nuisance odors is minimization of residence time and quantity of MSW on the tipping floor. The tipping floor is designed with capacity for approximately two days of MSW receipts and two days of primary processed material. The MSW is moved from the tipping floor to the processing line as quickly as possible. Limited time on the tipping floor reduces any potential nuisance and objectionable odors generated by the decomposition of the putrescible waste component of the MSW. In addition, the Facility's operations are designed to process any organics continuously for entry into the wash stage prior to decomposition in order to maintain the Facility's sugar and sugar production efficiency which further reduces any potential nuisance odors. Fiberight will utilize the principle of First-In-First-Out operation to the maximum extent possible to minimize the residence time of waste on the tipping floor.

The tipping floor and processing portion of the facility are maintained under constant negative pressure. The odor control system consists of two air handling fans. The control systems use a fan rated at approximately 50,000 ACFM to draw air from the tipping floor and processing area at all times. When the overhead doors are opened a second fan actuates to draw a total of 100,000 ACFM from the tipping floor and processing areas. The combination of fans maintains the processing area under negative pressure even with the overhead doors in the open position. The designed pressure differential is 0.10 inches of water column. The exhaust from each fan is treated in with an odor scrubbing system. The odors present in the exhaust fan air are captured in the scrubber media and prevented from entering the atmosphere.

(f) Evidence that the solid waste facility will not unreasonably alter climate if the facility has or is proposed to have water cooling towers.

The Fiberight facility will need two small cooling towers to meet the facility's needs. The water evaporation and drift associated with the cooling towers proposed in this project will be minimal and will not unreasonably alter climate. The cooling towers are anticipated to evaporate approximately 112 gallons per minute. This is not a sufficient quantity to cause localized fog banks or icing beyond the property line of the facility. Seasonal/Annual Cooling Tower Impact (SACTI) model has been historically used to model the effects of cooling towers associated with nuclear power and fossil fuel power generation facilities but is no longer commercially available.

CES INC

ATTACHMENT 18

STORMWATER AND EROSION AND SEDIMENTATION CONTROL

ATTACHMENT 18

STORMWATER AND EROSION AND SEDIMENTATION CONTROL

Applications must include evidence that affirmatively demonstrate that there will be no unreasonable adverse effect on surface water quality, including evidence that:

(a) The applicant will comply with all applicable stormwater management standards of 06-096 CMR 500, if the proposed facility is in the direct watershed of "waterbodies most at risk from new development"; and

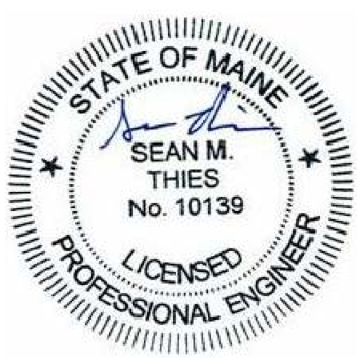
The proposed project is not located within the direct watershed of a waterbody most at risk from new development.

Included in this section are the Basic Standard and General Standard submissions of the MDEP Chapter 500 Stormwater Law. These Standards address erosion and sedimentation control and stormwater quality consistent with the submission requirements of Chapter 400, Section 4.H and 4.J.

Refer to Attachment 12 for the preliminary findings of the geotechnical investigations that have been done to date, along with boring logs, which indicate that the soils are suitable for the proposed development.

(b) A waste water discharge license has been obtained or will be obtained, if required by 38 M.R.S.A. §413.

The proposed project does not require a waste water discharge license.



ATTACHMENT 18A

BASIC STANDARD SUBMISSIONS

An Erosion and Sedimentation Plan has been prepared for the MRC/Fiberight Processing Facility. The erosion control notes in this plan address permanent stabilization measures, seeding, and mulching rates, as well as the timing of installation. Construction and installation details are also provided for the project. Additional descriptions and specifications are provided in this section. The locations of silt fence and other erosion control devices have been shown on Sheet C101.

An Inspection and Maintenance Plan has also been included. This plan includes a list of measures to be inspected and maintained, as well as the frequency and responsible parties to implement the plan.

A Housekeeping Plan has also been included. This plan provides controls to address spill prevention and possible events that could result in discharges on the site.

EROSION AND SEDIMENTATION CONTROL

1. **Pollution Prevention:** The proposed project includes the construction of a solid waste processing facility in Hampden, Maine. The facility will include an administration building, processing facility building, parking areas, and truck maneuvering area. All disturbed areas, with the exception of the buildings, and parking/maneuvering areas, will be stabilized with vegetation or riprap. Proposed downgradient wooded areas will be protected with the use of silt fence or additional control devices if necessary during construction.

2. **Sediment Barriers:** Prior to construction, sediment barriers will be installed downgradient of all disturbed areas. Sediment barriers will include silt fence, bark mulch berms, or additional measures which may become necessary.

   Sediment barriers will also be installed adjacent to any significant natural drainage channel, not otherwise protected. All installed sediment barriers will be maintained until disturbed areas are permanently stabilized.

3. **Temporary Stabilization:** Disturbed areas, which have lost natural vegetation cover, and will not be worked for more than seven days, will be temporarily stabilized. Areas within 75 feet of a wetland or waterbody will be stabilized within 48 hours of the initial disturbance or prior to any significant storm event, whichever comes first.

   Temporary stabilization will include mulch or other non-erodible material such as erosion control mesh mats. In some instances temporary stabilization may include temporary mulch and seeding, based on the time until the area will be worked or permanently stabilized.

4. **Removal of Temporary Sediment Control Measures:** After permanent stabilization of disturbed areas has been completed, temporary measures, such as silt fence, will be removed within 30 days. Any accumulated sediments will be removed and any disturbed areas permanently stabilized.

5. **Permanent Stabilization:** Once proposed construction is completed all disturbed areas, not otherwise permanently stabilized, will be permanently stabilized with vegetation, seeding, or permanent mulch.

   Vegetation plantings and seeding will include species which are suitable for the conditions of the area. Seeded areas will be protected with temporary mulch or erosion control blankets.

   Concentrated flows will not be allowed on newly seeded areas until an adequate catch of vegetation is established. It may be necessary to reseed and mulch again if germination is sparse, plant coverage is spotty, or topsoil erosion is evident. For seeded areas, permanent stabilization means a 90% cover of healthy plants with no evidence of washing or rilling of the topsoil.

Other permanent measures associated with the project include the following:

A. Permanent Mulch: Permanent mulching means total coverage of exposed area with an approved mulch material. Erosion control mix may be used as mulch for permanent stabilization according to the approved application rates and limitations.

B. Permanent Riprap: Permanent riprap means that slopes and ditches stabilized with riprap have an appropriate backing of well-graded gravel or approved geotextile to prevent soil movement from behind the riprap. Properly sized angular stones will be utilized.

C. Permanent Ditches, Channels, and Swales: Permanent stabilization means the channel is stabilized with a 90% cover of healthy vegetation or with a well-graded riprap lining. There must be no evidence of slumping of the channel lining, undercutting of the channel banks, or down-cutting of the channel.

6. **Winter Construction:** At this time no earthwork is expected during the Winter months. If unexpected Winter construction occurs, additional provision will be made to protect disturbed areas from runoff. “Winter construction” includes the time between November 1 and April 15.

7. **Stormwater Channels:** Ditches, swales, and open stormwater channels are planned as part of this project. They will be stabilized with either vegetation or riprap depending on the situation to prevent soil erosion.

8. **Roads:** The proposed entrance driveway will be treated by various BMPs.

9. **Culverts:** Culverts utilized in this project will be protected on both ends and the outlet pool to prevent scour.

10. **Parking Areas:** The proposed project includes parking areas graded to collect runoff in the various proposed BMPs.

11. **Additional Requirements:** No additional requirements are proposed at this time.

INSPECTION AND MAINTENANCE

Maintenance Plan

The Owner and their Contractor will be responsible for maintenance of stormwater and erosion and sedimentation control measures during the construction of the facility. The Owner will be responsible for post construction maintenance of the site and the devices that provide treatment for the stormwater from the site as well as erosion and sedimentation control measures on the site.

A Pre- and Post-Construction Maintenance Plan for the stormwater management system is included in this section. Any questions regarding the design and maintenance of the Stormwater Management and Erosion and Sedimentation Control Systems should be directed to:

Sean Thies, P.E.
CES, Inc.
P.O. Box 639
Brewer, ME 04412

MAINTENANCE PLAN OF STORMWATER MANAGEMENT SYSTEM

The Maine Department of Environmental Protection's (MDEP) Stormwater Management for Maine: Best Management Practices latest edition, and the MDEP's Chapter 500: Stormwater Management were used as guidelines in the development of this Maintenance Plan. General maintenance requirements are listed below.

A. DURING CONSTRUCTION

The general contractor will be responsible for the inspection and maintenance of all stormwater management system components during construction.

Inspection: Inspection of disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site will be performed at least once a week as well as before and after a storm event, and prior to completing permanent stabilization measures. Inspections shall be conducted by a person with knowledge of erosion and stormwater control, including the standards and conditions in the permit.

Maintenance: All erosion control measures will be kept in effective operating condition until areas are permanently stabilized. If BMPs need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation will be completed within seven calendar days and prior to any rainfall event.

Documentation: A log shall be kept summarizing the inspections and any corrective action taken. A copy of the log is provided at the end of this section, and is titled, *Construction Inspection Log*.

B. POST-CONSTRUCTION

The Owner will be responsible for the inspection and maintenance of all stormwater management system components associated with the proposed project.

Inspection and Corrective Action

1. **Vegetated Areas:** Inspections and maintenance of vegetated areas will be performed early in the growing season or after significant rainfall to identify any erosion problems. Areas where erosion is evident will be covered with an appropriate lining, or erosive flows will be diverted to an area able to handle the flows. Any bare areas or areas with sparse growth will be replanted.

2. **Stormwater Underdrain Soil Filters:** Maintenance of the underdrain soil filters built for the treatment of stormwater will at a minimum include the items listed below.

    a. <u>Soil Filter Inspection</u>: The soil filter should be inspected after every major storm in the first few months to ensure proper function. Thereafter, the filter should be inspected at least once every six months to ensure that it is draining within 48 hours: and that, after storms that fill the system to overflow, it drains in no less than 24 hours. If the system drains too fast, the orifice on the underdrain outlet may need to be modified.

b. Soil Filter Replacement: The top several inches of the filter shall be replaced with fresh material when water ponds on the surface of the bed for more than 72 hours. The removed sediments should be disposed in an acceptable manner.

c. Sediment Removal: Sediment and plant debris should be removed from the pretreatment structure at least annually.

d. Mowing: Filters with grass cover should be mowed no more than two times per growing season to maintain grass heights less than 12-inches.

e. Fertilization: Fertilization of the underdrained filter area should be avoided unless absolutely necessary to establish vegetation.

f. Harvesting and Weeding: Harvesting and pruning of excessive growth will need to be done occasionally. Weeding to control unwanted or invasive plants may also be necessary. Add new mulch as necessary for bioretention cell.

g. Roadway: Sweeping of the roadways may be necessary to remove and legally dispose of any accumulated sediments.

C. DOCUMENTATION

A log shall be kept summarizing the inspections, maintenance, and any corrective action taken. A copy of the log is provided at the end of this section, and is titled, BMP Inspection Log.

HOUSEKEEPING

The following performance standards are proposed for the project.

1. **Spill Prevention:** Controls must be used to prevent pollutants from being discharged from materials on site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.

2. **Groundwater Protection:** During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An “infiltration area” is any area of the site that by design or as a result of soils, topography and other relevant factors accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.

3. **Fugitive Sediment and Dust:** Actions must be taken to ensure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control. Operations during wet months that experience tracking of mud off the site onto public roads should provide for sweeping of road areas at least once a week and prior to significant storm events. Where chronic mud tracking occurs, a stabilized construction entrance should be provided. Operations during dry months, that experience fugitive dust problems, should wet down the access roads once a week or more frequently as needed.

4. **Debris and Other Materials:** Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

5. **Trench or Foundation De-Watering:** Trench de-watering is the removal of water from trenches, foundations, coffer dams, ponds, and other areas within the construction area that retain water after excavation. In most cases the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoidance measures shall be implemented to prevent water from flowing over disturbed areas of the site. Equivalent measures may be taken if approved by the department.

6. **Non-Stormwater Discharges:** Identify and prevent contamination by non-stormwater discharges.

7. **Additional Requirements:** Additional requirements may be applied on a site-specific basis.

ATTACHMENT 18B

STORMWATER QUALITY CONTROL NARRATIVE

ATTACHMENT 18B

STORMWATER QUALITY CONTROL NARRATIVE

The proposed development will be located on a parcel of land in Hampden approximately 90 acres in size. The existing site of the development is undeveloped and covered mainly by woodland. Shaw Brook is classified as an Urban Impaired Stream and is located to the west of the proposed parcel. Runoff from the site generally drains to a large forested wetland area to the south of the parcel before eventually discharging to the Penobscot River. Runoff from the proposed parcel does not discharge to Shaw Brook. The proposed development includes the construction of a 144,000 square foot processing building, a 9,800 square foot administrative building, scales and scale shack, and associated parking and maneuvering areas. The Chapter 500 Stormwater Management Standards require this project to meet basic, general, and flooding standards. Basic standards as outlined in Attachment 18A include: erosion and sedimentation control; inspection; and maintenance and housekeeping; respectively.

General standards require a minimum of 95% of the impervious area and 80% of the developed area associated with a project to receive treatment measures. This project proposes to treat the new development by utilizing a combination of three vegetated underdrained soil filters (VUDSF) and a roofline drip edge filter per the Maine Department of Environmental Protection's (MDEP) Stormwater BMP Manual. Treating approximately 266,661 square feet of impervious area and 379,338 square feet of developed area is 100% of the proposed project impervious area and 89.58% of the proposed project developed area. The following charts summarize the impervious and developed area proposed to be permitted by the project, as well as the treatment structure, area treated, and relationship with the total developed and impervious areas for the project.

PROJECT AREA	IMPERVIOUS AREA	DEVELOPED AREA
Proposed Site Area	266,661 SF	423,444 SF
Total	**266,661 SF**	**423,444 SF**

TREATMENT METHOD	IMPERVIOUS AREA TREATED	DEVELOPED AREA TREATED
VUDSF 1	94,425 SF	140,184 SF
VUDSF 2	56,218 SF	110,958 SF
VUDSF 3	50,574 SF	59,924 SF
Roof Dripline Filter	65,444 SF	68,272 SF
Total Area Treated	**266,661SF**	**379,338 SF**
Percent Treated of Areas	**100%**	**89.58%**

A description of the treatment systems are as follows.

1. **Underdrained Soil Filter 1:**
   Impervious Area: 94,425 SF
   Landscaped Area: 45,759 SF

Chapter 500 sizing is based on 1" × the impervious area + 0.4" × the landscape area.

94,425 SF x 1" = 7,869 CF of Required Storage
45,759 SF x 0.4" = 1,525 CF of Required Storage
9,394 CF of Required Storage. 9,851 CF was provided by design.

Surface Area of filter is based on 5% x impervious area + 2% x landscape are.

94,425 SF x .05 = 4,722
45,759 SF x .02 = 916
5,638 SF of Required Filter Area. 5,700 SF was provided by design.

2. **Underdrained Soil Filter 2:**

Impervious Area: 50,574 SF
Landscaped Area: 9,350 SF

Chapter 500 sizing is based on 1" × the impervious area + 0.4" × the landscape area.

50,574 SF x 1" = 4,215 CF of Required Storage
9,350 SF x 0.4" = 312 CF of Required Storage
4,527 CF of Required Storage. 8,134 CF was provided by design.

Surface Area of filter is based on 5% x impervious area + 2% x landscape are.

50,574 SF x .05 = 2,529
9,350 SF x .02 = 187
2,716 SF of Required Filter Area. 2,750 SF was provided by design.

3. **Underdrained Soil Filter 3:**

Impervious Area: 56,218 SF
Landscaped Area: 54,740 SF

Chapter 500 sizing is based on 1" × the impervious area + 0.4" × the landscape area.

56,218 SF x 1" = 4,685 CF of Required Storage
54,740 SF x 0.4" = 1,825 CF of Required Storage
6,510 CF of Required Storage. 7,578 CF was provided by design.

Surface Area of filter is based on 5% x impervious area + 2% x landscape are.

56,218 SF x .05 = 2,811
54,740 SF x .02 = 1,095
3,906 SF of Required Filter Area. 3,950 SF was provided by design.

4. **Roof Dripline Filter:** A roof dripline will be constructed along most of the southern edge of the proposed building. The size of the dripline was determined by the requirement that storage was needed to meet the flooding standards. At 40% porosity, the minimum crushed rock treatment storage area required is 5.5-feet wide by 5-feet deep. This is what was provided by design.

The proposed stormwater quality control devices have been designed according to the standards outlined in the *Stormwater Management for Maine, Volume III BMP Manual*, January 2006 and revised April 2007. Construction and maintenance will be according to standards outlined in this manual.

MRC/FIBERIGHT PROCESSING FACILITY
LOG OF INSPECTIONS DURING CONSTRUCTION

Inspection Date	Inspector (Name and Qualifications)	Major Observations	Work Performed

Notes

1) Major Observations include the operation and maintenance of erosion and sedimentation controls, materials storage areas, and vehicles access points to the parcel. Major Observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular locations, and locations(s) where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken.
2) Work Performed will include a description of the corrective action taken, the date the corrective action was taken, and the name and qualifications of the person taking the corrective actions
3) The log must be made accessible to DEP department staff and a copy must be provided upon request.
4) The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

MRC/FIBERIGHT PROCESSING FACILITY
BMP INSPECTION LOG

Date	Inspector (Name and Qualifications)	ID Number	BMP Structure	Work Performed	Comments

Notes

1) If a maintenance task requires the clean-out of any sediments or debris, indicate where the sediment and debris was disposed after removal.
2) BMP Structures shall be numbered sequentially and located on attached site map.
3) The log must be made accessible to DEP department staff and a copy must be provided upon request.
4) The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

ATTACHMENT 19

OTHER NATURAL RESOURCES

ATTACHMENT 19

OTHER NATURAL RESOURCES

Provide information sufficient to meet the standards and submission requirements of Chapter 400, section 4.I, which states:

Submissions:

(a) Evidence that a Natural Resource Protection Act Application has been submitted or will be obtained when required under that Act (38 M.R.S.A. sections 480-A to 480-Z).

Natural resource work has been complete on the property. Impacts to protected natural resources (wetland alteration and fill) and potential impacts to significant wildlife habitats (activity adjacent to significant vernal pools) are anticipated and will be addressed as necessary by obtaining a permit pursuant to 38 M.R.S.A. section 480-A et seq. An MDEP Natural Resource Protection Act permit application has been submitted concurrently to MDEP and U.S. Army Corps of Engineers.

(b) Complete information as to whether a Federal Wetlands permit is required and on whether a Federal Wetland permit application has been submitted.

As noted, Natural resource work has been completed on the property. Federal permits will be required for fill in freshwater wetlands and for activities within proximity of vernal pools. An MDEP Natural Resource Protection Act permit application has been submitted concurrently to MDEP and U.S. Army Corps of Engineers.

CES INC

ATTACHMENT 20

ADEQUATE PROVISIONS FOR UTILITIES

ATTACHMENT 20

ADEQUATE PROVISIONS FOR UTILITIES

In accordance with 06 096 CMR Chapter 400.4.L this Attachment demonstrates the Facility has *Adequate Provision for Utilities and No Unreasonable Adverse Effect on Existing or Proposed Utilities*. The following evidence affirmatively demonstrates that the applicants have made adequate provision for utilities, including water supplies, sewerage facilities and solid waste disposal, and that the proposed solid waste facility will not have an unreasonable adverse effect on existing or proposed utilities in the municipality or areas served by those utilities. The following information satisfies the submittal requirements in Chapter 400, § 4.L:

(a) Verification that the facility will be served by the appropriate utilities;

Water: The water demands of the proposed Facility were provided to the Hampden Water District for their review. During steady state operation the Facility will require a maximum water demand of 4,800 gallons per day (gpd) and a peak flowrate of 200 gallons per minute (gpm). During maintenance period, which could occur 3-4 times per year, the Facility will require a maximum water demand of 132,000 gpd and a peak flowrate of 275 gpm, to fill various components in the process. The initial fill of the processing system, following construction, will require approximately 3,500,000 gallons. The initial fill will likely occur over a 30 day period and will require approximately 117,000 gpd at approximately 81 gpm.

The Facility will be served by the Hampden Water District which is a municipal water supply and supplies potable water to the surrounding community. As stated in the attached letter from the Hampden Water District, the District has the capacity and capability to meet the flow requirements of the Facility.

Sewer: The wastewater quantity and quality information from the proposed Facility were provided to the Town of Hampden and the Bangor Wastewater Treatment Plant for review. The Facility will discharge an average daily flow of 36,000 gallons to the municipal sanitary sewer system, which includes domestic and process wastewater. The wastewater from the Facility will have a maximum temperature of 100˚ Fahrenheit, 4-8 pH, maximum Total Suspended Solids (TSS) concentration of 2,000 milligrams per Liter (mg/L) and a maximum Total Chemical Oxygen Demand (TCOD) concentration of 1,000 mg/L.

The Facility's wastewater will be discharged into the Town of Hampden's municipal sanitary sewer collection system, and will be treated by the City of Bangor's Wastewater Treatment Plant. The Bangor Wastewater Treatment Plant is a municipal wastewater treatment plant that serves several surrounding communities. As stated in the attached letters from the Town of Hampden and the Bangor Wastewater Treatment Plant, they are currently evaluating the flows and loading from the proposed Facility to determine if the wastewater collection system and treatment plant have adequate capacity to collect and treat the Facility's wastewater.

Solid Waste Disposal: As referenced in this application, MRC and Fiberight have received letters of intent to accept solid waste residue and MSW bypass waste disposal from Waste Management's Crossroads Landfill, Tri-Community Landfill and Juniper Ridge Landfill (see Attachment 22). Fiberight estimates a range

between 30,000 and 40,000 tons per year of process residue waste and ash generated in the biomass boilers and estimates up to 37,500 to 50,000 tons per year of MSW bypass waste will require disposal in a licensed landfill. Attachment 22 of this Application includes copies of these letters of intent to accept this waste.

(b) Evidence that a sufficient and healthful water supply will be provided; and

The facility will be served by the Hampden Water District which is a municipal water supply and supplies potable water to the surrounding community. As stated in the attached letter from the Hampden Water District, the District has the capacity and capability to meet the flow requirements of the Facility.

(c) The identification of all aspects of the proposed solid waste facility that require access to or use of utilities, along with the provisions that have been made to use those utilities and to comply with any requirements and provisions of the utility.

The water required by the Facility from the Hampden Water District will be used for domestic water, fire protection and process water. The majority of the water required by the Facility will be for process water. For more information regarding the process components requiring water see the Fiberight Process Description in Attachment 3-Process Design Information of this Application.

The wastewater discharged by the Facility will include domestic and process wastewater. The domestic wastewater is generated in bathrooms and other similar facilities. The majority of the wastewater generated by the Facility will be process wastewater. For more information regarding the process wastewater see the Fiberight Process Description in Attachment 13-Process Design Information of this Application.

The Hampden Water District and the Town of Hampden have been consulted regarding the connection to the water and wastewater systems, respectively. The information gathered from the Town and District has been incorporated into the design of the Facility's systems.

Hampden Water District

Tel: (207) 862-3490
Fax: (207) 862-3595
www.hampdenwaterdistrict.org

P.O. Box 218
Hampden, ME 04444-0218

5/13/15

CES Inc.
Nate Gustafson P.E.
465 Main St.
Brewer, Maine 04412

RE: MRC/Fiberight Facility

Dear Nate,
the Hampden Water District has reviewed the proposed water demand you have provided us by the MRC/Fiberight facility and we feel that we can serve this facility with a couple of points to keep in mind.

If the proposed facility is to be served through the existing Business Park, Ammo Park and then cross country to the proposed facility the following will pertain:

Bangor Water District has informed us that they have a maximum capacity to serve of 2,000 GPM from their Perry Road Pump Station which would be serving this area.

There is a metering building at the entrance to the existing Business Park that reduces the 12" line down to 6" diameter through the backflow devices and then further reduces down to 4" passing through the water meters. There will also be pressure losses across both of these components. These will have to be taken into account when calculating fire protection flows.

If the facility is to be served from the existing 12" line on the Coldbrook Road there will be no restrictions regarding fire flows. Our existing pump station on Route 202 (max. output of 650-700 gpm), the 750,000 gallon capacity Ballfield Rd. standpipe, a direct pipeline of 12" diameter and static pressure of 80 psi would adequately serve the demand of this facility.

We hope this information will assist you in furthering you project and we look forward to working with you in the future.

Sincerely,

Jamie Holyoke
Working Superintendent
Hampden Water District

Cc: Rick Pershken, District Engineer, Bangor Water District,
Bob Osborne, Town Planner, Town of Hampden

Town of Hampden
106 Western Avenue
Hampden, Maine 04444

Phone: (207) 862-3034
Fax: (207) 862-5067
email: info@hampdenmaine.gov

May 14, 2015

Karen Knuuti
Maine Department of Environmental Protection
106 Hogan Road Suite 6
Bangor Maine

Dear Ms Knuuti:

I am writing with regard to MRC/Fiberight's pending application for a Solid Waste Processing Facility to be located here in Hampden. I have been asked by CESInc to provide a letter of status on the question of our wastewater collection system capacity.

At this time, we are evaluating the wastewater flows, provided by Fiberight, to determine if our existing collection system has the capacity to convey the facilities effluents.

I expect that evaluation to be completed in the near future.

Regards,

Dean L. Bennett
Community Development Director
106 Western Avenue
Hampden, Maine 04444

WASTEWATER TREATMENT PLANT

City of Bangor Maine

Bradley L. Moore
Superintendent
wwtp@bangormaine.gov

May 15, 2015

Nate Gustafson, P.E.
CES, Inc.
465 South Main Street,
Brewer, ME 04412

RE: MRC/Fiberight Facility – Preliminary Approval

Dear Mr. Gustafson,

We have received your email on May 12th requesting a capacity statement concerning the MRC/Fiberight facility. Please accept this letter as a preliminary statement of available capacity in the collection system and wastewater treatment plant to serve this facility at a daily average rate of 36,000 gallons per day. This is preliminary as the facility discharge must be evaluated through our industrial pretreatment program before discharge will be allowed to our collection system and wastewater treatment plant.

Please contact me if you have any further questions or concerns.

Best regards,

Bradley Moore

Bradley Moore

Cc: Andrew Rudzinski, City of Bangor

760 Main Street • Bangor, Maine 04401
207.992.4470 • Fax 207.947.3537
www.bangormaine.gov

CES INC

ATTACHMENT 21

FLOODING

ATTACHMENT 21

FLOODING
STORMWATER MANAGEMENT QUANTITY REPORT

As shown on the included Flood Insurance Map, the Fiberight facility is not located in, or within ¼ mile, of the 100 year flood plain.

Consistent with Department regulations, a 25-year, 24-hour storm event was modeled to determine the necessary detention and outlet sizing requirements. Stormwater modeling was completed using HydroCAD software. Included in this Attachment are the HydroCAD software results for the 2-year, 10-year, and 25-year storm events, the Pre and Post Stormwater Hydrology Plans, and a narrative describing the pre and post hydrology calculations. The Proposed Site Plan included in Attachment 12 outlines the proposed development. The pre and post development conditions for the project are described below. The following narratives, calculations, and plans address the requirements of Chapter 400.4.M.2(b-i).

PRE DEVELOPMENT/EXISTING CONDITIONS

The proposed development will be located on a parcel of land in Hampden approximately 90 acres in size. The parcel is undeveloped and covered mainly by woodland. Shaw Brook is classified as an Urban Impaired Stream and is located approximately 3,000 feet to the west of the existing parcel. Runoff from the site generally drains to a large forested wetland area to the south of the parcel before eventually draining to the Penobscot River. Runoff from the proposed parcel does not drain to Shaw Brook. Similarly, in the post development conditions, the runoff will not drain to Shaw Brook.

PRE DEVELOPMENT DRAINAGE

The attached predevelopment hydrology plan shows four drainage areas for the portion of the site studied. The area south of the development was not studied as this portion of the site is not proposed to be developed as part of this application. All four subareas are comprised mostly of wooded areas and all drain toward the south.

POST DEVELOPMENT/PROPOSED CONDITIONS

The proposed development includes the construction of a 144,000 square foot processing building, a 9,800 square foot administrative building, scales and scale house, and associated parking and maneuvering areas. The proposed development will be built over a portion of previously undeveloped land and will add approximately 9.7 acres of developed area to the existing site. The development will be treated with a combination of three vegetated underdrained soil filters and a roofline drip edge filter. All of these treatment measures discharge toward the south and west ends of the site before re-joining the pre-development flow paths.

POST DEVELOPMENT DRAINAGE

The attached post developed hydrology plan shows eight drainage areas. **Subarea 1** includes the wooded area north of the proposed development and drains southerly to a proposed grassed swale along the north side of the driveway. The grass swale delivers stormwater runoff from the wooded area to a culvert under the driveway where it discharges near the outlet for VUDSF #3. **Subarea 2** includes the employee parking, Administrative Building, and portions of the Process Building, driveway, and access road. Stormwater from this area will flow toward a grassed swale to the west of the Administrative Building which will discharge to a vegetated underdrained soil filter for treatment. **Subareas 3a and 3b** include most of the southern half of the Process Building roof. Stormwater from the roof will drain to the south and be captured in a roofline drip edge filter for treatment prior to discharging offsite. **Subarea 4** includes the scales, and portions of the northern half of the Process Building roof, driveway, and tank area. Stormwater from this area will flow toward the grassed area between the driveway and the building where it will be collected in a vegetated underdrained soil filter prior to discharging offsite. **Subarea 5** includes a mostly wooded area to the northeast of the proposed development. Stormwater from this area generally drains toward the south before being diverted around the driveway and maneuvering areas by a vegetated ditch prior to joining a wetland area to the east of the site. **Subarea 6** includes the truck maneuvering areas for the loading/unloading area. This area is predominantly paved and stormwater will flow toward the south where it will be collected in a vegetated underdrained soil filter prior to being discharged offsite. **Subarea 7** includes the wooded area to the south of the facility. Stormwater will generally sheet flow to the southwest toward the existing forested wetland area as it did prior to the development. **Subarea 8** includes the wooded area to the southwest of the facility. Stormwater will generally sheet flow to the southwest toward the existing forested wetland area as it did prior to the development.

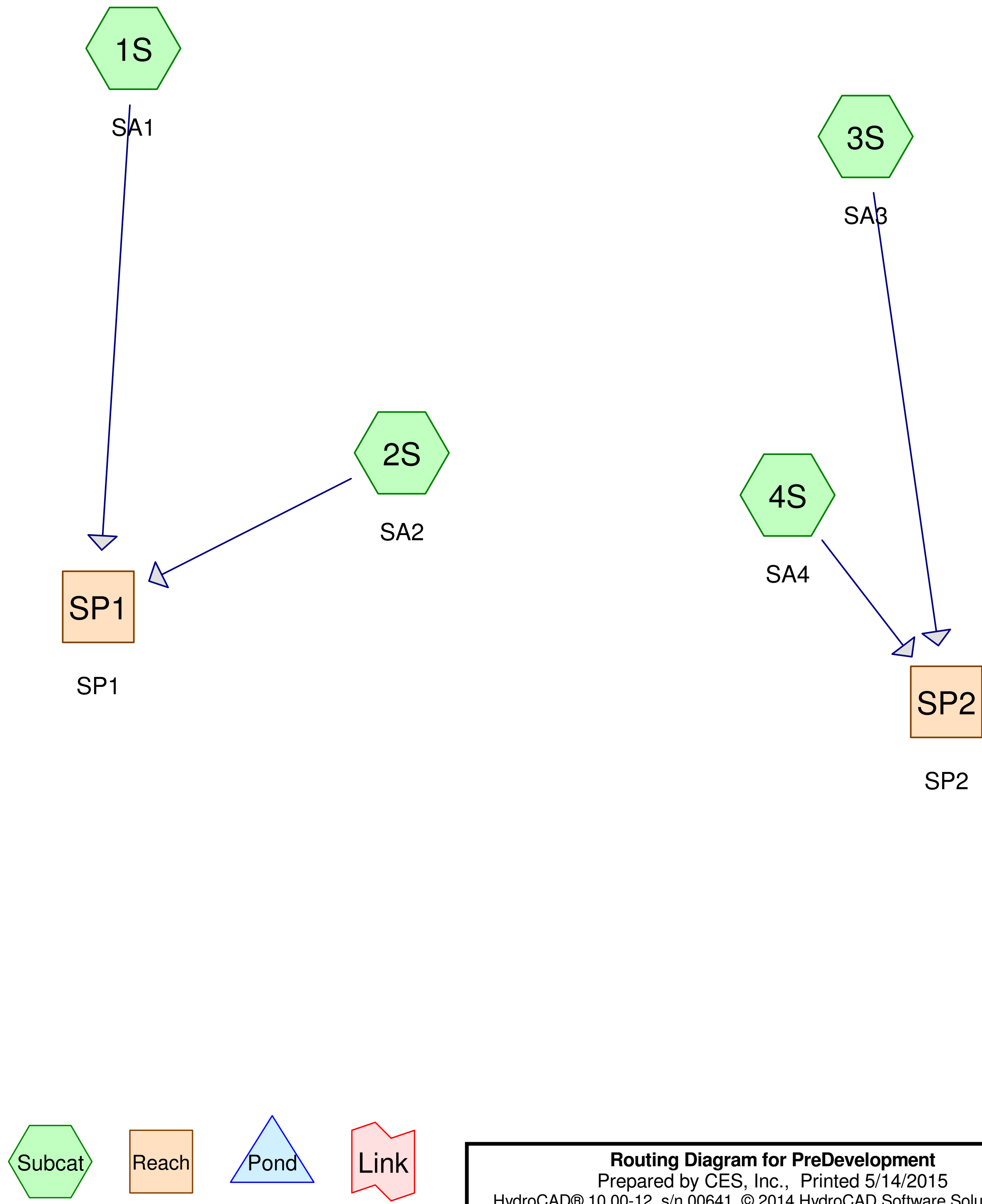
A comparison of pre and post development flows for the project at the analysis point follows.

24 HOUR, TYPE III DURATION STORM			
	2 YEAR PRE/POST (CFS)	**10 YEAR PRE/POST (CFS)**	**25 YEAR PRE/POST (CFS)**
Summation Point 1	6.98/5.85	15.20/14.85	19.63/17.59
Summation Point 2	3.85/3.60	8.39/8.16	10.83/10.81

POST DEVELOPMENT ANALYSIS

The results of the analysis for this site indicate that there is a reduction in runoff from both summation points, and that all of the stormwater treatment measures are sized adequately to handle storm water runoff from 2, 10, and 25-year storm events. Accordingly, there are no anticipated adverse impacts to the down-gradient areas, and as a result the development will have no unreasonable effect on run-on, run-off, and/or infiltration relationships on-site or on adjacent properties.

PRE DEVELOPMENT - 2 YEAR



Routing Diagram for PreDevelopment
Prepared by CES, Inc., Printed 5/14/2015

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.944	78	Meadow, non-grazed, HSG D (2S, 3S, 4S)
21.931	79	Woods, Fair, HSG D (1S, 2S, 3S, 4S)
23.875	**79**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
23.875	HSG D	1S, 2S, 3S, 4S
0.000	Other	
23.875		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	1.944	0.000	1.944	Meadow, non-grazed	2S, 3S, 4S
0.000	0.000	0.000	21.931	0.000	21.931	Woods, Fair	1S, 2S, 3S, 4S
0.000	**0.000**	**0.000**	**23.875**	**0.000**	**23.875**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SA1	Runoff Area=80,512 sf 0.00% Impervious Runoff Depth>0.89" Flow Length=407' Tc=20.3 min CN=79 Runoff=1.35 cfs 0.137 af
Subcatchment 2S: SA2	Runoff Area=605,980 sf 0.00% Impervious Runoff Depth>0.87" Flow Length=1,600' Tc=53.0 min CN=79 Runoff=6.44 cfs 1.013 af
Subcatchment 3S: SA3	Runoff Area=266,020 sf 0.00% Impervious Runoff Depth>0.87" Flow Length=966' Tc=52.3 min CN=79 Runoff=2.85 cfs 0.445 af
Subcatchment 4S: SA4	Runoff Area=87,465 sf 0.00% Impervious Runoff Depth>0.88" Flow Length=767' Tc=38.4 min CN=79 Runoff=1.11 cfs 0.147 af
Reach SP1: SP1	Inflow=6.98 cfs 1.150 af Outflow=6.98 cfs 1.150 af
Reach SP2: SP2	Inflow=3.85 cfs 0.592 af Outflow=3.85 cfs 0.592 af

Total Runoff Area = 23.875 ac Runoff Volume = 1.742 af Average Runoff Depth = 0.88"
100.00% Pervious = 23.875 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: SA1

Runoff = 1.35 cfs @ 12.30 hrs, Volume= 0.137 af, Depth> 0.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=2.70"

Area (sf)	CN	Description
80,512	79	Woods, Fair, HSG D
80,512		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	100	0.0500	0.10		**Sheet Flow, SF 1-1** Woods: Light underbrush n= 0.400 P2= 2.70"
2.2	130	0.0400	1.00		**Shallow Concentrated Flow, SCF 1-1** Woodland Kv= 5.0 fps
1.9	177	0.0500	1.57		**Shallow Concentrated Flow, SCF 1-2** Short Grass Pasture Kv= 7.0 fps
20.3	407	Total			

Summary for Subcatchment 2S: SA2

Runoff = 6.44 cfs @ 12.77 hrs, Volume= 1.013 af, Depth> 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=2.70"

Area (sf)	CN	Description
31,497	78	Meadow, non-grazed, HSG D
574,483	79	Woods, Fair, HSG D
605,980	79	Weighted Average
605,980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.7	100	0.0400	0.09		**Sheet Flow, SF 2-1** Woods: Light underbrush n= 0.400 P2= 2.70"
18.5	785	0.0200	0.71		**Shallow Concentrated Flow, SCF 2-1** Woodland Kv= 5.0 fps
2.1	90	0.0100	0.70		**Shallow Concentrated Flow, SCF 2-2** Short Grass Pasture Kv= 7.0 fps
14.7	625	0.0200	0.71		**Shallow Concentrated Flow, SCF 2-3** Woodland Kv= 5.0 fps
53.0	1,600	Total			

Summary for Subcatchment 3S: SA3

Runoff = 2.85 cfs @ 12.75 hrs, Volume= 0.445 af, Depth> 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=2.70"

Area (sf)	CN	Description
37,610	78	Meadow, non-grazed, HSG D
228,410	79	Woods, Fair, HSG D
266,020	79	Weighted Average
266,020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.4	100	0.0200	0.07		**Sheet Flow, SF 3-1** Woods: Light underbrush n= 0.400 P2= 2.70"
28.9	866	0.0100	0.50		**Shallow Concentrated Flow, SCF 3-1** Woodland Kv= 5.0 fps
52.3	966	Total			

Summary for Subcatchment 4S: SA4

Runoff = 1.11 cfs @ 12.57 hrs, Volume= 0.147 af, Depth> 0.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=2.70"

Area (sf)	CN	Description
15,577	78	Meadow, non-grazed, HSG D
71,888	79	Woods, Fair, HSG D
87,465	79	Weighted Average
87,465		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	100	0.0500	0.10		**Sheet Flow, SF 4-1** Woods: Light underbrush n= 0.400 P2= 2.70"
22.2	667	0.0100	0.50		**Shallow Concentrated Flow, SCF 4-1** Woodland Kv= 5.0 fps
38.4	767	Total			

Summary for Reach SP1: SP1

Inflow Area = 15.760 ac, 0.00% Impervious, Inflow Depth > 0.88" for 2 Year event
Inflow = 6.98 cfs @ 12.73 hrs, Volume= 1.150 af
Outflow = 6.98 cfs @ 12.73 hrs, Volume= 1.150 af, Atten= 0%, Lag= 0.0 min

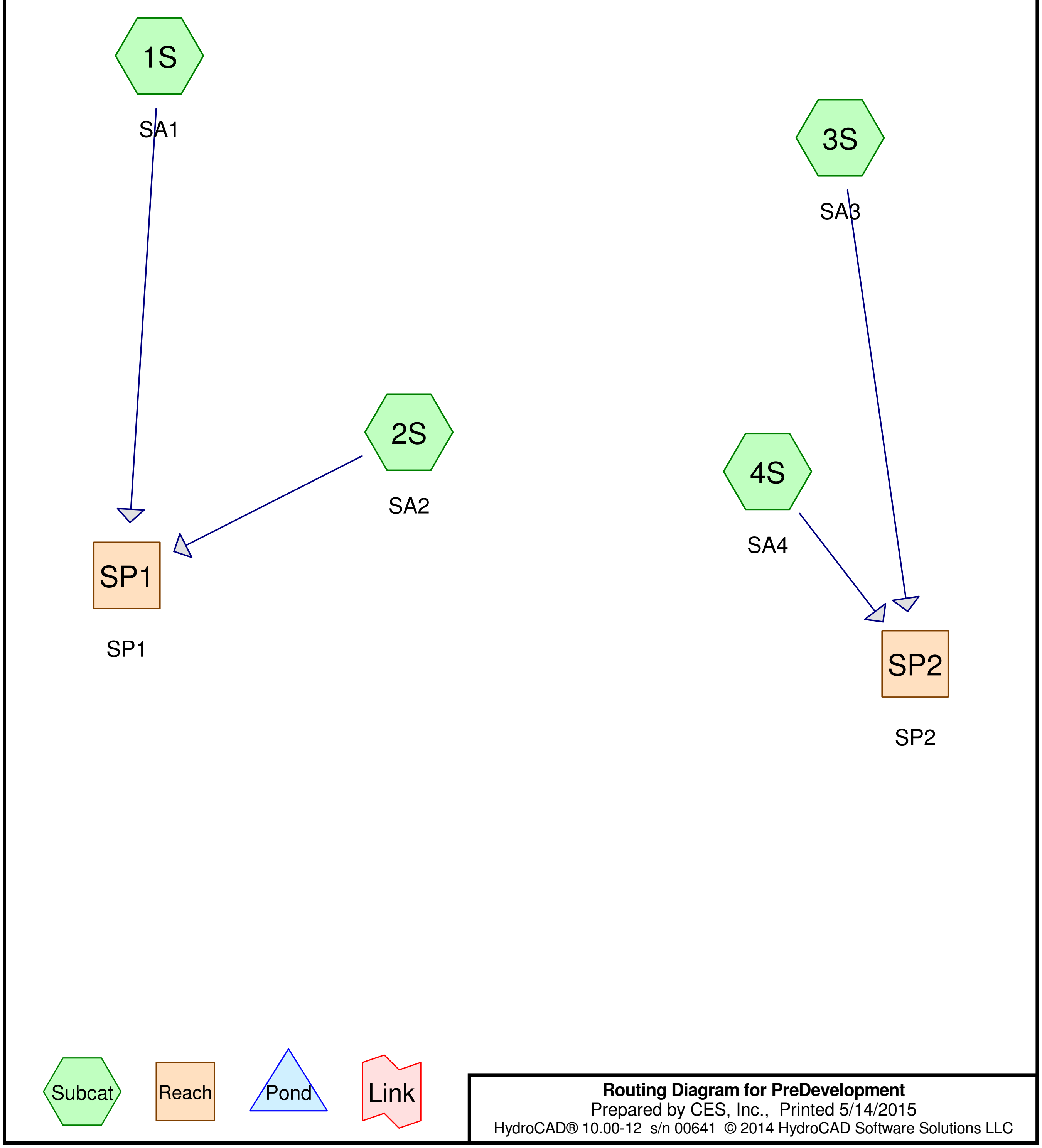
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach SP2: SP2

Inflow Area =	8.115 ac,	0.00% Impervious,	Inflow Depth > 0.88"	for 2 Year event	
Inflow =	3.85 cfs @	12.70 hrs,	Volume=	0.592 af	
Outflow =	3.85 cfs @	12.70 hrs,	Volume=	0.592 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

PRE DEVELOPMENT - 10 YEAR



Routing Diagram for PreDevelopment
Prepared by CES, Inc., Printed 5/14/2015
HydroCAD® 10.00-12 s/n 00641 © 2014 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.944	78	Meadow, non-grazed, HSG D (2S, 3S, 4S)
21.931	79	Woods, Fair, HSG D (1S, 2S, 3S, 4S)
23.875	**79**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
23.875	HSG D	1S, 2S, 3S, 4S
0.000	Other	
23.875		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	1.944	0.000	1.944	Meadow, non-grazed	2S, 3S, 4S
0.000	0.000	0.000	21.931	0.000	21.931	Woods, Fair	1S, 2S, 3S, 4S
0.000	**0.000**	**0.000**	**23.875**	**0.000**	**23.875**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SA1 Runoff Area=80,512 sf 0.00% Impervious Runoff Depth>1.89"
Flow Length=407' Tc=20.3 min CN=79 Runoff=2.95 cfs 0.291 af

Subcatchment 2S: SA2 Runoff Area=605,980 sf 0.00% Impervious Runoff Depth>1.87"
Flow Length=1,600' Tc=53.0 min CN=79 Runoff=14.01 cfs 2.163 af

Subcatchment 3S: SA3 Runoff Area=266,020 sf 0.00% Impervious Runoff Depth>1.87"
Flow Length=966' Tc=52.3 min CN=79 Runoff=6.21 cfs 0.950 af

Subcatchment 4S: SA4 Runoff Area=87,465 sf 0.00% Impervious Runoff Depth>1.88"
Flow Length=767' Tc=38.4 min CN=79 Runoff=2.41 cfs 0.314 af

Reach SP1: SP1 Inflow=15.20 cfs 2.454 af
Outflow=15.20 cfs 2.454 af

Reach SP2: SP2 Inflow=8.39 cfs 1.264 af
Outflow=8.39 cfs 1.264 af

Total Runoff Area = 23.875 ac Runoff Volume = 3.718 af Average Runoff Depth = 1.87"
100.00% Pervious = 23.875 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: SA1

Runoff = 2.95 cfs @ 12.29 hrs, Volume= 0.291 af, Depth> 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.10"

Area (sf)	CN	Description
80,512	79	Woods, Fair, HSG D
80,512		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	100	0.0500	0.10		**Sheet Flow, SF 1-1** Woods: Light underbrush n= 0.400 P2= 2.70"
2.2	130	0.0400	1.00		**Shallow Concentrated Flow, SCF 1-1** Woodland Kv= 5.0 fps
1.9	177	0.0500	1.57		**Shallow Concentrated Flow, SCF 1-2** Short Grass Pasture Kv= 7.0 fps
20.3	407	Total			

Summary for Subcatchment 2S: SA2

Runoff = 14.01 cfs @ 12.74 hrs, Volume= 2.163 af, Depth> 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.10"

Area (sf)	CN	Description
31,497	78	Meadow, non-grazed, HSG D
574,483	79	Woods, Fair, HSG D
605,980	79	Weighted Average
605,980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.7	100	0.0400	0.09		**Sheet Flow, SF 2-1** Woods: Light underbrush n= 0.400 P2= 2.70"
18.5	785	0.0200	0.71		**Shallow Concentrated Flow, SCF 2-1** Woodland Kv= 5.0 fps
2.1	90	0.0100	0.70		**Shallow Concentrated Flow, SCF 2-2** Short Grass Pasture Kv= 7.0 fps
14.7	625	0.0200	0.71		**Shallow Concentrated Flow, SCF 2-3** Woodland Kv= 5.0 fps
53.0	1,600	Total			

Summary for Subcatchment 3S: SA3

Runoff = 6.21 cfs @ 12.73 hrs, Volume= 0.950 af, Depth> 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.10"

Area (sf)	CN	Description
37,610	78	Meadow, non-grazed, HSG D
228,410	79	Woods, Fair, HSG D
266,020	79	Weighted Average
266,020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.4	100	0.0200	0.07		**Sheet Flow, SF 3-1** Woods: Light underbrush n= 0.400 P2= 2.70"
28.9	866	0.0100	0.50		**Shallow Concentrated Flow, SCF 3-1** Woodland Kv= 5.0 fps
52.3	966	Total			

Summary for Subcatchment 4S: SA4

Runoff = 2.41 cfs @ 12.54 hrs, Volume= 0.314 af, Depth> 1.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.10"

Area (sf)	CN	Description
15,577	78	Meadow, non-grazed, HSG D
71,888	79	Woods, Fair, HSG D
87,465	79	Weighted Average
87,465		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	100	0.0500	0.10		**Sheet Flow, SF 4-1** Woods: Light underbrush n= 0.400 P2= 2.70"
22.2	667	0.0100	0.50		**Shallow Concentrated Flow, SCF 4-1** Woodland Kv= 5.0 fps
38.4	767	Total			

Summary for Reach SP1: SP1

Inflow Area = 15.760 ac, 0.00% Impervious, Inflow Depth > 1.87" for 10 Year event
Inflow = 15.20 cfs @ 12.69 hrs, Volume= 2.454 af
Outflow = 15.20 cfs @ 12.69 hrs, Volume= 2.454 af, Atten= 0%, Lag= 0.0 min

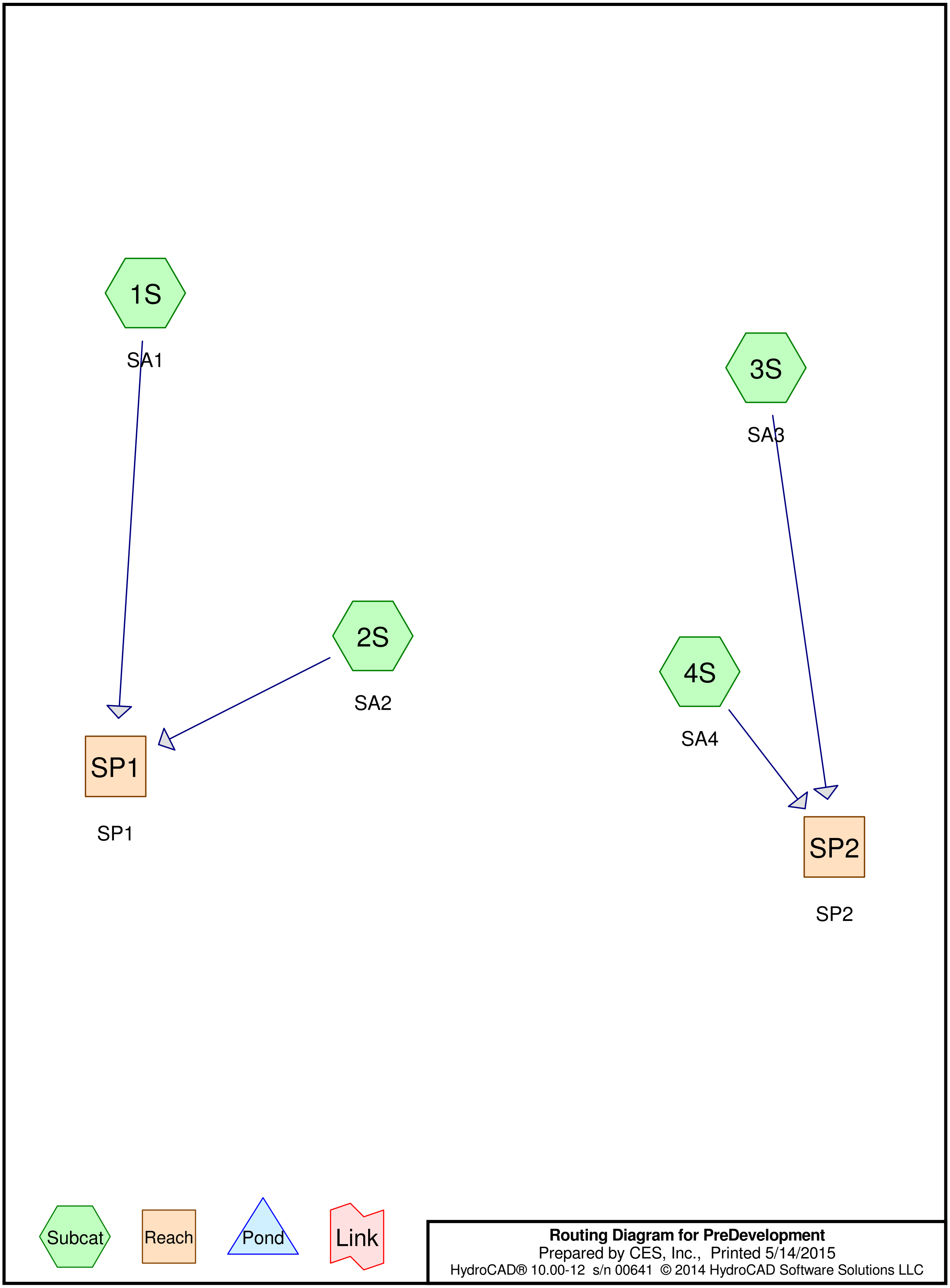
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach SP2: SP2

Inflow Area =	8.115 ac,	0.00% Impervious,	Inflow Depth > 1.87"	for 10 Year event
Inflow =	8.39 cfs @	12.67 hrs, Volume=	1.264 af	
Outflow =	8.39 cfs @	12.67 hrs, Volume=	1.264 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

PRE DEVELOPMENT - 25 YEAR



Routing Diagram for PreDevelopment
Prepared by CES, Inc., Printed 5/14/2015
HydroCAD® 10.00-12 s/n 00641 © 2014 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.944	78	Meadow, non-grazed, HSG D (2S, 3S, 4S)
21.931	79	Woods, Fair, HSG D (1S, 2S, 3S, 4S)
23.875	**79**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
23.875	HSG D	1S, 2S, 3S, 4S
0.000	Other	
23.875		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	1.944	0.000	1.944	Meadow, non-grazed	2S, 3S, 4S
0.000	0.000	0.000	21.931	0.000	21.931	Woods, Fair	1S, 2S, 3S, 4S
0.000	**0.000**	**0.000**	**23.875**	**0.000**	**23.875**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SA1 Runoff Area=80,512 sf 0.00% Impervious Runoff Depth>2.44"
Flow Length=407' Tc=20.3 min CN=79 Runoff=3.80 cfs 0.376 af

Subcatchment 2S: SA2 Runoff Area=605,980 sf 0.00% Impervious Runoff Depth>2.41"
Flow Length=1,600' Tc=53.0 min CN=79 Runoff=18.10 cfs 2.795 af

Subcatchment 3S: SA3 Runoff Area=266,020 sf 0.00% Impervious Runoff Depth>2.41"
Flow Length=966' Tc=52.3 min CN=79 Runoff=8.02 cfs 1.227 af

Subcatchment 4S: SA4 Runoff Area=87,465 sf 0.00% Impervious Runoff Depth>2.42"
Flow Length=767' Tc=38.4 min CN=79 Runoff=3.11 cfs 0.406 af

Reach SP1: SP1 Inflow=19.63 cfs 3.171 af
Outflow=19.63 cfs 3.171 af

Reach SP2: SP2 Inflow=10.83 cfs 1.633 af
Outflow=10.83 cfs 1.633 af

Total Runoff Area = 23.875 ac Runoff Volume = 4.804 af Average Runoff Depth = 2.41"
100.00% Pervious = 23.875 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: SA1

Runoff = 3.80 cfs @ 12.28 hrs, Volume= 0.376 af, Depth> 2.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=4.80"

Area (sf)	CN	Description
80,512	79	Woods, Fair, HSG D
80,512		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	100	0.0500	0.10		**Sheet Flow, SF 1-1** Woods: Light underbrush n= 0.400 P2= 2.70"
2.2	130	0.0400	1.00		**Shallow Concentrated Flow, SCF 1-1** Woodland Kv= 5.0 fps
1.9	177	0.0500	1.57		**Shallow Concentrated Flow, SCF 1-2** Short Grass Pasture Kv= 7.0 fps
20.3	407	Total			

Summary for Subcatchment 2S: SA2

Runoff = 18.10 cfs @ 12.73 hrs, Volume= 2.795 af, Depth> 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=4.80"

Area (sf)	CN	Description
31,497	78	Meadow, non-grazed, HSG D
574,483	79	Woods, Fair, HSG D
605,980	79	Weighted Average
605,980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.7	100	0.0400	0.09		**Sheet Flow, SF 2-1** Woods: Light underbrush n= 0.400 P2= 2.70"
18.5	785	0.0200	0.71		**Shallow Concentrated Flow, SCF 2-1** Woodland Kv= 5.0 fps
2.1	90	0.0100	0.70		**Shallow Concentrated Flow, SCF 2-2** Short Grass Pasture Kv= 7.0 fps
14.7	625	0.0200	0.71		**Shallow Concentrated Flow, SCF 2-3** Woodland Kv= 5.0 fps
53.0	1,600	Total			

Summary for Subcatchment 3S: SA3

Runoff = 8.02 cfs @ 12.72 hrs, Volume= 1.227 af, Depth> 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=4.80"

Area (sf)	CN	Description
37,610	78	Meadow, non-grazed, HSG D
228,410	79	Woods, Fair, HSG D
266,020	79	Weighted Average
266,020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.4	100	0.0200	0.07		**Sheet Flow, SF 3-1**
					Woods: Light underbrush n= 0.400 P2= 2.70"
28.9	866	0.0100	0.50		**Shallow Concentrated Flow, SCF 3-1**
					Woodland Kv= 5.0 fps
52.3	966	Total			

Summary for Subcatchment 4S: SA4

Runoff = 3.11 cfs @ 12.53 hrs, Volume= 0.406 af, Depth> 2.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=4.80"

Area (sf)	CN	Description
15,577	78	Meadow, non-grazed, HSG D
71,888	79	Woods, Fair, HSG D
87,465	79	Weighted Average
87,465		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	100	0.0500	0.10		**Sheet Flow, SF 4-1**
					Woods: Light underbrush n= 0.400 P2= 2.70"
22.2	667	0.0100	0.50		**Shallow Concentrated Flow, SCF 4-1**
					Woodland Kv= 5.0 fps
38.4	767	Total			

Summary for Reach SP1: SP1

Inflow Area = 15.760 ac, 0.00% Impervious, Inflow Depth > 2.41" for 25 Year event
Inflow = 19.63 cfs @ 12.68 hrs, Volume= 3.171 af
Outflow = 19.63 cfs @ 12.68 hrs, Volume= 3.171 af, Atten= 0%, Lag= 0.0 min

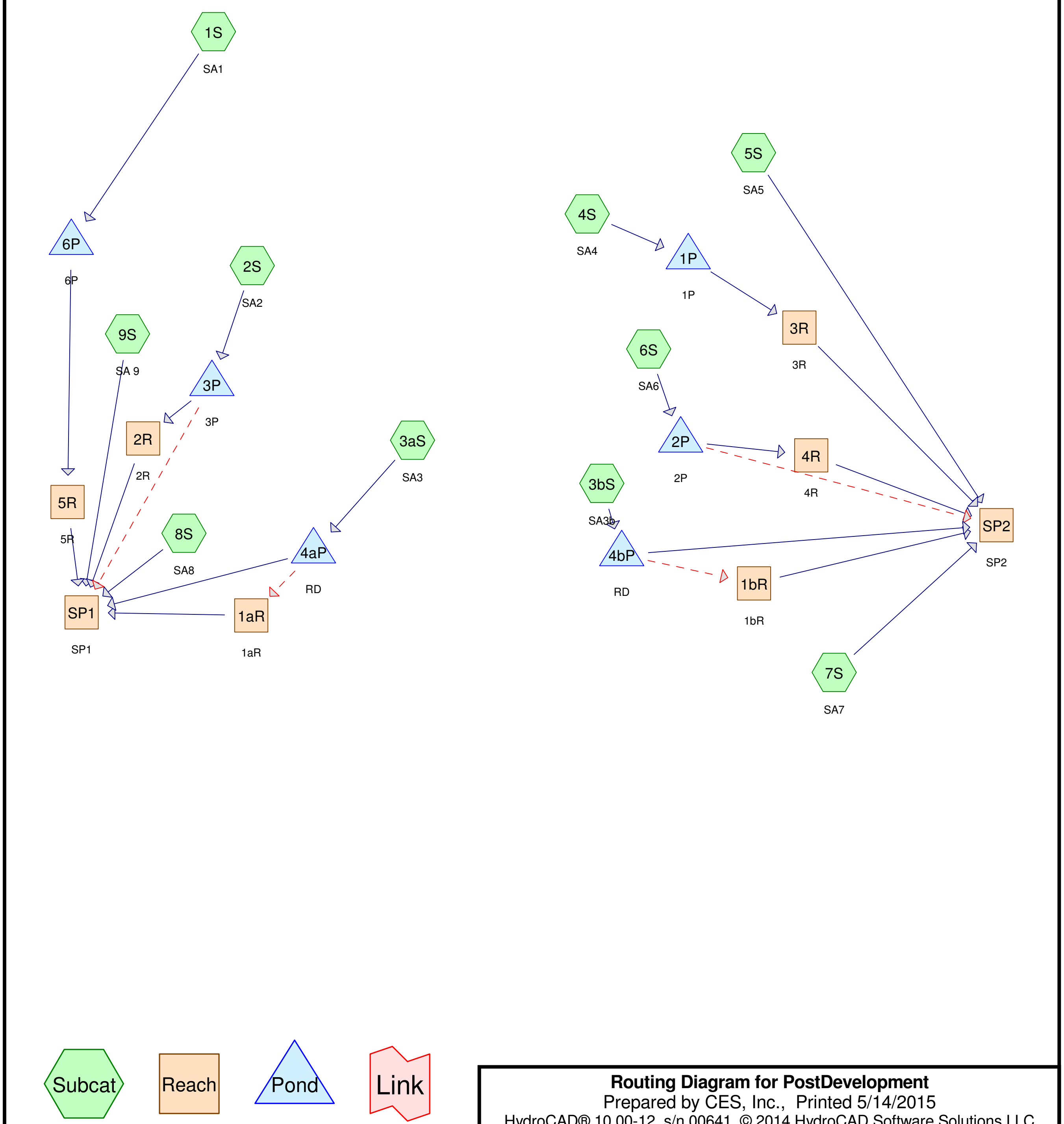
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach SP2: SP2

Inflow Area = 8.115 ac, 0.00% Impervious, Inflow Depth > 2.41" for 25 Year event
Inflow = 10.83 cfs @ 12.66 hrs, Volume= 1.633 af
Outflow = 10.83 cfs @ 12.66 hrs, Volume= 1.633 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

POST DEVELOPMENT - 2 YEAR



Routing Diagram for PostDevelopment
Prepared by CES, Inc., Printed 5/14/2015

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.903	80	>75% Grass cover, Good, HSG D (1S, 2S, 4S, 5S, 6S, 7S, 8S, 9S)
6.122	98	Impervious, HSG D (2S, 3aS, 3bS, 4S, 6S)
1.389	78	Meadow, non-grazed, HSG D (1S, 5S)
0.065	66	Roof Dripline (3aS, 3bS)
12.397	79	Woods, Fair, HSG D (1S, 5S, 7S, 8S, 9S)
23.875	**84**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
23.810	HSG D	1S, 2S, 3aS, 3bS, 4S, 5S, 6S, 7S, 8S, 9S
0.065	Other	3aS, 3bS
23.875		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	3.903	0.000	3.903	>75% Grass cover, Good	1S, 2S, 4S, 5S, 6S, 7S, 8S, 9S
0.000	0.000	0.000	6.122	0.000	6.122	Impervious	2S, 3aS, 3bS, 4S, 6S
0.000	0.000	0.000	1.389	0.000	1.389	Meadow, non-grazed	1S, 5S
0.000	0.000	0.000	0.000	0.065	0.065	Roof Dripline	3aS, 3bS
0.000	0.000	0.000	12.397	0.000	12.397	Woods, Fair	1S, 5S, 7S, 8S, 9S
0.000	**0.000**	**0.000**	**23.810**	**0.065**	**23.875**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	139.00	137.00	200.0	0.0100	0.013	12.0	0.0	0.0
2	2P	134.50	133.50	100.0	0.0100	0.013	12.0	0.0	0.0
3	3P	135.00	134.00	100.0	0.0100	0.013	12.0	0.0	0.0
4	4aP	139.00	138.00	100.0	0.0100	0.013	6.0	0.0	0.0
5	4bP	139.00	138.00	100.0	0.0100	0.013	6.0	0.0	0.0
6	6P	140.00	137.50	500.0	0.0050	0.013	18.0	0.0	0.0

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SA1 Runoff Area=402,743 sf 0.00% Impervious Runoff Depth>0.88"
Flow Length=1,165' Tc=41.9 min CN=79 Runoff=4.88 cfs 0.677 af

Subcatchment 2S: SA2 Runoff Area=110,958 sf 50.67% Impervious Runoff Depth>1.52"
Flow Length=520' Tc=12.5 min CN=89 Runoff=3.92 cfs 0.323 af

Subcatchment 3aS: SA3 Runoff Area=38,427 sf 95.86% Impervious Runoff Depth>2.23"
Flow Length=115' Slope=0.1670 '/' Tc=0.6 min CN=97 Runoff=2.55 cfs 0.164 af

Subcatchment 3bS: SA3b Runoff Area=29,845 sf 95.86% Impervious Runoff Depth>2.23"
Flow Length=115' Slope=0.1670 '/' Tc=0.6 min CN=97 Runoff=1.98 cfs 0.127 af

Subcatchment 4S: SA4 Runoff Area=140,184 sf 67.36% Impervious Runoff Depth>1.77"
Flow Length=150' Tc=1.7 min CN=92 Runoff=7.61 cfs 0.475 af

Subcatchment 5S: SA5 Runoff Area=136,118 sf 0.00% Impervious Runoff Depth>0.88"
Flow Length=750' Tc=34.0 min CN=79 Runoff=1.83 cfs 0.230 af

Subcatchment 6S: SA6 Runoff Area=59,924 sf 84.40% Impervious Runoff Depth>2.04"
Flow Length=260' Tc=1.9 min CN=95 Runoff=3.62 cfs 0.234 af

Subcatchment 7S: SA7 Runoff Area=60,331 sf 0.00% Impervious Runoff Depth>0.89"
Flow Length=180' Tc=20.1 min CN=79 Runoff=1.02 cfs 0.102 af

Subcatchment 8S: SA8 Runoff Area=47,172 sf 0.00% Impervious Runoff Depth>0.89"
Flow Length=190' Tc=19.2 min CN=79 Runoff=0.81 cfs 0.080 af

Subcatchment 9S: SA 9 Runoff Area=14,300 sf 0.00% Impervious Runoff Depth>0.94"
Flow Length=290' Tc=12.8 min CN=80 Runoff=0.31 cfs 0.026 af

Reach 1aR: 1aR Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.400 L=100.0' S=0.0200 '/' Capacity=133.65 cfs Outflow=0.00 cfs 0.000 af

Reach 1bR: 1bR Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.400 L=100.0' S=0.0200 '/' Capacity=133.65 cfs Outflow=0.00 cfs 0.000 af

Reach 2R: 2R Avg. Flow Depth=0.12' Max Vel=0.07 fps Inflow=0.36 cfs 0.146 af
n=0.400 L=50.0' S=0.0100 '/' Capacity=37.80 cfs Outflow=0.35 cfs 0.141 af

Reach 3R: 3R Avg. Flow Depth=0.14' Max Vel=0.08 fps Inflow=0.57 cfs 0.245 af
n=0.400 L=100.0' S=0.0100 '/' Capacity=37.80 cfs Outflow=0.55 cfs 0.234 af

Reach 4R: 4R Avg. Flow Depth=0.07' Max Vel=0.05 fps Inflow=0.11 cfs 0.103 af
n=0.400 L=100.0' S=0.0100 '/' Capacity=37.80 cfs Outflow=0.11 cfs 0.092 af

Reach 5R: 5R Avg. Flow Depth=0.27' Max Vel=0.26 fps Inflow=4.88 cfs 0.677 af
n=0.400 L=100.0' S=0.0500 '/' Capacity=84.52 cfs Outflow=4.76 cfs 0.669 af

Reach SP1: SP1
Inflow=5.85 cfs 1.079 af
Outflow=5.85 cfs 1.079 af

Reach SP2: SP2
Inflow=3.60 cfs 0.784 af
Outflow=3.60 cfs 0.784 af

Pond 1P: 1P
Peak Elev=143.17' Storage=11,723 cf Inflow=7.61 cfs 0.475 af
Outflow=0.57 cfs 0.245 af

Pond 2P: 2P
Peak Elev=138.34' Storage=6,374 cf Inflow=3.62 cfs 0.234 af
Primary=0.11 cfs 0.103 af Secondary=0.00 cfs 0.000 af Outflow=0.11 cfs 0.103 af

Pond 3P: 3P
Peak Elev=139.06' Storage=8,307 cf Inflow=3.92 cfs 0.323 af
Primary=0.36 cfs 0.146 af Secondary=0.00 cfs 0.000 af Outflow=0.36 cfs 0.146 af

Pond 4aP: RD
Peak Elev=141.27' Storage=1,415 cf Inflow=2.55 cfs 0.164 af
Primary=0.87 cfs 0.162 af Secondary=0.00 cfs 0.000 af Outflow=0.87 cfs 0.162 af

Pond 4bP: RD
Peak Elev=140.86' Storage=898 cf Inflow=1.98 cfs 0.127 af
Primary=0.81 cfs 0.126 af Secondary=0.00 cfs 0.000 af Outflow=0.81 cfs 0.126 af

Pond 6P: 6P
Peak Elev=144.01' Storage=29 cf Inflow=4.88 cfs 0.677 af
18.0" Round Culvert n=0.013 L=500.0' S=0.0050 '/' Outflow=4.88 cfs 0.677 af

Total Runoff Area = 23.875 ac Runoff Volume = 2.438 af Average Runoff Depth = 1.23"
74.36% Pervious = 17.753 ac 25.64% Impervious = 6.122 ac

Summary for Subcatchment 1S: SA1

Runoff = 4.88 cfs @ 12.62 hrs, Volume= 0.677 af, Depth> 0.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=2.70"

Area (sf)	CN	Description
24,192	78	Meadow, non-grazed, HSG D
362,489	79	Woods, Fair, HSG D
16,062	80	>75% Grass cover, Good, HSG D
402,743	79	Weighted Average
402,743		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.7	100	0.0400	0.09		**Sheet Flow, SF 1-1**
					Woods: Light underbrush n= 0.400 P2= 2.70"
18.5	785	0.0200	0.71		**Shallow Concentrated Flow, SCF 1-1**
					Woodland Kv= 5.0 fps
2.1	90	0.0100	0.70		**Shallow Concentrated Flow, SCF 1-2**
					Short Grass Pasture Kv= 7.0 fps
1.6	70	0.0200	0.71		**Shallow Concentrated Flow, SCF 1-3**
					Woodland Kv= 5.0 fps
2.0	120	0.0200	0.99		**Shallow Concentrated Flow, SCF 1-4**
					Short Grass Pasture Kv= 7.0 fps
41.9	1,165	Total			

Summary for Subcatchment 2S: SA2

Runoff = 3.92 cfs @ 12.17 hrs, Volume= 0.323 af, Depth> 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=2.70"

Area (sf)	CN	Description
56,218	98	Impervious, HSG D
54,740	80	>75% Grass cover, Good, HSG D
110,958	89	Weighted Average
54,740		49.33% Pervious Area
56,218		50.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	40	0.0200	1.05		**Sheet Flow, SF 2-1** Smooth surfaces n= 0.011 P2= 2.70"
10.3	60	0.0200	0.10		**Sheet Flow, SF 2-2** Grass: Dense n= 0.240 P2= 2.70"
0.5	30	0.0200	0.99		**Sheet Flow, SF 2-3** Smooth surfaces n= 0.011 P2= 2.70"
0.6	110	0.0200	2.87		**Shallow Concentrated Flow, SCF 2-1** Paved Kv= 20.3 fps
0.5	280	0.0140	9.46	529.89	**Trap/Vee/Rect Channel Flow, CF 2-1** Bot.W=2.00' D=4.00' Z= 3.0 '/' Top.W=26.00' n= 0.030 Stream, clean & straight
12.5	520	Total			

Summary for Subcatchment 3aS: SA3

Runoff = 2.55 cfs @ 12.01 hrs, Volume= 0.164 af, Depth> 2.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=2.70"

	Area (sf)	CN	Description
	36,835	98	Impervious, HSG D
*	1,592	66	Roof Dripline
	38,427	97	Weighted Average
	1,592		4.14% Pervious Area
	36,835		95.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	115	0.1670	3.04		**Sheet Flow, SF 3-1** Smooth surfaces n= 0.011 P2= 2.70"

Summary for Subcatchment 3bS: SA3b

Runoff = 1.98 cfs @ 12.01 hrs, Volume= 0.127 af, Depth> 2.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=2.70"

	Area (sf)	CN	Description
	28,609	98	Impervious, HSG D
*	1,236	66	Roof Dripline
	29,845	97	Weighted Average
	1,236		4.14% Pervious Area
	28,609		95.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	115	0.1670	3.04		**Sheet Flow, SF 3-1** Smooth surfaces n= 0.011 P2= 2.70"

Summary for Subcatchment 4S: SA4

Runoff = 7.61 cfs @ 12.03 hrs, Volume= 0.475 af, Depth> 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=2.70"

	Area (sf)	CN	Description
	45,759	80	>75% Grass cover, Good, HSG D
*	94,425	98	Impervious, HSG D
	140,184	92	Weighted Average
	45,759		32.64% Pervious Area
	94,425		67.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	140	0.0200	1.35		**Sheet Flow, SF 4-1** Smooth surfaces n= 0.011 P2= 2.70"
0.0	10	0.1000	4.74		**Shallow Concentrated Flow, SCF 4-1** Grassed Waterway Kv= 15.0 fps
1.7	150	Total			

Summary for Subcatchment 5S: SA5

Runoff = 1.83 cfs @ 12.50 hrs, Volume= 0.230 af, Depth> 0.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=2.70"

Area (sf)	CN	Description
11,975	80	>75% Grass cover, Good, HSG D
36,307	78	Meadow, non-grazed, HSG D
87,836	79	Woods, Fair, HSG D
136,118	79	Weighted Average
136,118		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	100	0.0500	0.10		**Sheet Flow, SF 5-1** Woods: Light underbrush n= 0.400 P2= 2.70"
7.0	210	0.0100	0.50		**Shallow Concentrated Flow, SCF 5-1** Woodland Kv= 5.0 fps
2.4	100	0.0100	0.70		**Shallow Concentrated Flow, SCF 5-2** Short Grass Pasture Kv= 7.0 fps
8.4	340	0.0180	0.67		**Shallow Concentrated Flow, SCF 5-3** Woodland Kv= 5.0 fps
34.0	750	Total			

Summary for Subcatchment 6S: SA6

Runoff = 3.62 cfs @ 12.03 hrs, Volume= 0.234 af, Depth> 2.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=2.70"

Area (sf)	CN	Description
9,350	80	>75% Grass cover, Good, HSG D
50,574	98	Impervious, HSG D
59,924	95	Weighted Average
9,350		15.60% Pervious Area
50,574		84.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	90	0.0330	1.51		**Sheet Flow, SF 6-1** Smooth surfaces n= 0.011 P2= 2.70"
0.9	170	0.0240	3.14		**Shallow Concentrated Flow, SCF 6-1** Paved Kv= 20.3 fps
1.9	260	Total			

Summary for Subcatchment 7S: SA7

Runoff = 1.02 cfs @ 12.30 hrs, Volume= 0.102 af, Depth> 0.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=2.70"

Area (sf)	CN	Description
50,265	79	Woods, Fair, HSG D
10,066	80	>75% Grass cover, Good, HSG D
60,331	79	Weighted Average
60,331		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	40	0.1000	0.17		**Sheet Flow, SF 7-1** Grass: Dense n= 0.240 P2= 2.70"
14.2	60	0.0250	0.07		**Sheet Flow, SF 7-2** Woods: Light underbrush n= 0.400 P2= 2.70"
2.0	80	0.0170	0.65		**Shallow Concentrated Flow, SCF 7-1** Woodland Kv= 5.0 fps
20.1	180	Total			

Summary for Subcatchment 8S: SA8

Runoff = 0.81 cfs @ 12.28 hrs, Volume= 0.080 af, Depth> 0.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=2.70"

Area (sf)	CN	Description
37,393	79	Woods, Fair, HSG D
9,779	80	>75% Grass cover, Good, HSG D
47,172	79	Weighted Average
47,172		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	40	0.1000	0.17		**Sheet Flow, SF 8-1** Grass: Dense n= 0.240 P2= 2.70"
13.2	60	0.0300	0.08		**Sheet Flow, SF 8-2** Woods: Light underbrush n= 0.400 P2= 2.70"
2.1	90	0.0200	0.71		**Shallow Concentrated Flow, SCF 8-1** Woodland Kv= 5.0 fps
19.2	190	Total			

Summary for Subcatchment 9S: SA 9

Runoff = 0.31 cfs @ 12.19 hrs, Volume= 0.026 af, Depth> 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=2.70"

Area (sf)	CN	Description
12,287	80	>75% Grass cover, Good, HSG D
2,013	79	Woods, Fair, HSG D
14,300	80	Weighted Average
14,300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0500	0.15		**Sheet Flow, SF 9-1** Grass: Dense n= 0.240 P2= 2.70"
1.6	160	0.0600	1.71		**Shallow Concentrated Flow, SCF 9-1** Short Grass Pasture Kv= 7.0 fps
0.4	30	0.0500	1.12		**Shallow Concentrated Flow, SCF 9-2** Woodland Kv= 5.0 fps
12.8	290	Total			

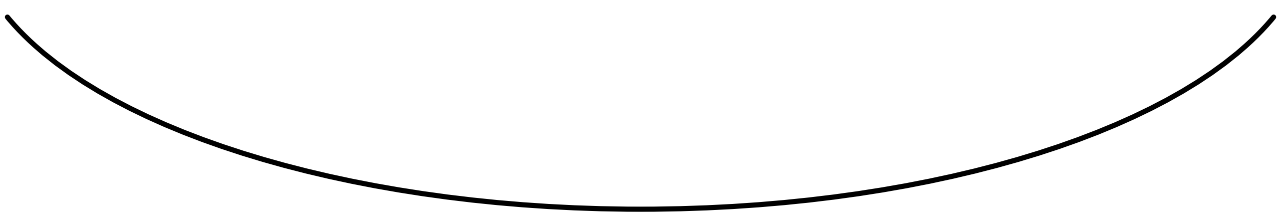
Summary for Reach 1aR: 1aR

Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 333.3 sf, Capacity= 133.65 cfs

500.00' x 1.00' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush
Length= 100.0' Slope= 0.0200 '/'
Inlet Invert= 0.00', Outlet Invert= -2.00'



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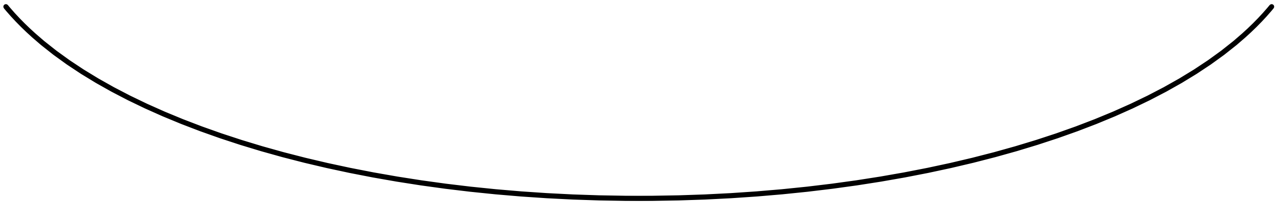
Summary for Reach 1bR: 1bR

Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 333.3 sf, Capacity= 133.65 cfs

500.00' x 1.00' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush
Length= 100.0' Slope= 0.0200 '/'
Inlet Invert= 0.00', Outlet Invert= -2.00'



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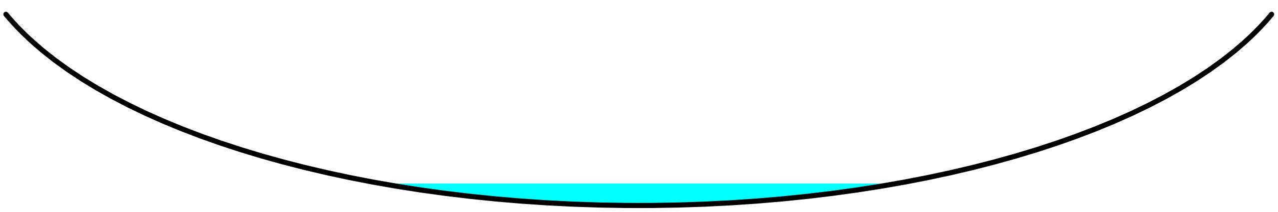
Summary for Reach 2R: 2R

Inflow Area = 2.547 ac, 50.67% Impervious, Inflow Depth > 0.69" for 2 Year event
Inflow = 0.36 cfs @ 13.69 hrs, Volume= 0.146 af
Outflow = 0.35 cfs @ 14.08 hrs, Volume= 0.141 af, Atten= 2%, Lag= 23.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.07 fps, Min. Travel Time= 12.4 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 18.0 min

Peak Storage= 261 cf @ 13.87 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 1.00' Flow Area= 133.3 sf, Capacity= 37.80 cfs

200.00' x 1.00' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush
Length= 50.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.50'



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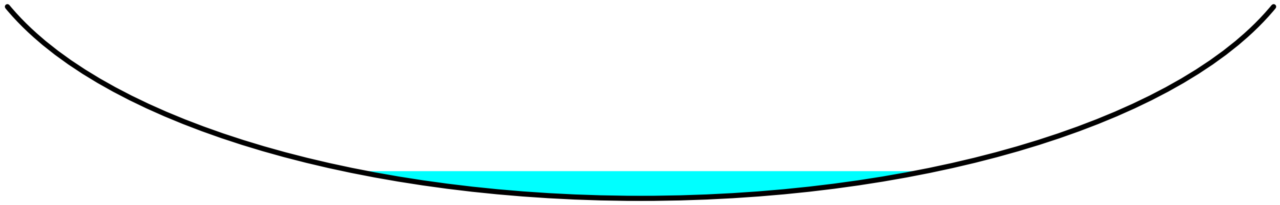
Summary for Reach 3R: 3R

Inflow Area = 3.218 ac, 67.36% Impervious, Inflow Depth > 0.92" for 2 Year event
Inflow = 0.57 cfs @ 13.07 hrs, Volume= 0.245 af
Outflow = 0.55 cfs @ 13.88 hrs, Volume= 0.234 af, Atten= 3%, Lag= 48.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.08 fps, Min. Travel Time= 21.6 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 32.9 min

Peak Storage= 711 cf @ 13.52 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 1.00' Flow Area= 133.3 sf, Capacity= 37.80 cfs

200.00' x 1.00' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush
Length= 100.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -1.00'



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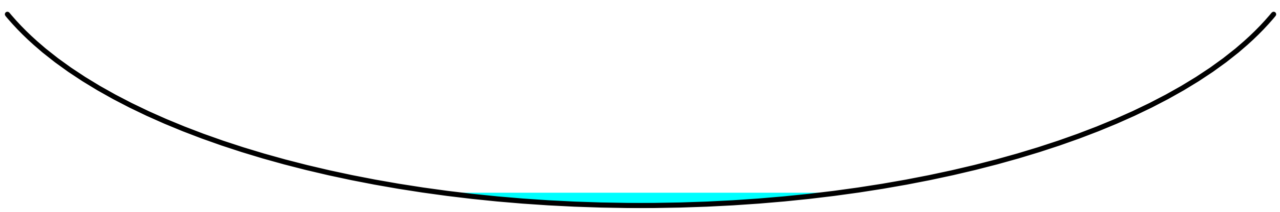
Summary for Reach 4R: 4R

Inflow Area = 1.376 ac, 84.40% Impervious, Inflow Depth > 0.89" for 2 Year event
Inflow = 0.11 cfs @ 15.65 hrs, Volume= 0.103 af
Outflow = 0.11 cfs @ 16.68 hrs, Volume= 0.092 af, Atten= 0%, Lag= 61.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.05 fps, Min. Travel Time= 35.4 min
Avg. Velocity = 0.04 fps, Avg. Travel Time= 41.5 min

Peak Storage= 233 cf @ 16.08 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 1.00' Flow Area= 133.3 sf, Capacity= 37.80 cfs

200.00' x 1.00' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush
Length= 100.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -1.00'



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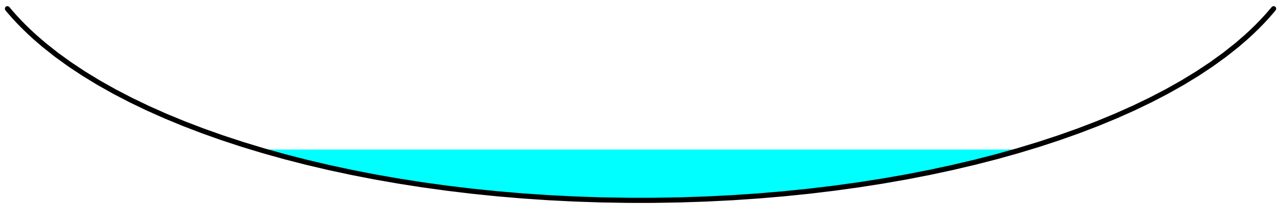
Summary for Reach 5R: 5R

Inflow Area = 9.246 ac, 0.00% Impervious, Inflow Depth > 0.88" for 2 Year event
Inflow = 4.88 cfs @ 12.62 hrs, Volume= 0.677 af
Outflow = 4.76 cfs @ 12.80 hrs, Volume= 0.669 af, Atten= 3%, Lag= 11.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.26 fps, Min. Travel Time= 6.4 min
Avg. Velocity = 0.13 fps, Avg. Travel Time= 12.6 min

Peak Storage= 1,820 cf @ 12.70 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 1.00' Flow Area= 133.3 sf, Capacity= 84.52 cfs

200.00' x 1.00' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush
Length= 100.0' Slope= 0.0500 '/'
Inlet Invert= 0.00', Outlet Invert= -5.00'



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Summary for Reach SP1: SP1

Inflow Area = 14.086 ac, 15.17% Impervious, Inflow Depth > 0.92" for 2 Year event
Inflow = 5.85 cfs @ 12.77 hrs, Volume= 1.079 af
Outflow = 5.85 cfs @ 12.77 hrs, Volume= 1.079 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach SP2: SP2

Inflow Area = 9.789 ac, 40.71% Impervious, Inflow Depth > 0.96" for 2 Year event
Inflow = 3.60 cfs @ 12.41 hrs, Volume= 0.784 af
Outflow = 3.60 cfs @ 12.41 hrs, Volume= 0.784 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: 1P

Inflow Area = 3.218 ac, 67.36% Impervious, Inflow Depth > 1.77" for 2 Year event
Inflow = 7.61 cfs @ 12.03 hrs, Volume= 0.475 af
Outflow = 0.57 cfs @ 13.07 hrs, Volume= 0.245 af, Atten= 93%, Lag= 62.5 min
Primary = 0.57 cfs @ 13.07 hrs, Volume= 0.245 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 143.17' @ 13.07 hrs Surf.Area= 10,515 sf Storage= 11,723 cf

Plug-Flow detention time= 178.3 min calculated for 0.245 af (52% of inflow)
Center-of-Mass det. time= 96.0 min (864.6 - 768.7)

Volume	Invert	Avail.Storage	Storage Description
#1	141.95'	20,930 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.95	5,637	0	0
142.00	8,752	360	360
143.00	10,374	9,563	9,923
143.50	10,782	5,289	15,212
144.00	12,092	5,719	20,930

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	**12.0" Round Culvert** L= 200.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 139.00' / 137.00' S= 0.0100 '/' Cc= 0.900

			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	141.95'	**0.598 in/hr Exfiltration over Surface area**
#3	Device 1	143.00'	**22.0" W x 5.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.57 cfs @ 13.07 hrs HW=143.17' (Free Discharge)
└─**1=Culvert** (Passes 0.57 cfs of 5.24 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.15 cfs)
  └─**3=Orifice/Grate** (Orifice Controls 0.42 cfs @ 1.33 fps)

Summary for Pond 2P: 2P

Inflow Area = 1.376 ac, 84.40% Impervious, Inflow Depth > 2.04" for 2 Year event
Inflow = 3.62 cfs @ 12.03 hrs, Volume= 0.234 af
Outflow = 0.11 cfs @ 15.65 hrs, Volume= 0.103 af, Atten= 97%, Lag= 217.3 min
Primary = 0.11 cfs @ 15.65 hrs, Volume= 0.103 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 138.34' @ 15.65 hrs Surf.Area= 7,911 sf Storage= 6,374 cf

Plug-Flow detention time= 189.4 min calculated for 0.102 af (44% of inflow)
Center-of-Mass det. time= 94.9 min (849.0 - 754.1)

Volume	Invert	Avail.Storage	Storage Description
#1	137.45'	17,331 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
137.45	2,716	0	0
137.50	6,701	235	235
138.00	7,413	3,529	3,764
139.00	8,876	8,145	11,908
139.60	9,200	5,423	17,331

Device	Routing	Invert	Outlet Devices
#1	Primary	134.50'	**12.0" Round Culvert** L= 100.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 134.50' / 133.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	137.45'	**0.598 in/hr Exfiltration over Surface area**
#3	Device 1	139.00'	**20.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Secondary	139.50'	**15.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.11 cfs @ 15.65 hrs HW=138.34' (Free Discharge)
└─**1=Culvert** (Passes 0.11 cfs of 5.93 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.11 cfs)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=137.45' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 3P: 3P

Inflow Area = 2.547 ac, 50.67% Impervious, Inflow Depth > 1.52" for 2 Year event
Inflow = 3.92 cfs @ 12.17 hrs, Volume= 0.323 af
Outflow = 0.36 cfs @ 13.69 hrs, Volume= 0.146 af, Atten= 91%, Lag= 91.1 min
Primary = 0.36 cfs @ 13.69 hrs, Volume= 0.146 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 139.06' @ 13.69 hrs Surf.Area= 8,240 sf Storage= 8,307 cf

Plug-Flow detention time= 181.7 min calculated for 0.145 af (45% of inflow)
Center-of-Mass det. time= 97.1 min (886.2 - 789.1)

Volume	Invert	Avail.Storage	Storage Description
#1	137.95'	12,142 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
137.95	3,906	0	0
138.00	7,013	273	273
139.00	8,142	7,578	7,850
139.50	9,024	4,292	12,142

Device	Routing	Invert	Outlet Devices
#1	Primary	135.00'	**12.0" Round Culvert** L= 100.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 135.00' / 134.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	137.95'	**0.598 in/hr Exfiltration over Surface area**
#3	Device 1	139.00'	**21.4" Horiz. Orifice/Grate-NFCO R-4342 Beehive Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	139.45'	**15.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.35 cfs @ 13.69 hrs HW=139.06' (Free Discharge)
└─**1=Culvert** (Passes 0.35 cfs of 6.09 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.11 cfs)
  └─**3=Orifice/Grate-NFCO R-4342 Beehive Grate** (Weir Controls 0.24 cfs @ 0.77 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=137.95' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 4aP: RD

Inflow Area = 0.882 ac, 95.86% Impervious, Inflow Depth > 2.23" for 2 Year event
Inflow = 2.55 cfs @ 12.01 hrs, Volume= 0.164 af
Outflow = 0.87 cfs @ 12.22 hrs, Volume= 0.162 af, Atten= 66%, Lag= 12.8 min
Primary = 0.87 cfs @ 12.22 hrs, Volume= 0.162 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 141.27' @ 12.22 hrs Surf.Area= 1,557 sf Storage= 1,415 cf

Plug-Flow detention time= 20.8 min calculated for 0.162 af (99% of inflow)
Center-of-Mass det. time= 16.6 min (758.7 - 742.1)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	3,114 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 7,785 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	1,557	0	0
140.00	1,557	1,557	1,557
141.00	1,557	1,557	3,114
142.00	1,557	1,557	4,671
143.00	1,557	1,557	6,228
144.00	1,557	1,557	7,785

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	**6.0" Round Culvert** L= 100.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 139.00' / 138.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Secondary	144.00'	**503.0' long x 5.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.35 2.51 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.69 2.73 2.77 2.86

Primary OutFlow Max=0.87 cfs @ 12.22 hrs HW=141.27' (Free Discharge)
└—**1=Culvert** (Barrel Controls 0.87 cfs @ 4.45 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=139.00' (Free Discharge)
└—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 4bP: RD

Inflow Area =	0.685 ac, 95.86% Impervious, Inflow Depth > 2.23"		for 2 Year event
Inflow =	1.98 cfs @ 12.01 hrs, Volume=	0.127 af	
Outflow =	0.81 cfs @ 12.16 hrs, Volume=	0.126 af,	Atten= 59%, Lag= 9.0 min
Primary =	0.81 cfs @ 12.16 hrs, Volume=	0.126 af	
Secondary =	0.00 cfs @ 5.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 140.86' @ 12.16 hrs Surf.Area= 1,210 sf Storage= 898 cf

Plug-Flow detention time= 16.3 min calculated for 0.126 af (99% of inflow)
Center-of-Mass det. time= 12.6 min (754.7 - 742.1)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	2,420 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 6,050 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	1,210	0	0
140.00	1,210	1,210	1,210
141.00	1,210	1,210	2,420
142.00	1,210	1,210	3,630
143.00	1,210	1,210	4,840
144.00	1,210	1,210	6,050

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	**6.0" Round Culvert** L= 100.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 139.00' / 138.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Secondary	144.00'	**503.0' long x 5.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.35 2.51 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.69 2.73 2.77 2.86

Primary OutFlow Max=0.81 cfs @ 12.16 hrs HW=140.85' (Free Discharge)
└—**1=Culvert** (Barrel Controls 0.81 cfs @ 4.10 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=139.00' (Free Discharge)
└—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6P: 6P

Inflow Area =	9.246 ac,	0.00% Impervious,	Inflow Depth > 0.88"	for 2 Year event
Inflow =	4.88 cfs @	12.62 hrs,	Volume=	0.677 af
Outflow =	4.88 cfs @	12.62 hrs,	Volume=	0.677 af, Atten= 0%, Lag= 0.1 min
Primary =	4.88 cfs @	12.62 hrs,	Volume=	0.677 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 144.01' @ 12.62 hrs Surf.Area= 3,984 sf Storage= 29 cf

Plug-Flow detention time= 0.1 min calculated for 0.677 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (840.8 - 840.7)

Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	7,720 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

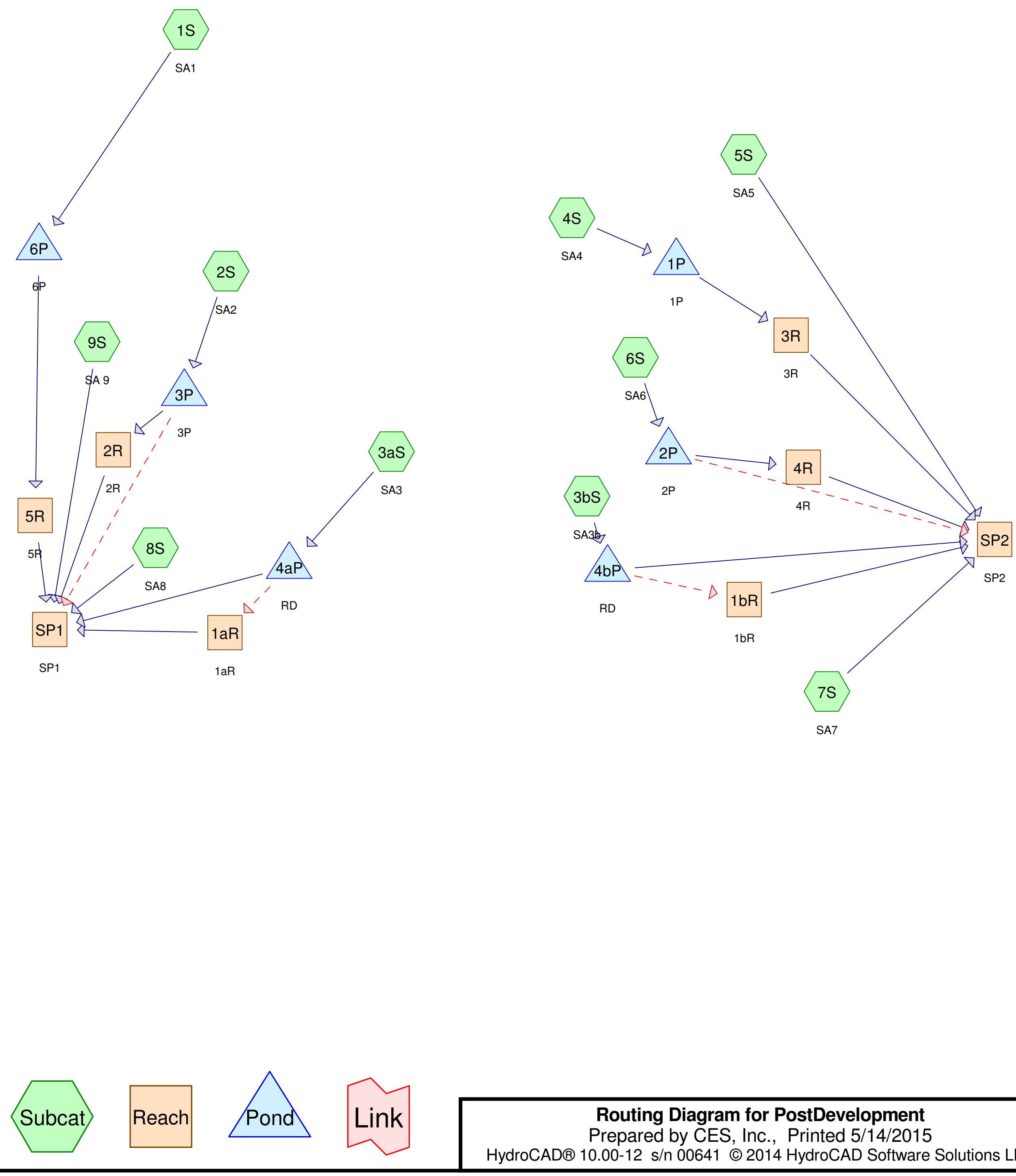
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
144.00	3,972	0	0
145.50	6,321	7,720	7,720

Device	Routing	Invert	Outlet Devices
#1	Primary	140.00'	**18.0" Round Culvert** L= 500.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 140.00' / 137.50' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=9.87 cfs @ 12.62 hrs HW=144.01' (Free Discharge)
└─**1=Culvert** (Barrel Controls 9.87 cfs @ 5.58 fps)

CES INC

POST DEVELOPMENT - 10 YEAR



Routing Diagram for PostDevelopment
Prepared by CES, Inc., Printed 5/14/2015
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.903	80	>75% Grass cover, Good, HSG D (1S, 2S, 4S, 5S, 6S, 7S, 8S, 9S)
6.122	98	Impervious, HSG D (2S, 3aS, 3bS, 4S, 6S)
1.389	78	Meadow, non-grazed, HSG D (1S, 5S)
0.065	66	Roof Dripline (3aS, 3bS)
12.397	79	Woods, Fair, HSG D (1S, 5S, 7S, 8S, 9S)
23.875	**84**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
23.810	HSG D	1S, 2S, 3aS, 3bS, 4S, 5S, 6S, 7S, 8S, 9S
0.065	Other	3aS, 3bS
23.875		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	3.903	0.000	3.903	>75% Grass cover, Good	1S, 2S, 4S, 5S, 6S, 7S, 8S, 9S
0.000	0.000	0.000	6.122	0.000	6.122	Impervious	2S, 3aS, 3bS, 4S, 6S
0.000	0.000	0.000	1.389	0.000	1.389	Meadow, non-grazed	1S, 5S
0.000	0.000	0.000	0.000	0.065	0.065	Roof Dripline	3aS, 3bS
0.000	0.000	0.000	12.397	0.000	12.397	Woods, Fair	1S, 5S, 7S, 8S, 9S
0.000	**0.000**	**0.000**	**23.810**	**0.065**	**23.875**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	139.00	137.00	200.0	0.0100	0.013	12.0	0.0	0.0
2	2P	134.50	133.50	100.0	0.0100	0.013	12.0	0.0	0.0
3	3P	135.00	134.00	100.0	0.0100	0.013	12.0	0.0	0.0
4	4aP	139.00	138.00	100.0	0.0100	0.013	6.0	0.0	0.0
5	4bP	139.00	138.00	100.0	0.0100	0.013	6.0	0.0	0.0
6	6P	140.00	137.50	500.0	0.0050	0.013	18.0	0.0	0.0

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SA1 Runoff Area=402,743 sf 0.00% Impervious Runoff Depth>1.87"
Flow Length=1,165' Tc=41.9 min CN=79 Runoff=10.61 cfs 1.444 af

Subcatchment 2S: SA2 Runoff Area=110,958 sf 50.67% Impervious Runoff Depth>2.74"
Flow Length=520' Tc=12.5 min CN=89 Runoff=6.91 cfs 0.582 af

Subcatchment 3aS: SA3 Runoff Area=38,427 sf 95.86% Impervious Runoff Depth>3.52"
Flow Length=115' Slope=0.1670 '/' Tc=0.6 min CN=97 Runoff=3.96 cfs 0.259 af

Subcatchment 3bS: SA3b Runoff Area=29,845 sf 95.86% Impervious Runoff Depth>3.52"
Flow Length=115' Slope=0.1670 '/' Tc=0.6 min CN=97 Runoff=3.07 cfs 0.201 af

Subcatchment 4S: SA4 Runoff Area=140,184 sf 67.36% Impervious Runoff Depth>3.04"
Flow Length=150' Tc=1.7 min CN=92 Runoff=12.67 cfs 0.815 af

Subcatchment 5S: SA5 Runoff Area=136,118 sf 0.00% Impervious Runoff Depth>1.88"
Flow Length=750' Tc=34.0 min CN=79 Runoff=3.98 cfs 0.489 af

Subcatchment 6S: SA6 Runoff Area=59,924 sf 84.40% Impervious Runoff Depth>3.33"
Flow Length=260' Tc=1.9 min CN=95 Runoff=5.75 cfs 0.382 af

Subcatchment 7S: SA7 Runoff Area=60,331 sf 0.00% Impervious Runoff Depth>1.89"
Flow Length=180' Tc=20.1 min CN=79 Runoff=2.22 cfs 0.218 af

Subcatchment 8S: SA8 Runoff Area=47,172 sf 0.00% Impervious Runoff Depth>1.89"
Flow Length=190' Tc=19.2 min CN=79 Runoff=1.77 cfs 0.171 af

Subcatchment 9S: SA 9 Runoff Area=14,300 sf 0.00% Impervious Runoff Depth>1.97"
Flow Length=290' Tc=12.8 min CN=80 Runoff=0.65 cfs 0.054 af

Reach 1aR: 1aR Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.400 L=100.0' S=0.0200 '/' Capacity=133.65 cfs Outflow=0.00 cfs 0.000 af

Reach 1bR: 1bR Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.400 L=100.0' S=0.0200 '/' Capacity=133.65 cfs Outflow=0.00 cfs 0.000 af

Reach 2R: 2R Avg. Flow Depth=0.32' Max Vel=0.13 fps Inflow=3.43 cfs 0.400 af
n=0.400 L=50.0' S=0.0100 '/' Capacity=37.80 cfs Outflow=3.19 cfs 0.395 af

Reach 3R: 3R Avg. Flow Depth=0.29' Max Vel=0.12 fps Inflow=2.69 cfs 0.577 af
n=0.400 L=100.0' S=0.0100 '/' Capacity=37.80 cfs Outflow=2.50 cfs 0.564 af

Reach 4R: 4R Avg. Flow Depth=0.07' Max Vel=0.05 fps Inflow=0.12 cfs 0.122 af
n=0.400 L=100.0' S=0.0100 '/' Capacity=37.80 cfs Outflow=0.12 cfs 0.110 af

Reach 5R: 5R Avg. Flow Depth=0.37' Max Vel=0.33 fps Inflow=9.97 cfs 1.444 af
n=0.400 L=100.0' S=0.0500 '/' Capacity=84.52 cfs Outflow=9.95 cfs 1.433 af

Reach SP1: SP1 Inflow=14.85 cfs 2.309 af
Outflow=14.85 cfs 2.309 af

Reach SP2: SP2 Inflow=8.16 cfs 1.581 af
Outflow=8.16 cfs 1.581 af

Pond 1P: 1P Peak Elev=143.69' Storage=17,311 cf Inflow=12.67 cfs 0.815 af
Outflow=2.69 cfs 0.577 af

Pond 2P: 2P Peak Elev=138.98' Storage=11,691 cf Inflow=5.75 cfs 0.382 af
Primary=0.12 cfs 0.122 af Secondary=0.00 cfs 0.000 af Outflow=0.12 cfs 0.122 af

Pond 3P: 3P Peak Elev=139.32' Storage=10,544 cf Inflow=6.91 cfs 0.582 af
Primary=3.43 cfs 0.400 af Secondary=0.00 cfs 0.000 af Outflow=3.43 cfs 0.400 af

Pond 4aP: RD Peak Elev=143.18' Storage=2,602 cf Inflow=3.96 cfs 0.259 af
Primary=1.14 cfs 0.257 af Secondary=0.00 cfs 0.000 af Outflow=1.14 cfs 0.257 af

Pond 4bP: RD Peak Elev=142.49' Storage=1,689 cf Inflow=3.07 cfs 0.201 af
Primary=1.05 cfs 0.200 af Secondary=0.00 cfs 0.000 af Outflow=1.05 cfs 0.200 af

Pond 6P: 6P Peak Elev=144.11' Storage=463 cf Inflow=10.61 cfs 1.444 af
18.0" Round Culvert n=0.013 L=500.0' S=0.0050 '/' Outflow=9.97 cfs 1.444 af

Total Runoff Area = 23.875 ac Runoff Volume = 4.615 af Average Runoff Depth = 2.32"
74.36% Pervious = 17.753 ac 25.64% Impervious = 6.122 ac

Summary for Subcatchment 1S: SA1

Runoff = 10.61 cfs @ 12.59 hrs, Volume= 1.444 af, Depth> 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.10"

Area (sf)	CN	Description
24,192	78	Meadow, non-grazed, HSG D
362,489	79	Woods, Fair, HSG D
16,062	80	>75% Grass cover, Good, HSG D
402,743	79	Weighted Average
402,743		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.7	100	0.0400	0.09		**Sheet Flow, SF 1-1** Woods: Light underbrush n= 0.400 P2= 2.70"
18.5	785	0.0200	0.71		**Shallow Concentrated Flow, SCF 1-1** Woodland Kv= 5.0 fps
2.1	90	0.0100	0.70		**Shallow Concentrated Flow, SCF 1-2** Short Grass Pasture Kv= 7.0 fps
1.6	70	0.0200	0.71		**Shallow Concentrated Flow, SCF 1-3** Woodland Kv= 5.0 fps
2.0	120	0.0200	0.99		**Shallow Concentrated Flow, SCF 1-4** Short Grass Pasture Kv= 7.0 fps
41.9	1,165	Total			

Summary for Subcatchment 2S: SA2

Runoff = 6.91 cfs @ 12.17 hrs, Volume= 0.582 af, Depth> 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.10"

Area (sf)	CN	Description
56,218	98	Impervious, HSG D
54,740	80	>75% Grass cover, Good, HSG D
110,958	89	Weighted Average
54,740		49.33% Pervious Area
56,218		50.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	40	0.0200	1.05		**Sheet Flow, SF 2-1** Smooth surfaces n= 0.011 P2= 2.70"
10.3	60	0.0200	0.10		**Sheet Flow, SF 2-2** Grass: Dense n= 0.240 P2= 2.70"
0.5	30	0.0200	0.99		**Sheet Flow, SF 2-3** Smooth surfaces n= 0.011 P2= 2.70"
0.6	110	0.0200	2.87		**Shallow Concentrated Flow, SCF 2-1** Paved Kv= 20.3 fps
0.5	280	0.0140	9.46	529.89	**Trap/Vee/Rect Channel Flow, CF 2-1** Bot.W=2.00' D=4.00' Z= 3.0 '/' Top.W=26.00' n= 0.030 Stream, clean & straight
12.5	520	Total			

Summary for Subcatchment 3aS: SA3

Runoff = 3.96 cfs @ 12.01 hrs, Volume= 0.259 af, Depth> 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.10"

	Area (sf)	CN	Description
	36,835	98	Impervious, HSG D
*	1,592	66	Roof Dripline
	38,427	97	Weighted Average
	1,592		4.14% Pervious Area
	36,835		95.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	115	0.1670	3.04		**Sheet Flow, SF 3-1** Smooth surfaces n= 0.011 P2= 2.70"

Summary for Subcatchment 3bS: SA3b

Runoff = 3.07 cfs @ 12.01 hrs, Volume= 0.201 af, Depth> 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.10"

	Area (sf)	CN	Description
	28,609	98	Impervious, HSG D
*	1,236	66	Roof Dripline
	29,845	97	Weighted Average
	1,236		4.14% Pervious Area
	28,609		95.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	115	0.1670	3.04		**Sheet Flow, SF 3-1** Smooth surfaces n= 0.011 P2= 2.70"

Summary for Subcatchment 4S: SA4

Runoff = 12.67 cfs @ 12.03 hrs, Volume= 0.815 af, Depth> 3.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.10"

	Area (sf)	CN	Description
	45,759	80	>75% Grass cover, Good, HSG D
*	94,425	98	Impervious, HSG D
	140,184	92	Weighted Average
	45,759		32.64% Pervious Area
	94,425		67.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	140	0.0200	1.35		**Sheet Flow, SF 4-1** Smooth surfaces n= 0.011 P2= 2.70"
0.0	10	0.1000	4.74		**Shallow Concentrated Flow, SCF 4-1** Grassed Waterway Kv= 15.0 fps
1.7	150	Total			

Summary for Subcatchment 5S: SA5

Runoff = 3.98 cfs @ 12.48 hrs, Volume= 0.489 af, Depth> 1.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.10"

Area (sf)	CN	Description
11,975	80	>75% Grass cover, Good, HSG D
36,307	78	Meadow, non-grazed, HSG D
87,836	79	Woods, Fair, HSG D
136,118	79	Weighted Average
136,118		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	100	0.0500	0.10		**Sheet Flow, SF 5-1** Woods: Light underbrush n= 0.400 P2= 2.70"
7.0	210	0.0100	0.50		**Shallow Concentrated Flow, SCF 5-1** Woodland Kv= 5.0 fps
2.4	100	0.0100	0.70		**Shallow Concentrated Flow, SCF 5-2** Short Grass Pasture Kv= 7.0 fps
8.4	340	0.0180	0.67		**Shallow Concentrated Flow, SCF 5-3** Woodland Kv= 5.0 fps
34.0	750	Total			

Summary for Subcatchment 6S: SA6

Runoff = 5.75 cfs @ 12.03 hrs, Volume= 0.382 af, Depth> 3.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.10"

Area (sf)	CN	Description
9,350	80	>75% Grass cover, Good, HSG D
50,574	98	Impervious, HSG D
59,924	95	Weighted Average
9,350		15.60% Pervious Area
50,574		84.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	90	0.0330	1.51		**Sheet Flow, SF 6-1** Smooth surfaces n= 0.011 P2= 2.70"
0.9	170	0.0240	3.14		**Shallow Concentrated Flow, SCF 6-1** Paved Kv= 20.3 fps
1.9	260	Total			

Summary for Subcatchment 7S: SA7

Runoff = 2.22 cfs @ 12.28 hrs, Volume= 0.218 af, Depth> 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.10"

Area (sf)	CN	Description
50,265	79	Woods, Fair, HSG D
10,066	80	>75% Grass cover, Good, HSG D
60,331	79	Weighted Average
60,331		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	40	0.1000	0.17		**Sheet Flow, SF 7-1** Grass: Dense n= 0.240 P2= 2.70"
14.2	60	0.0250	0.07		**Sheet Flow, SF 7-2** Woods: Light underbrush n= 0.400 P2= 2.70"
2.0	80	0.0170	0.65		**Shallow Concentrated Flow, SCF 7-1** Woodland Kv= 5.0 fps
20.1	180	Total			

Summary for Subcatchment 8S: SA8

Runoff = 1.77 cfs @ 12.27 hrs, Volume= 0.171 af, Depth> 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.10"

Area (sf)	CN	Description
37,393	79	Woods, Fair, HSG D
9,779	80	>75% Grass cover, Good, HSG D
47,172	79	Weighted Average
47,172		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	40	0.1000	0.17		**Sheet Flow, SF 8-1** Grass: Dense n= 0.240 P2= 2.70"
13.2	60	0.0300	0.08		**Sheet Flow, SF 8-2** Woods: Light underbrush n= 0.400 P2= 2.70"
2.1	90	0.0200	0.71		**Shallow Concentrated Flow, SCF 8-1** Woodland Kv= 5.0 fps
19.2	190	Total			

Summary for Subcatchment 9S: SA 9

Runoff = 0.65 cfs @ 12.18 hrs, Volume= 0.054 af, Depth> 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.10"

Area (sf)	CN	Description
12,287	80	>75% Grass cover, Good, HSG D
2,013	79	Woods, Fair, HSG D
14,300	80	Weighted Average
14,300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0500	0.15		**Sheet Flow, SF 9-1**
					Grass: Dense n= 0.240 P2= 2.70"
1.6	160	0.0600	1.71		**Shallow Concentrated Flow, SCF 9-1**
					Short Grass Pasture Kv= 7.0 fps
0.4	30	0.0500	1.12		**Shallow Concentrated Flow, SCF 9-2**
					Woodland Kv= 5.0 fps
12.8	290	Total			

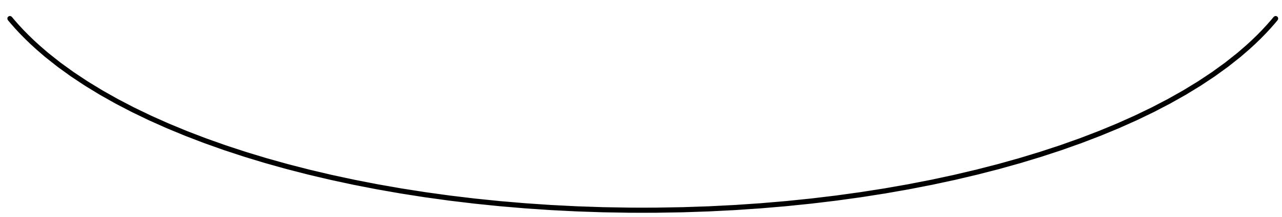
Summary for Reach 1aR: 1aR

Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 333.3 sf, Capacity= 133.65 cfs

500.00' x 1.00' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush
Length= 100.0' Slope= 0.0200 '/'
Inlet Invert= 0.00', Outlet Invert= -2.00'



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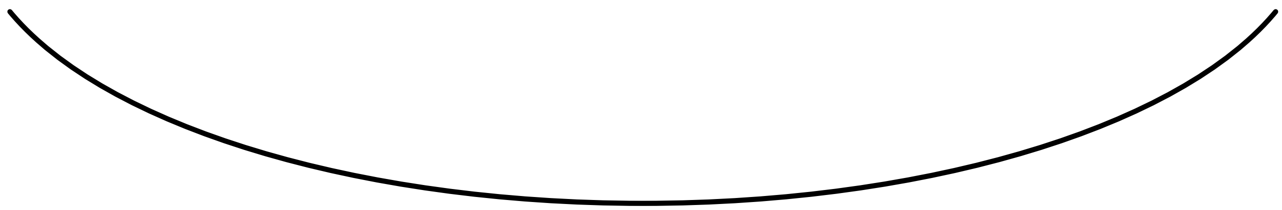
Summary for Reach 1bR: 1bR

Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 333.3 sf, Capacity= 133.65 cfs

500.00' x 1.00' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush
Length= 100.0' Slope= 0.0200 '/'
Inlet Invert= 0.00', Outlet Invert= -2.00'



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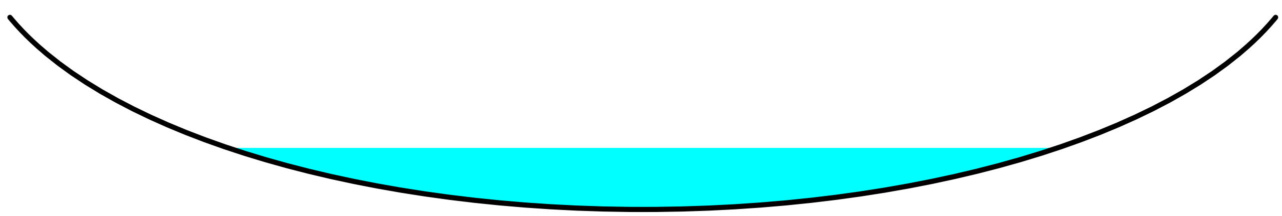
Summary for Reach 2R: 2R

Inflow Area = 2.547 ac, 50.67% Impervious, Inflow Depth > 1.88" for 10 Year event
Inflow = 3.43 cfs @ 12.43 hrs, Volume= 0.400 af
Outflow = 3.19 cfs @ 12.64 hrs, Volume= 0.395 af, Atten= 7%, Lag= 12.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.13 fps, Min. Travel Time= 6.3 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 15.2 min

Peak Storage= 1,206 cf @ 12.53 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 1.00' Flow Area= 133.3 sf, Capacity= 37.80 cfs

200.00' x 1.00' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush
Length= 50.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.50'



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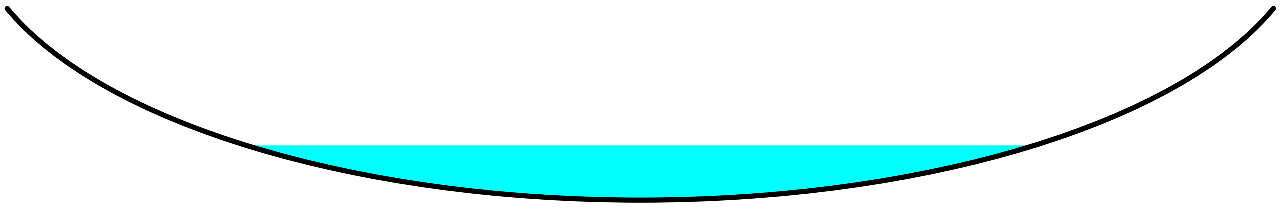
Summary for Reach 3R: 3R

Inflow Area = 3.218 ac, 67.36% Impervious, Inflow Depth > 2.15" for 10 Year event
Inflow = 2.69 cfs @ 12.42 hrs, Volume= 0.577 af
Outflow = 2.50 cfs @ 12.88 hrs, Volume= 0.564 af, Atten= 7%, Lag= 27.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.12 fps, Min. Travel Time= 13.6 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 26.9 min

Peak Storage= 2,035 cf @ 12.65 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 133.3 sf, Capacity= 37.80 cfs

200.00' x 1.00' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush
Length= 100.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -1.00'



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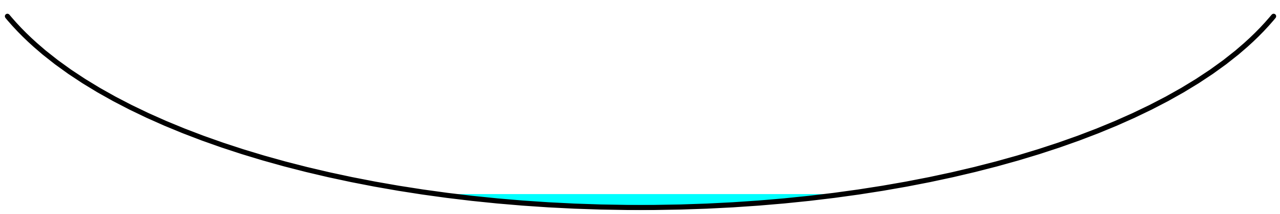
Summary for Reach 4R: 4R

Inflow Area = 1.376 ac, 84.40% Impervious, Inflow Depth > 1.06" for 10 Year event
Inflow = 0.12 cfs @ 16.86 hrs, Volume= 0.122 af
Outflow = 0.12 cfs @ 17.83 hrs, Volume= 0.110 af, Atten= 0%, Lag= 58.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.05 fps, Min. Travel Time= 34.3 min
Avg. Velocity = 0.04 fps, Avg. Travel Time= 38.4 min

Peak Storage= 252 cf @ 17.26 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 1.00' Flow Area= 133.3 sf, Capacity= 37.80 cfs

200.00' x 1.00' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush
Length= 100.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -1.00'



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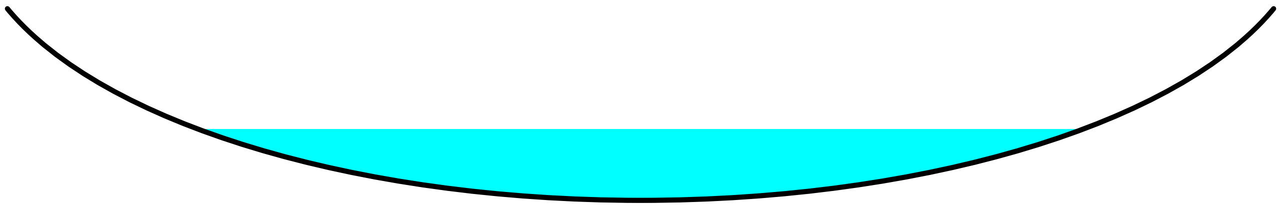
Summary for Reach 5R: 5R

Inflow Area = 9.246 ac, 0.00% Impervious, Inflow Depth > 1.87" for 10 Year event
Inflow = 9.97 cfs @ 12.71 hrs, Volume= 1.444 af
Outflow = 9.95 cfs @ 12.86 hrs, Volume= 1.433 af, Atten= 0%, Lag= 8.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.33 fps, Min. Travel Time= 5.1 min
Avg. Velocity = 0.16 fps, Avg. Travel Time= 10.7 min

Peak Storage= 3,033 cf @ 12.77 hrs
Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 1.00' Flow Area= 133.3 sf, Capacity= 84.52 cfs

200.00' x 1.00' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush
Length= 100.0' Slope= 0.0500 '/'
Inlet Invert= 0.00', Outlet Invert= -5.00'



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Summary for Reach SP1: SP1

Inflow Area = 14.086 ac, 15.17% Impervious, Inflow Depth > 1.97" for 10 Year event
Inflow = 14.85 cfs @ 12.65 hrs, Volume= 2.309 af
Outflow = 14.85 cfs @ 12.65 hrs, Volume= 2.309 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach SP2: SP2

Inflow Area = 9.789 ac, 40.71% Impervious, Inflow Depth > 1.94" for 10 Year event
Inflow = 8.16 cfs @ 12.51 hrs, Volume= 1.581 af
Outflow = 8.16 cfs @ 12.51 hrs, Volume= 1.581 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: 1P

Inflow Area = 3.218 ac, 67.36% Impervious, Inflow Depth > 3.04" for 10 Year event
Inflow = 12.67 cfs @ 12.03 hrs, Volume= 0.815 af
Outflow = 2.69 cfs @ 12.42 hrs, Volume= 0.577 af, Atten= 79%, Lag= 23.3 min
Primary = 2.69 cfs @ 12.42 hrs, Volume= 0.577 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 143.69' @ 12.42 hrs Surf.Area= 11,280 sf Storage= 17,311 cf

Plug-Flow detention time= 133.9 min calculated for 0.575 af (70% of inflow)
Center-of-Mass det. time= 68.7 min (824.8 - 756.1)

Volume	Invert	Avail.Storage	Storage Description
#1	141.95'	20,930 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.95	5,637	0	0
142.00	8,752	360	360
143.00	10,374	9,563	9,923
143.50	10,782	5,289	15,212
144.00	12,092	5,719	20,930

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	**12.0" Round Culvert** L= 200.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 139.00' / 137.00' S= 0.0100 '/' Cc= 0.900

			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	141.95'	**0.598 in/hr Exfiltration over Surface area**
#3	Device 1	143.00'	**22.0" W x 5.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.69 cfs @ 12.42 hrs HW=143.69' (Free Discharge)
└─**1=Culvert** (Passes 2.69 cfs of 5.50 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.16 cfs)
  └─**3=Orifice/Grate** (Orifice Controls 2.53 cfs @ 3.31 fps)

Summary for Pond 2P: 2P

Inflow Area = 1.376 ac, 84.40% Impervious, Inflow Depth > 3.33" for 10 Year event
Inflow = 5.75 cfs @ 12.03 hrs, Volume= 0.382 af
Outflow = 0.12 cfs @ 16.86 hrs, Volume= 0.122 af, Atten= 98%, Lag= 289.4 min
Primary = 0.12 cfs @ 16.86 hrs, Volume= 0.122 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 138.98' @ 16.86 hrs Surf.Area= 8,840 sf Storage= 11,691 cf

Plug-Flow detention time= 203.5 min calculated for 0.121 af (32% of inflow)
Center-of-Mass det. time= 77.4 min (822.6 - 745.1)

Volume	Invert	Avail.Storage	Storage Description
#1	137.45'	17,331 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
137.45	2,716	0	0
137.50	6,701	235	235
138.00	7,413	3,529	3,764
139.00	8,876	8,145	11,908
139.60	9,200	5,423	17,331

Device	Routing	Invert	Outlet Devices
#1	Primary	134.50'	**12.0" Round Culvert** L= 100.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 134.50' / 133.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	137.45'	**0.598 in/hr Exfiltration over Surface area**
#3	Device 1	139.00'	**20.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Secondary	139.50'	**15.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.12 cfs @ 16.86 hrs HW=138.98' (Free Discharge)
└─**1=Culvert** (Passes 0.12 cfs of 6.40 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.12 cfs)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=137.45' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 3P: 3P

Inflow Area =	2.547 ac, 50.67% Impervious,	Inflow Depth > 2.74"	for 10 Year event	
Inflow =	6.91 cfs @	12.17 hrs, Volume=	0.582 af	
Outflow =	3.43 cfs @	12.43 hrs, Volume=	0.400 af,	Atten= 50%, Lag= 15.7 min
Primary =	3.43 cfs @	12.43 hrs, Volume=	0.400 af	
Secondary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 139.32' @ 12.43 hrs Surf.Area= 8,706 sf Storage= 10,544 cf

Plug-Flow detention time= 116.7 min calculated for 0.400 af (69% of inflow)
Center-of-Mass det. time= 49.7 min (824.9 - 775.2)

Volume	Invert	Avail.Storage	Storage Description
#1	137.95'	12,142 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
137.95	3,906	0	0
138.00	7,013	273	273
139.00	8,142	7,578	7,850
139.50	9,024	4,292	12,142

Device	Routing	Invert	Outlet Devices
#1	Primary	135.00'	**12.0" Round Culvert** L= 100.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 135.00' / 134.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	137.95'	**0.598 in/hr Exfiltration over Surface area**
#3	Device 1	139.00'	**21.4" Horiz. Orifice/Grate-NFCO R-4342 Beehive Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	139.45'	**15.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=3.42 cfs @ 12.43 hrs HW=139.32' (Free Discharge)
└─**1=Culvert** (Passes 3.42 cfs of 6.29 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.12 cfs)
  └─**3=Orifice/Grate-NFCO R-4342 Beehive Grate** (Weir Controls 3.30 cfs @ 1.85 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=137.95' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 4aP: RD

Inflow Area = 0.882 ac, 95.86% Impervious, Inflow Depth > 3.52" for 10 Year event
Inflow = 3.96 cfs @ 12.01 hrs, Volume= 0.259 af
Outflow = 1.14 cfs @ 12.29 hrs, Volume= 0.257 af, Atten= 71%, Lag= 16.8 min
Primary = 1.14 cfs @ 12.29 hrs, Volume= 0.257 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 143.18' @ 12.29 hrs Surf.Area= 1,557 sf Storage= 2,602 cf

Plug-Flow detention time= 23.5 min calculated for 0.256 af (99% of inflow)
Center-of-Mass det. time= 20.0 min (756.3 - 736.3)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	3,114 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 7,785 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	1,557	0	0
140.00	1,557	1,557	1,557
141.00	1,557	1,557	3,114
142.00	1,557	1,557	4,671
143.00	1,557	1,557	6,228
144.00	1,557	1,557	7,785

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	**6.0" Round Culvert** L= 100.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 139.00' / 138.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Secondary	144.00'	**503.0' long x 5.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.35 2.51 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.69 2.73 2.77 2.86

Primary OutFlow Max=1.13 cfs @ 12.29 hrs HW=143.17' (Free Discharge)
└─**1=Culvert** (Barrel Controls 1.13 cfs @ 5.78 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=139.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 4bP: RD

Inflow Area = 0.685 ac, 95.86% Impervious, Inflow Depth > 3.52" for 10 Year event
Inflow = 3.07 cfs @ 12.01 hrs, Volume= 0.201 af
Outflow = 1.05 cfs @ 12.22 hrs, Volume= 0.200 af, Atten= 66%, Lag= 12.7 min
Primary = 1.05 cfs @ 12.22 hrs, Volume= 0.200 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 142.49' @ 12.22 hrs Surf.Area= 1,210 sf Storage= 1,689 cf

Plug-Flow detention time= 17.7 min calculated for 0.199 af (99% of inflow)
Center-of-Mass det. time= 14.6 min (750.9 - 736.3)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	2,420 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 6,050 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	1,210	0	0
140.00	1,210	1,210	1,210
141.00	1,210	1,210	2,420
142.00	1,210	1,210	3,630
143.00	1,210	1,210	4,840
144.00	1,210	1,210	6,050

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	**6.0" Round Culvert** L= 100.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 139.00' / 138.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Secondary	144.00'	**503.0' long x 5.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.35 2.51 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.69 2.73 2.77 2.86

Primary OutFlow Max=1.05 cfs @ 12.22 hrs HW=142.49' (Free Discharge)
└─**1=Culvert** (Barrel Controls 1.05 cfs @ 5.34 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=139.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6P: 6P

Inflow Area =	9.246 ac,	0.00% Impervious,	Inflow Depth > 1.87"	for 10 Year event	
Inflow =	10.61 cfs @	12.59 hrs,	Volume=	1.444 af	
Outflow =	9.97 cfs @	12.71 hrs,	Volume=	1.444 af,	Atten= 6%, Lag= 7.3 min
Primary =	9.97 cfs @	12.71 hrs,	Volume=	1.444 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 144.11' @ 12.71 hrs Surf.Area= 4,151 sf Storage= 463 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.2 min (824.7 - 824.5)

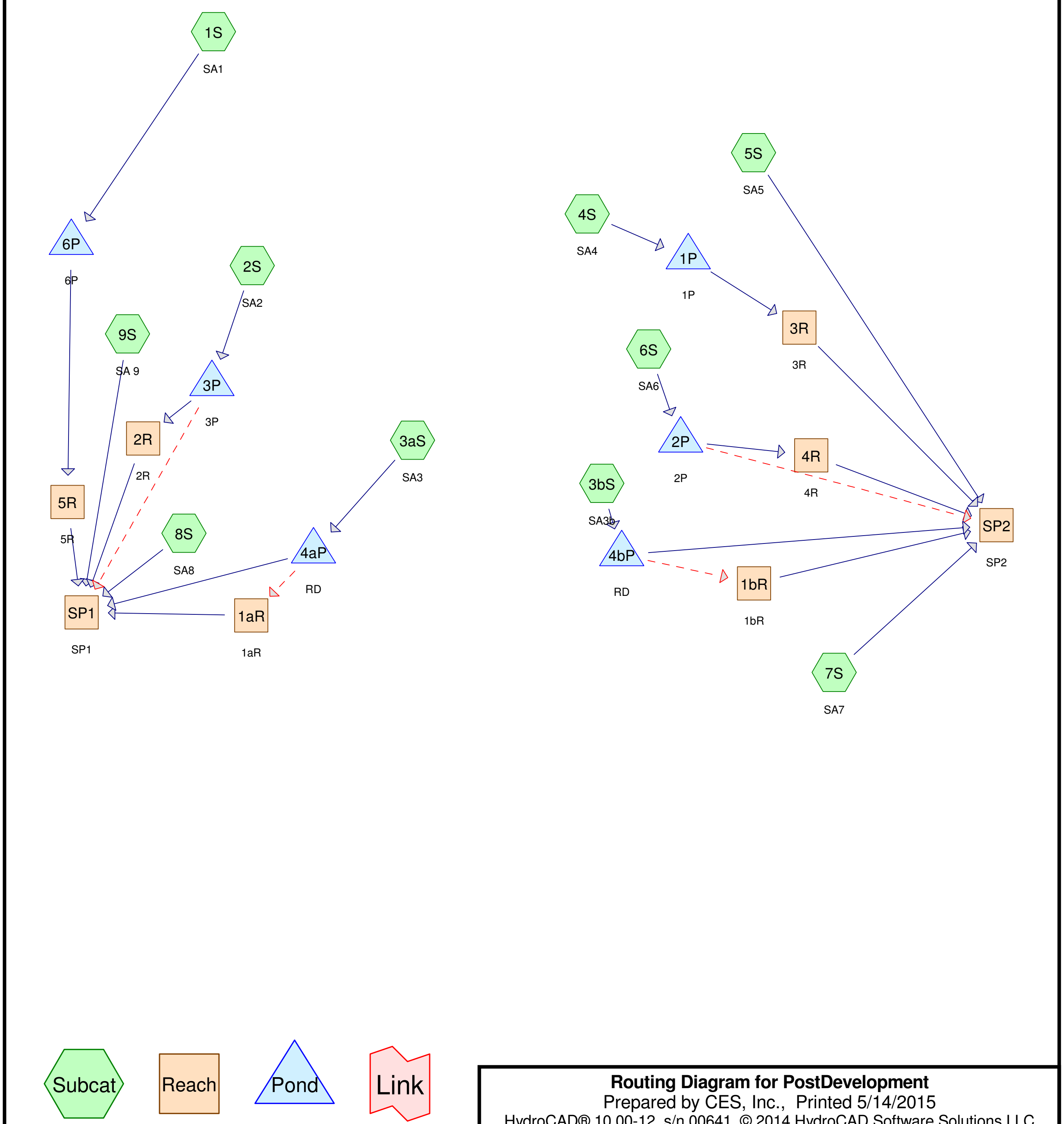
Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	7,720 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
144.00	3,972	0	0
145.50	6,321	7,720	7,720

Device	Routing	Invert	Outlet Devices
#1	Primary	140.00'	**18.0" Round Culvert** L= 500.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 140.00' / 137.50' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=9.97 cfs @ 12.71 hrs HW=144.11' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 9.97 cfs @ 5.64 fps)

POST DEVELOPMENT - 25 YEAR



Routing Diagram for PostDevelopment
Prepared by CES, Inc., Printed 5/14/2015
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.903	80	>75% Grass cover, Good, HSG D (1S, 2S, 4S, 5S, 6S, 7S, 8S, 9S)
6.122	98	Impervious, HSG D (2S, 3aS, 3bS, 4S, 6S)
1.389	78	Meadow, non-grazed, HSG D (1S, 5S)
0.065	66	Roof Dripline (3aS, 3bS)
12.397	79	Woods, Fair, HSG D (1S, 5S, 7S, 8S, 9S)
23.875	**84**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
23.810	HSG D	1S, 2S, 3aS, 3bS, 4S, 5S, 6S, 7S, 8S, 9S
0.065	Other	3aS, 3bS
23.875		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	3.903	0.000	3.903	>75% Grass cover, Good	1S, 2S, 4S, 5S, 6S, 7S, 8S, 9S
0.000	0.000	0.000	6.122	0.000	6.122	Impervious	2S, 3aS, 3bS, 4S, 6S
0.000	0.000	0.000	1.389	0.000	1.389	Meadow, non-grazed	1S, 5S
0.000	0.000	0.000	0.000	0.065	0.065	Roof Dripline	3aS, 3bS
0.000	0.000	0.000	12.397	0.000	12.397	Woods, Fair	1S, 5S, 7S, 8S, 9S
0.000	**0.000**	**0.000**	**23.810**	**0.065**	**23.875**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	139.00	137.00	200.0	0.0100	0.013	12.0	0.0	0.0
2	2P	134.50	133.50	100.0	0.0100	0.013	12.0	0.0	0.0
3	3P	135.00	134.00	100.0	0.0100	0.013	12.0	0.0	0.0
4	4aP	139.00	138.00	100.0	0.0100	0.013	6.0	0.0	0.0
5	4bP	139.00	138.00	100.0	0.0100	0.013	6.0	0.0	0.0
6	6P	140.00	137.50	500.0	0.0050	0.013	18.0	0.0	0.0

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SA1 Runoff Area=402,743 sf 0.00% Impervious Runoff Depth>2.42"
Flow Length=1,165' Tc=41.9 min CN=79 Runoff=13.69 cfs 1.865 af

Subcatchment 2S: SA2 Runoff Area=110,958 sf 50.67% Impervious Runoff Depth>3.37"
Flow Length=520' Tc=12.5 min CN=89 Runoff=8.41 cfs 0.716 af

Subcatchment 3aS: SA3 Runoff Area=38,427 sf 95.86% Impervious Runoff Depth>4.16"
Flow Length=115' Slope=0.1670 '/' Tc=0.6 min CN=97 Runoff=4.66 cfs 0.306 af

Subcatchment 3bS: SA3b Runoff Area=29,845 sf 95.86% Impervious Runoff Depth>4.16"
Flow Length=115' Slope=0.1670 '/' Tc=0.6 min CN=97 Runoff=3.62 cfs 0.237 af

Subcatchment 4S: SA4 Runoff Area=140,184 sf 67.36% Impervious Runoff Depth>3.68"
Flow Length=150' Tc=1.7 min CN=92 Runoff=15.18 cfs 0.988 af

Subcatchment 5S: SA5 Runoff Area=136,118 sf 0.00% Impervious Runoff Depth>2.43"
Flow Length=750' Tc=34.0 min CN=79 Runoff=5.13 cfs 0.632 af

Subcatchment 6S: SA6 Runoff Area=59,924 sf 84.40% Impervious Runoff Depth>3.98"
Flow Length=260' Tc=1.9 min CN=95 Runoff=6.81 cfs 0.456 af

Subcatchment 7S: SA7 Runoff Area=60,331 sf 0.00% Impervious Runoff Depth>2.44"
Flow Length=180' Tc=20.1 min CN=79 Runoff=2.86 cfs 0.282 af

Subcatchment 8S: SA8 Runoff Area=47,172 sf 0.00% Impervious Runoff Depth>2.44"
Flow Length=190' Tc=19.2 min CN=79 Runoff=2.28 cfs 0.220 af

Subcatchment 9S: SA 9 Runoff Area=14,300 sf 0.00% Impervious Runoff Depth>2.53"
Flow Length=290' Tc=12.8 min CN=80 Runoff=0.83 cfs 0.069 af

Reach 1aR: 1aR Avg. Flow Depth=0.02' Max Vel=0.03 fps Inflow=0.50 cfs 0.003 af
n=0.400 L=100.0' S=0.0200 '/' Capacity=133.65 cfs Outflow=0.04 cfs 0.003 af

Reach 1bR: 1bR Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.400 L=100.0' S=0.0200 '/' Capacity=133.65 cfs Outflow=0.00 cfs 0.000 af

Reach 2R: 2R Avg. Flow Depth=0.39' Max Vel=0.15 fps Inflow=5.36 cfs 0.532 af
n=0.400 L=50.0' S=0.0100 '/' Capacity=37.80 cfs Outflow=5.02 cfs 0.527 af

Reach 3R: 3R Avg. Flow Depth=0.32' Max Vel=0.13 fps Inflow=3.39 cfs 0.745 af
n=0.400 L=100.0' S=0.0100 '/' Capacity=37.80 cfs Outflow=3.23 cfs 0.732 af

Reach 4R: 4R Avg. Flow Depth=0.11' Max Vel=0.06 fps Inflow=0.32 cfs 0.183 af
n=0.400 L=100.0' S=0.0100 '/' Capacity=37.80 cfs Outflow=0.31 cfs 0.172 af

Reach 5R: 5R Avg. Flow Depth=0.38' Max Vel=0.34 fps Inflow=10.69 cfs 1.865 af
n=0.400 L=100.0' S=0.0500 '/' Capacity=84.52 cfs Outflow=10.67 cfs 1.852 af

Reach SP1: SP1		Inflow=17.59 cfs 2.973 af
		Outflow=17.59 cfs 2.973 af
Reach SP2: SP2		Inflow=10.81 cfs 2.054 af
		Outflow=10.81 cfs 2.054 af
Pond 1P: 1P	Peak Elev=143.98' Storage=20,716 cf	Inflow=15.18 cfs 0.988 af
		Outflow=3.39 cfs 0.745 af
Pond 2P: 2P	Peak Elev=139.11' Storage=12,896 cf	Inflow=6.81 cfs 0.456 af
	Primary=0.32 cfs 0.183 af Secondary=0.00 cfs 0.000 af	Outflow=0.32 cfs 0.183 af
Pond 3P: 3P	Peak Elev=139.43' Storage=11,548 cf	Inflow=8.41 cfs 0.716 af
	Primary=5.36 cfs 0.532 af Secondary=0.00 cfs 0.000 af	Outflow=5.36 cfs 0.532 af
Pond 4aP: RD	Peak Elev=144.00' Storage=3,114 cf	Inflow=4.66 cfs 0.306 af
	Primary=1.23 cfs 0.300 af Secondary=0.50 cfs 0.003 af	Outflow=1.73 cfs 0.304 af
Pond 4bP: RD	Peak Elev=143.39' Storage=2,123 cf	Inflow=3.62 cfs 0.237 af
	Primary=1.16 cfs 0.236 af Secondary=0.00 cfs 0.000 af	Outflow=1.16 cfs 0.236 af
Pond 6P: 6P	Peak Elev=144.88' Storage=4,099 cf	Inflow=13.69 cfs 1.865 af
	18.0" Round Culvert n=0.013 L=500.0' S=0.0050 '/'	Outflow=10.69 cfs 1.865 af

Total Runoff Area = 23.875 ac Runoff Volume = 5.772 af Average Runoff Depth = 2.90"
74.36% Pervious = 17.753 ac 25.64% Impervious = 6.122 ac

Summary for Subcatchment 1S: SA1

Runoff = 13.69 cfs @ 12.58 hrs, Volume= 1.865 af, Depth> 2.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=4.80"

Area (sf)	CN	Description
24,192	78	Meadow, non-grazed, HSG D
362,489	79	Woods, Fair, HSG D
16,062	80	>75% Grass cover, Good, HSG D
402,743	79	Weighted Average
402,743		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.7	100	0.0400	0.09		**Sheet Flow, SF 1-1** Woods: Light underbrush n= 0.400 P2= 2.70"
18.5	785	0.0200	0.71		**Shallow Concentrated Flow, SCF 1-1** Woodland Kv= 5.0 fps
2.1	90	0.0100	0.70		**Shallow Concentrated Flow, SCF 1-2** Short Grass Pasture Kv= 7.0 fps
1.6	70	0.0200	0.71		**Shallow Concentrated Flow, SCF 1-3** Woodland Kv= 5.0 fps
2.0	120	0.0200	0.99		**Shallow Concentrated Flow, SCF 1-4** Short Grass Pasture Kv= 7.0 fps
41.9	1,165	Total			

Summary for Subcatchment 2S: SA2

Runoff = 8.41 cfs @ 12.17 hrs, Volume= 0.716 af, Depth> 3.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=4.80"

Area (sf)	CN	Description
56,218	98	Impervious, HSG D
54,740	80	>75% Grass cover, Good, HSG D
110,958	89	Weighted Average
54,740		49.33% Pervious Area
56,218		50.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	40	0.0200	1.05		**Sheet Flow, SF 2-1** Smooth surfaces n= 0.011 P2= 2.70"
10.3	60	0.0200	0.10		**Sheet Flow, SF 2-2** Grass: Dense n= 0.240 P2= 2.70"
0.5	30	0.0200	0.99		**Sheet Flow, SF 2-3** Smooth surfaces n= 0.011 P2= 2.70"
0.6	110	0.0200	2.87		**Shallow Concentrated Flow, SCF 2-1** Paved Kv= 20.3 fps
0.5	280	0.0140	9.46	529.89	**Trap/Vee/Rect Channel Flow, CF 2-1** Bot.W=2.00' D=4.00' Z= 3.0 '/' Top.W=26.00' n= 0.030 Stream, clean & straight
12.5	520	Total			

Summary for Subcatchment 3aS: SA3

Runoff = 4.66 cfs @ 12.01 hrs, Volume= 0.306 af, Depth> 4.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=4.80"

	Area (sf)	CN	Description
	36,835	98	Impervious, HSG D
*	1,592	66	Roof Dripline
	38,427	97	Weighted Average
	1,592		4.14% Pervious Area
	36,835		95.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	115	0.1670	3.04		**Sheet Flow, SF 3-1** Smooth surfaces n= 0.011 P2= 2.70"

Summary for Subcatchment 3bS: SA3b

Runoff = 3.62 cfs @ 12.01 hrs, Volume= 0.237 af, Depth> 4.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=4.80"

	Area (sf)	CN	Description
	28,609	98	Impervious, HSG D
*	1,236	66	Roof Dripline
	29,845	97	Weighted Average
	1,236		4.14% Pervious Area
	28,609		95.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	115	0.1670	3.04		**Sheet Flow, SF 3-1**
					Smooth surfaces n= 0.011 P2= 2.70"

Summary for Subcatchment 4S: SA4

Runoff = 15.18 cfs @ 12.03 hrs, Volume= 0.988 af, Depth> 3.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=4.80"

	Area (sf)	CN	Description
	45,759	80	>75% Grass cover, Good, HSG D
*	94,425	98	Impervious, HSG D
	140,184	92	Weighted Average
	45,759		32.64% Pervious Area
	94,425		67.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	140	0.0200	1.35		**Sheet Flow, SF 4-1**
					Smooth surfaces n= 0.011 P2= 2.70"
0.0	10	0.1000	4.74		**Shallow Concentrated Flow, SCF 4-1**
					Grassed Waterway Kv= 15.0 fps
1.7	150	Total			

Summary for Subcatchment 5S: SA5

Runoff = 5.13 cfs @ 12.48 hrs, Volume= 0.632 af, Depth> 2.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=4.80"

Area (sf)	CN	Description
11,975	80	>75% Grass cover, Good, HSG D
36,307	78	Meadow, non-grazed, HSG D
87,836	79	Woods, Fair, HSG D
136,118	79	Weighted Average
136,118		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	100	0.0500	0.10		**Sheet Flow, SF 5-1** Woods: Light underbrush n= 0.400 P2= 2.70"
7.0	210	0.0100	0.50		**Shallow Concentrated Flow, SCF 5-1** Woodland Kv= 5.0 fps
2.4	100	0.0100	0.70		**Shallow Concentrated Flow, SCF 5-2** Short Grass Pasture Kv= 7.0 fps
8.4	340	0.0180	0.67		**Shallow Concentrated Flow, SCF 5-3** Woodland Kv= 5.0 fps
34.0	750	Total			

Summary for Subcatchment 6S: SA6

Runoff = 6.81 cfs @ 12.03 hrs, Volume= 0.456 af, Depth> 3.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=4.80"

Area (sf)	CN	Description
9,350	80	>75% Grass cover, Good, HSG D
50,574	98	Impervious, HSG D
59,924	95	Weighted Average
9,350		15.60% Pervious Area
50,574		84.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	90	0.0330	1.51		**Sheet Flow, SF 6-1** Smooth surfaces n= 0.011 P2= 2.70"
0.9	170	0.0240	3.14		**Shallow Concentrated Flow, SCF 6-1** Paved Kv= 20.3 fps
1.9	260	Total			

Summary for Subcatchment 7S: SA7

Runoff = 2.86 cfs @ 12.28 hrs, Volume= 0.282 af, Depth> 2.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=4.80"

Area (sf)	CN	Description
50,265	79	Woods, Fair, HSG D
10,066	80	>75% Grass cover, Good, HSG D
60,331	79	Weighted Average
60,331		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	40	0.1000	0.17		**Sheet Flow, SF 7-1** Grass: Dense n= 0.240 P2= 2.70"
14.2	60	0.0250	0.07		**Sheet Flow, SF 7-2** Woods: Light underbrush n= 0.400 P2= 2.70"
2.0	80	0.0170	0.65		**Shallow Concentrated Flow, SCF 7-1** Woodland Kv= 5.0 fps
20.1	180	Total			

Summary for Subcatchment 8S: SA8

Runoff = 2.28 cfs @ 12.27 hrs, Volume= 0.220 af, Depth> 2.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=4.80"

Area (sf)	CN	Description
37,393	79	Woods, Fair, HSG D
9,779	80	>75% Grass cover, Good, HSG D
47,172	79	Weighted Average
47,172		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	40	0.1000	0.17		**Sheet Flow, SF 8-1** Grass: Dense n= 0.240 P2= 2.70"
13.2	60	0.0300	0.08		**Sheet Flow, SF 8-2** Woods: Light underbrush n= 0.400 P2= 2.70"
2.1	90	0.0200	0.71		**Shallow Concentrated Flow, SCF 8-1** Woodland Kv= 5.0 fps
19.2	190	Total			

Summary for Subcatchment 9S: SA 9

Runoff = 0.83 cfs @ 12.18 hrs, Volume= 0.069 af, Depth> 2.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Rainfall=4.80"

Area (sf)	CN	Description
12,287	80	>75% Grass cover, Good, HSG D
2,013	79	Woods, Fair, HSG D
14,300	80	Weighted Average
14,300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0500	0.15		**Sheet Flow, SF 9-1**
					Grass: Dense n= 0.240 P2= 2.70"
1.6	160	0.0600	1.71		**Shallow Concentrated Flow, SCF 9-1**
					Short Grass Pasture Kv= 7.0 fps
0.4	30	0.0500	1.12		**Shallow Concentrated Flow, SCF 9-2**
					Woodland Kv= 5.0 fps
12.8	290	Total			

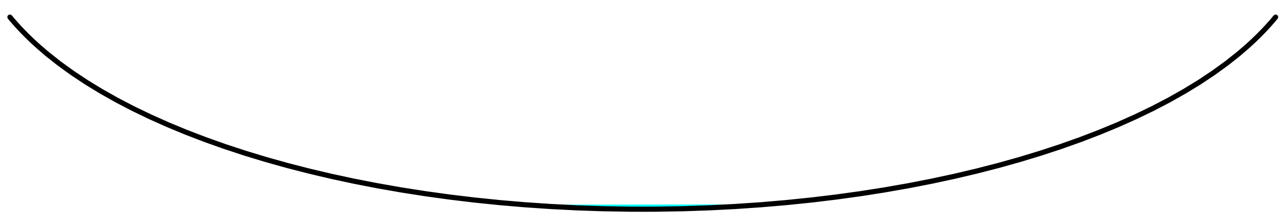
Summary for Reach 1aR: 1aR

Inflow = 0.50 cfs @ 12.21 hrs, Volume= 0.003 af
Outflow = 0.04 cfs @ 13.15 hrs, Volume= 0.003 af, Atten= 92%, Lag= 57.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.03 fps, Min. Travel Time= 48.6 min
Avg. Velocity = 0.02 fps, Avg. Travel Time= 82.7 min

Peak Storage= 123 cf @ 12.34 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 1.00' Flow Area= 333.3 sf, Capacity= 133.65 cfs

500.00' x 1.00' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush
Length= 100.0' Slope= 0.0200 '/'
Inlet Invert= 0.00', Outlet Invert= -2.00'



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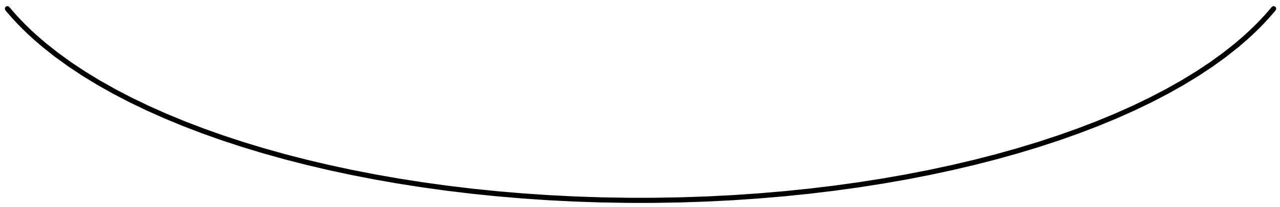
Summary for Reach 1bR: 1bR

Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 333.3 sf, Capacity= 133.65 cfs

500.00' x 1.00' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush
Length= 100.0' Slope= 0.0200 '/'
Inlet Invert= 0.00', Outlet Invert= -2.00'



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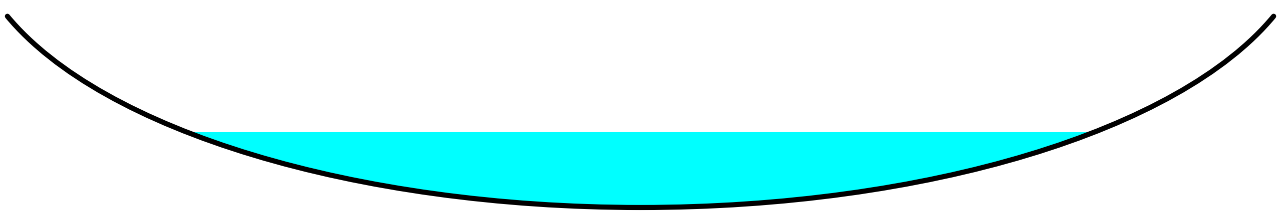
Summary for Reach 2R: 2R

Inflow Area = 2.547 ac, 50.67% Impervious, Inflow Depth > 2.51" for 25 Year event
Inflow = 5.36 cfs @ 12.34 hrs, Volume= 0.532 af
Outflow = 5.02 cfs @ 12.52 hrs, Volume= 0.527 af, Atten= 6%, Lag= 10.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.15 fps, Min. Travel Time= 5.5 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 14.4 min

Peak Storage= 1,648 cf @ 12.43 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 1.00' Flow Area= 133.3 sf, Capacity= 37.80 cfs

200.00' x 1.00' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush
Length= 50.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.50'



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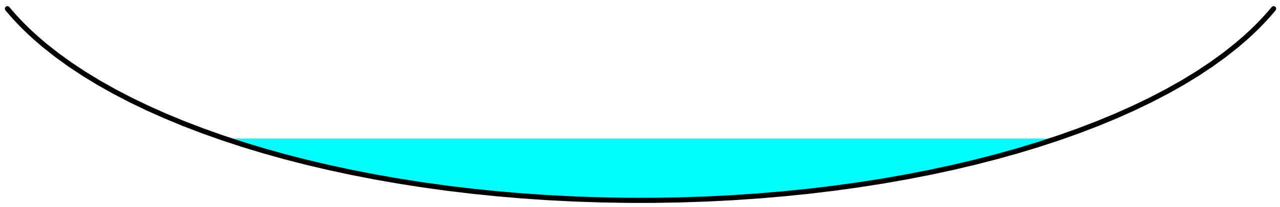
Summary for Reach 3R: 3R

Inflow Area = 3.218 ac, 67.36% Impervious, Inflow Depth > 2.78" for 25 Year event
Inflow = 3.39 cfs @ 12.40 hrs, Volume= 0.745 af
Outflow = 3.23 cfs @ 12.83 hrs, Volume= 0.732 af, Atten= 5%, Lag= 25.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.13 fps, Min. Travel Time= 12.5 min
Avg. Velocity = 0.07 fps, Avg. Travel Time= 25.1 min

Peak Storage= 2,432 cf @ 12.62 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 1.00' Flow Area= 133.3 sf, Capacity= 37.80 cfs

200.00' x 1.00' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush
Length= 100.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -1.00'



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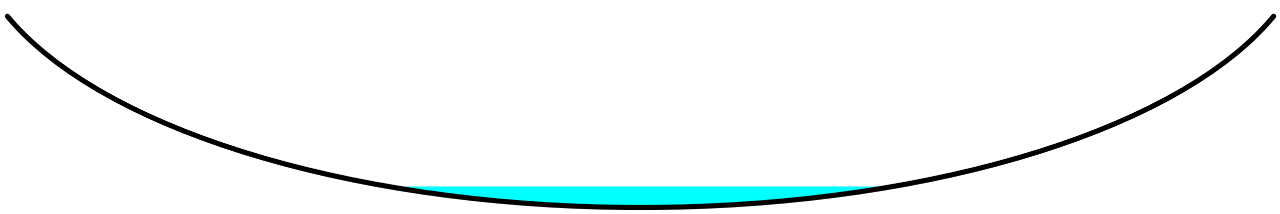
Summary for Reach 4R: 4R

Inflow Area = 1.376 ac, 84.40% Impervious, Inflow Depth > 1.59" for 25 Year event
Inflow = 0.32 cfs @ 14.04 hrs, Volume= 0.183 af
Outflow = 0.31 cfs @ 14.90 hrs, Volume= 0.172 af, Atten= 2%, Lag= 51.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.06 fps, Min. Travel Time= 25.7 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 34.4 min

Peak Storage= 484 cf @ 14.47 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 1.00' Flow Area= 133.3 sf, Capacity= 37.80 cfs

200.00' x 1.00' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush
Length= 100.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -1.00'



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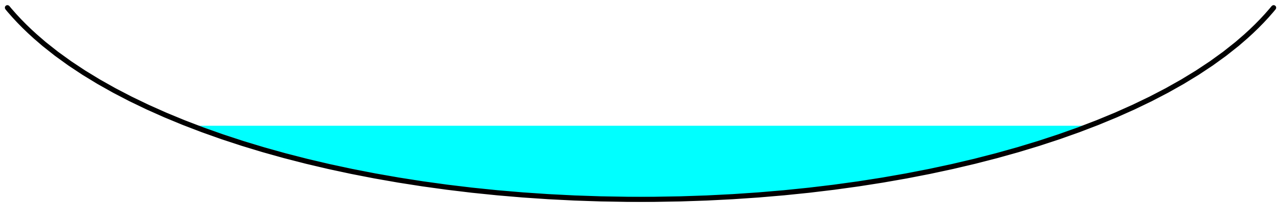
Summary for Reach 5R: 5R

Inflow Area = 9.246 ac, 0.00% Impervious, Inflow Depth > 2.42" for 25 Year event
Inflow = 10.69 cfs @ 12.85 hrs, Volume= 1.865 af
Outflow = 10.67 cfs @ 12.99 hrs, Volume= 1.852 af, Atten= 0%, Lag= 8.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.34 fps, Min. Travel Time= 5.0 min
Avg. Velocity = 0.16 fps, Avg. Travel Time= 10.1 min

Peak Storage= 3,182 cf @ 12.90 hrs
Average Depth at Peak Storage= 0.38'
Bank-Full Depth= 1.00' Flow Area= 133.3 sf, Capacity= 84.52 cfs

200.00' x 1.00' deep Parabolic Channel, n= 0.400 Sheet flow: Woods+light brush
Length= 100.0' Slope= 0.0500 '/'
Inlet Invert= 0.00', Outlet Invert= -5.00'



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Summary for Reach SP1: SP1

Inflow Area = 14.086 ac, 15.17% Impervious, Inflow Depth > 2.53" for 25 Year event
Inflow = 17.59 cfs @ 12.54 hrs, Volume= 2.973 af
Outflow = 17.59 cfs @ 12.54 hrs, Volume= 2.973 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach SP2: SP2

Inflow Area = 9.789 ac, 40.71% Impervious, Inflow Depth > 2.52" for 25 Year event
Inflow = 10.81 cfs @ 12.48 hrs, Volume= 2.054 af
Outflow = 10.81 cfs @ 12.48 hrs, Volume= 2.054 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: 1P

Inflow Area = 3.218 ac, 67.36% Impervious, Inflow Depth > 3.68" for 25 Year event
Inflow = 15.18 cfs @ 12.03 hrs, Volume= 0.988 af
Outflow = 3.39 cfs @ 12.40 hrs, Volume= 0.745 af, Atten= 78%, Lag= 22.4 min
Primary = 3.39 cfs @ 12.40 hrs, Volume= 0.745 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 143.98' @ 12.40 hrs Surf.Area= 12,045 sf Storage= 20,716 cf

Plug-Flow detention time= 128.7 min calculated for 0.745 af (75% of inflow)
Center-of-Mass det. time= 68.1 min (820.3 - 752.2)

Volume	Invert	Avail.Storage	Storage Description
#1	141.95'	20,930 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.95	5,637	0	0
142.00	8,752	360	360
143.00	10,374	9,563	9,923
143.50	10,782	5,289	15,212
144.00	12,092	5,719	20,930

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	**12.0" Round Culvert** L= 200.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 139.00' / 137.00' S= 0.0100 '/' Cc= 0.900

			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	141.95'	**0.598 in/hr Exfiltration over Surface area**
#3	Device 1	143.00'	**22.0" W x 5.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=3.39 cfs @ 12.40 hrs HW=143.98' (Free Discharge)
└─**1=Culvert** (Passes 3.39 cfs of 5.64 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.17 cfs)
  └─**3=Orifice/Grate** (Orifice Controls 3.23 cfs @ 4.22 fps)

Summary for Pond 2P: 2P

Inflow Area = 1.376 ac, 84.40% Impervious, Inflow Depth > 3.98" for 25 Year event
Inflow = 6.81 cfs @ 12.03 hrs, Volume= 0.456 af
Outflow = 0.32 cfs @ 14.04 hrs, Volume= 0.183 af, Atten= 95%, Lag= 120.4 min
Primary = 0.32 cfs @ 14.04 hrs, Volume= 0.183 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 139.11' @ 14.04 hrs Surf.Area= 8,936 sf Storage= 12,896 cf

Plug-Flow detention time= 206.1 min calculated for 0.182 af (40% of inflow)
Center-of-Mass det. time= 97.9 min (840.4 - 742.4)

Volume	Invert	Avail.Storage	Storage Description
#1	137.45'	17,331 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
137.45	2,716	0	0
137.50	6,701	235	235
138.00	7,413	3,529	3,764
139.00	8,876	8,145	11,908
139.60	9,200	5,423	17,331

Device	Routing	Invert	Outlet Devices
#1	Primary	134.50'	**12.0" Round Culvert** L= 100.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 134.50' / 133.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	137.45'	**0.598 in/hr Exfiltration over Surface area**
#3	Device 1	139.00'	**20.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#4	Secondary	139.50'	**15.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.32 cfs @ 14.04 hrs HW=139.11' (Free Discharge)
└─**1=Culvert** (Passes 0.32 cfs of 6.50 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.12 cfs)
  └─**3=Orifice/Grate** (Orifice Controls 0.20 cfs @ 1.07 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=137.45' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 3P: 3P

Inflow Area = 2.547 ac, 50.67% Impervious, Inflow Depth > 3.37" for 25 Year event
Inflow = 8.41 cfs @ 12.17 hrs, Volume= 0.716 af
Outflow = 5.36 cfs @ 12.34 hrs, Volume= 0.532 af, Atten= 36%, Lag= 10.5 min
Primary = 5.36 cfs @ 12.34 hrs, Volume= 0.532 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 139.43' @ 12.34 hrs Surf.Area= 8,907 sf Storage= 11,548 cf

Plug-Flow detention time= 104.3 min calculated for 0.532 af (74% of inflow)
Center-of-Mass det. time= 43.5 min (813.7 - 770.3)

Volume	Invert	Avail.Storage	Storage Description
#1	137.95'	12,142 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
137.95	3,906	0	0
138.00	7,013	273	273
139.00	8,142	7,578	7,850
139.50	9,024	4,292	12,142

Device	Routing	Invert	Outlet Devices
#1	Primary	135.00'	**12.0" Round Culvert** L= 100.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 135.00' / 134.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	137.95'	**0.598 in/hr Exfiltration over Surface area**
#3	Device 1	139.00'	**21.4" Horiz. Orifice/Grate-NFCO R-4342 Beehive Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	139.45'	**15.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=5.34 cfs @ 12.34 hrs HW=139.43' (Free Discharge)
↑—**1=Culvert** (Passes 5.34 cfs of 6.37 cfs potential flow)
↑—**2=Exfiltration** (Exfiltration Controls 0.12 cfs)
└—**3=Orifice/Grate-NFCO R-4342 Beehive Grate** (Weir Controls 5.22 cfs @ 2.15 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=137.95' (Free Discharge)
↑—**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 4aP: RD

Inflow Area = 0.882 ac, 95.86% Impervious, Inflow Depth > 4.16" for 25 Year event
Inflow = 4.66 cfs @ 12.01 hrs, Volume= 0.306 af
Outflow = 1.73 cfs @ 12.21 hrs, Volume= 0.304 af, Atten= 63%, Lag= 11.9 min
Primary = 1.23 cfs @ 12.20 hrs, Volume= 0.300 af
Secondary = 0.50 cfs @ 12.21 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 144.00' @ 12.20 hrs Surf.Area= 1,557 sf Storage= 3,114 cf

Plug-Flow detention time= 24.5 min calculated for 0.303 af (99% of inflow)
Center-of-Mass det. time= 21.2 min (755.9 - 734.6)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	3,114 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 7,785 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	1,557	0	0
140.00	1,557	1,557	1,557
141.00	1,557	1,557	3,114
142.00	1,557	1,557	4,671
143.00	1,557	1,557	6,228
144.00	1,557	1,557	7,785

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	**6.0" Round Culvert** L= 100.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 139.00' / 138.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Secondary	144.00'	**503.0' long x 5.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.35 2.51 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.69 2.73 2.77 2.86

Primary OutFlow Max=1.23 cfs @ 12.20 hrs HW=144.00' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 1.23 cfs @ 6.27 fps)

Secondary OutFlow Max=0.09 cfs @ 12.21 hrs HW=144.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.09 cfs @ 0.10 fps)

Summary for Pond 4bP: RD

Inflow Area = 0.685 ac, 95.86% Impervious, Inflow Depth > 4.16" for 25 Year event
Inflow = 3.62 cfs @ 12.01 hrs, Volume= 0.237 af
Outflow = 1.16 cfs @ 12.24 hrs, Volume= 0.236 af, Atten= 68%, Lag= 14.2 min
Primary = 1.16 cfs @ 12.24 hrs, Volume= 0.236 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 143.39' @ 12.24 hrs Surf.Area= 1,210 sf Storage= 2,123 cf

Plug-Flow detention time= 18.7 min calculated for 0.235 af (99% of inflow)
Center-of-Mass det. time= 15.8 min (750.4 - 734.6)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	2,420 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 6,050 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	1,210	0	0
140.00	1,210	1,210	1,210
141.00	1,210	1,210	2,420
142.00	1,210	1,210	3,630
143.00	1,210	1,210	4,840
144.00	1,210	1,210	6,050

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	**6.0" Round Culvert** L= 100.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 139.00' / 138.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Secondary	144.00'	**503.0' long x 5.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.35 2.51 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.69 2.73 2.77 2.86

Primary OutFlow Max=1.16 cfs @ 12.24 hrs HW=143.38' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 1.16 cfs @ 5.91 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=139.01' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6P: 6P

Inflow Area = 9.246 ac, 0.00% Impervious, Inflow Depth > 2.42" for 25 Year event
Inflow = 13.69 cfs @ 12.58 hrs, Volume= 1.865 af
Outflow = 10.69 cfs @ 12.85 hrs, Volume= 1.865 af, Atten= 22%, Lag= 15.8 min
Primary = 10.69 cfs @ 12.85 hrs, Volume= 1.865 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 144.88' @ 12.85 hrs Surf.Area= 5,349 sf Storage= 4,099 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1.7 min (820.6 - 818.9)

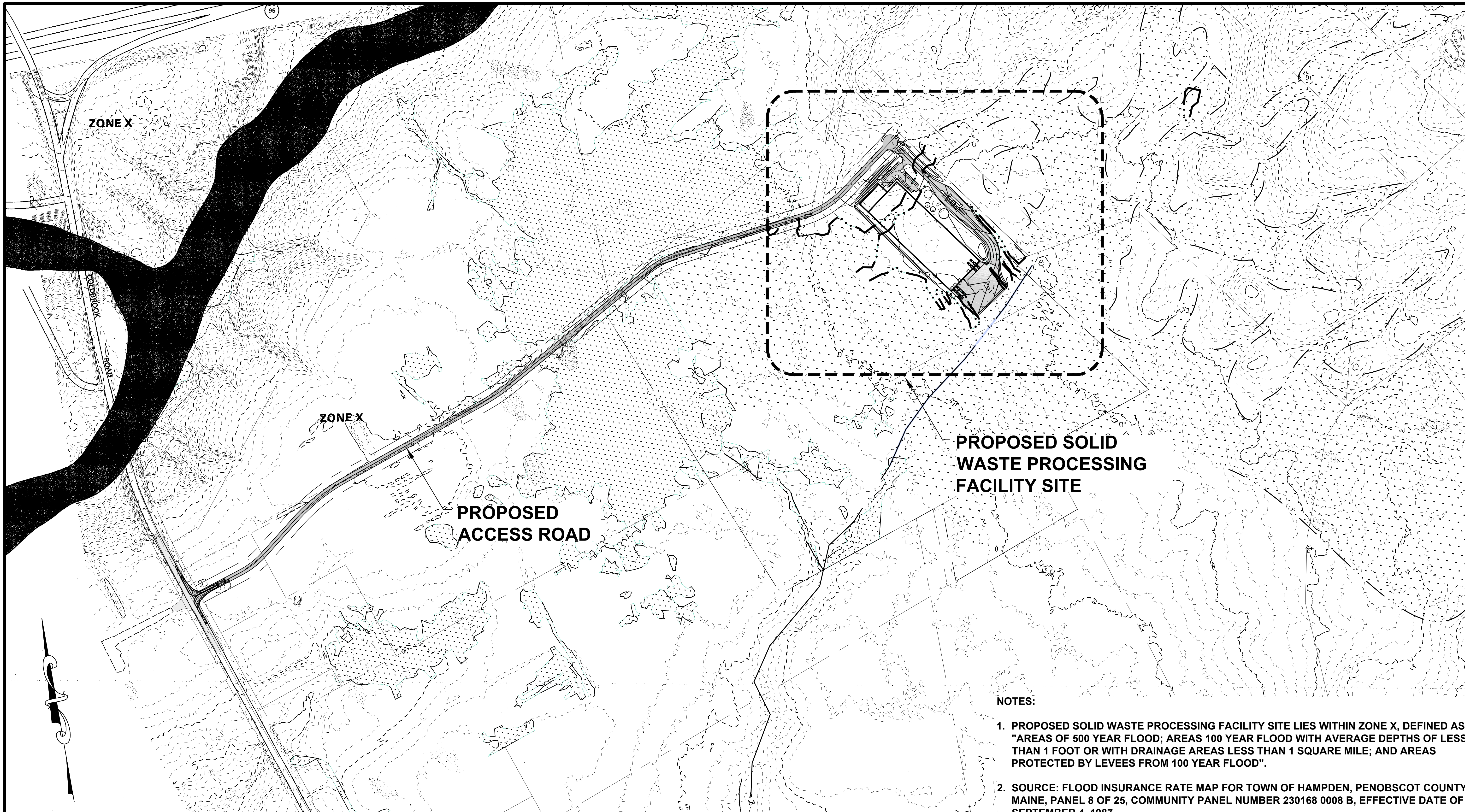
Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	7,720 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
144.00	3,972	0	0
145.50	6,321	7,720	7,720

Device	Routing	Invert	Outlet Devices
#1	Primary	140.00'	**18.0" Round Culvert** L= 500.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 140.00' / 137.50' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=10.69 cfs @ 12.85 hrs HW=144.88' (Free Discharge)
└─**1=Culvert** (Barrel Controls 10.69 cfs @ 6.05 fps)

FLOOD INSURANCE MAP
PRE DEVELOPMENT HYDROLOGY PLAN
POST DEVELOPMENT HYDROLOGY PLAN
STORMWATER MANAGEMENT DETAILS AND NOTES



NOTES:

1. PROPOSED SOLID WASTE PROCESSING FACILITY SITE LIES WITHIN ZONE X, DEFINED AS "AREAS OF 500 YEAR FLOOD; AREAS 100 YEAR FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 100 YEAR FLOOD".

2. SOURCE: FLOOD INSURANCE RATE MAP FOR TOWN OF HAMPDEN, PENOBSCOT COUNTY, MAINE, PANEL 8 OF 25, COMMUNITY PANEL NUMBER 230168 0008 B, EFFECTIVE DATE OF SEPTEMBER 4, 1987.

PROJECT TITLE: MRC / FIBERIGHT SOLID WASTE PROCESSING FACILITY HAMPDEN, MAINE	DWG: 1 OF 1	BY: BLQ	REV:	DESCRIPTION:
		DATE: 2015-05-07	REV DATE:	
SHEET TITLE: FLOOD INSURANCE RATE MAP	JN: 10973	APPROVED BY: CTM	ISSUE:	DESCRIPTION:
	SCALE: 1"=500'	CHECKED BY:	ISSUE DATE:	

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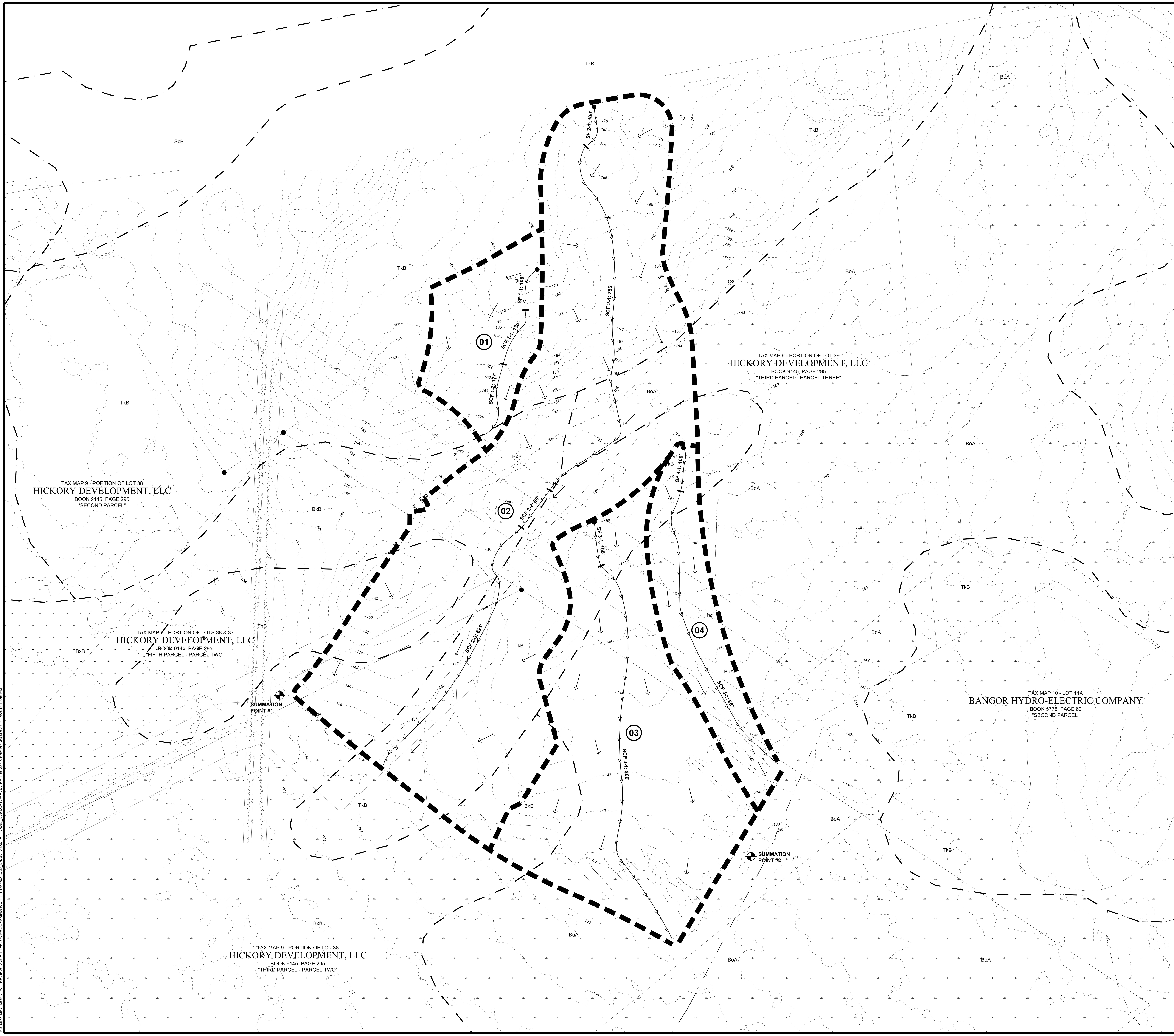

LEGEND:

FLOW DIRECTION

FLOW PATH

WATERSHED I.D. 01

WATERSHED BOUNDARY

SOILS BOUNDARY

EDGE OF GRAVEL

EDGE OF PAVEMENT

PROPERTY LINE

1 FOOT CONTOUR 397

5 FOOT CONTOUR 395

TREELINE

WETLAND

ABBREVIATIONS:

SF SHEET FLOW
SCF SHALLOW CONCENTRATED FLOW

BoA BIDDEFORD MUCKY PEAT, 3% SLOPES
BuA BUXTON SILT LOAM, 0-2% SLOPES
BxB BUXTON, SCANTIC, AND BIDDEFORD STONY SILT LOAMS, 0-8% SLOPES
ThB THORNDIKE VERY ROCKY SILT 8% SLOPES
TkB THORNDIKE VERY ROCKY LOAM, 2-8% SLOPES

PRE-DEVELOPMENT HYDROLOGY PLAN

FOR

SOLID WASTE PROCESSING FACILITY

HAMPDEN, MAINE

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

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PO Box 639
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F.207-288-0588

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F.207-795-6128

PROJECT TITLE
MRC / FIBERIGHT SOLID WASTE PROCESSING FACILITY
HAMPDEN, MAINE

SHEET TITLE
PRE-DEVELOPMENT HYDROLOGY PLAN

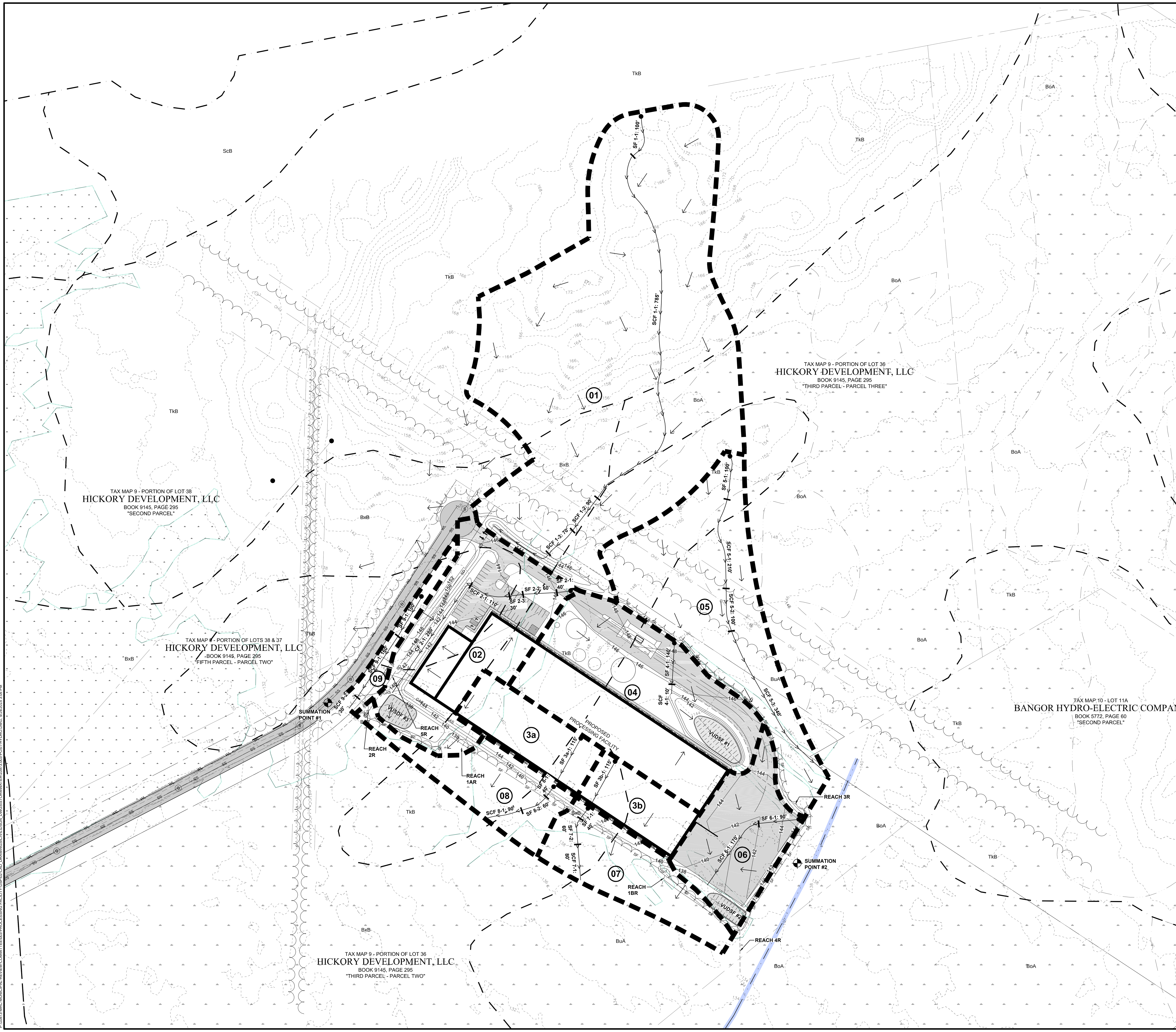
DATE	DRAWN BY	CHECKED BY

STATE OF MAINE
SEAN M. THIES
No. 10139
5-13-2015
LICENSED
PROFESSIONAL ENGINEER

ISSUED FOR PERMITTING

SCALE 1"=100'	
DATE 2015-05-11	
DRAWN BY BLQ	CHECKED BY ACH/SMT
DESIGNED BY CTM	APPROVED BY SMT
JOB NUMBER 10973.003	

DRAWING NUMBER
C701



LEGEND:

FLOW DIRECTION	
FLOW PATH	
WATERSHED I.D.	01
WATERSHED BOUNDARY	
UTILITY POLE	
EDGE OF GRAVEL	
EDGE OF PAVEMENT	
PROPERTY LINE	
1 FOOT CONTOUR	397
5 FOOT CONTOUR	395
TREELINE	
GRAVEL SURFACE	
PAVED SURFACE	
WETLAND	
SOIL FILTER AREA	

ABBREVIATIONS:

SF SHEET FLOW
SCF SHALLOW CONCENTRATED FLOW
CF CHANNEL FLOW
PF PIPE FLOW

BoA BIDDEFORD MUCKY PEAT, 3% SLOPES
BuA BUXTON SILT LOAM, 0-2% SLOPES
BxB BUXTON, SCANTIC, AND BIDDEFORD STONY SILT LOAMS, 0-8% SLOPES
ThB THORNDIKE VERY ROCKY SILT 8% SLOPES
TkB THORNDIKE VERY ROCKY LOAM, 2-8% SLOPES

POST-DEVELOPMENT HYDROLOGY PLAN
FOR
SOLID WASTE PROCESSING FACILITY
HAMPDEN, MAINE

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

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640 Main Street
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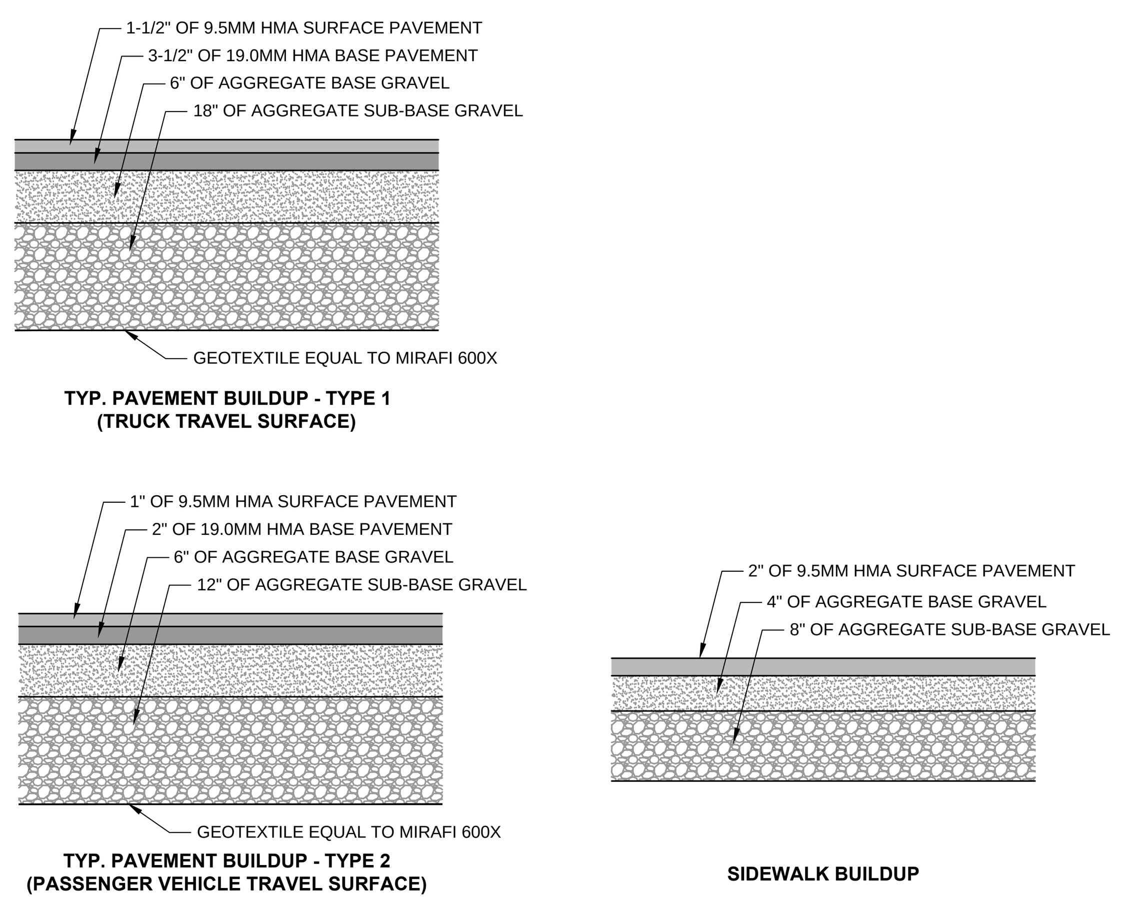
PROJECT TITLE
MRC / FIBERIGHT SOLID WASTE PROCESSING FACILITY
HAMPDEN, MAINE

SHEET TITLE
POST-DEVELOPMENT HYDROLOGY PLAN

REV.	DESCRIPTION	DATE	DRAWN BY	CHECKED BY
R1				
R2				
R3				
R4				
R5				
R6				
R7				

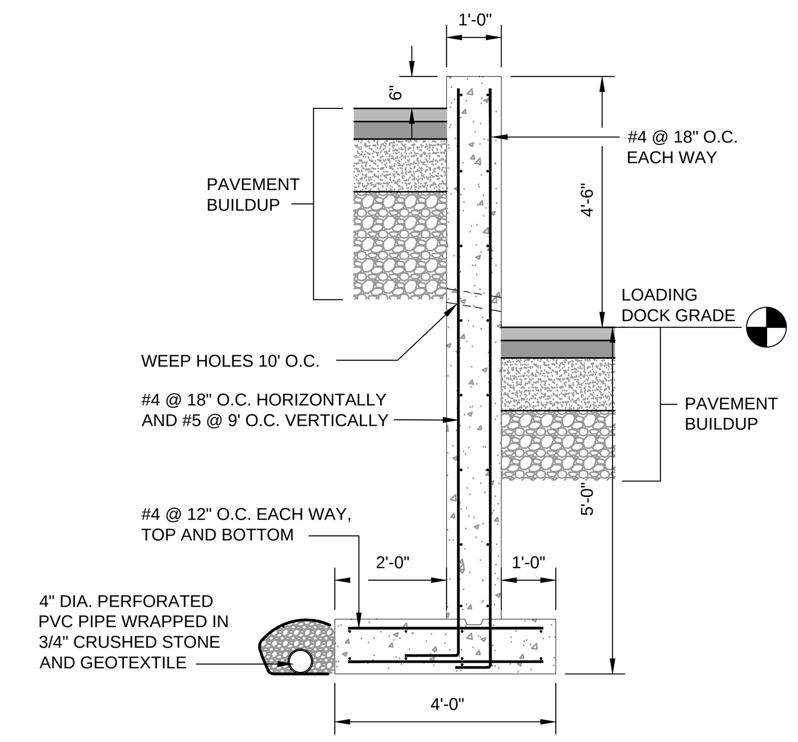
STATE OF MAINE
SEAN M. THIES
No. 10139
5-13-2015
LICENSED PROFESSIONAL ENGINEER
ISSUED FOR PERMITTING

SCALE	1"=100'
DATE	2015-05-12
DRAWN BY	BLQ
CHECKED BY	ACH/SMT
DESIGNED BY	CTM
APPROVED BY	
JOB NUMBER	10973.003
DRAWING NUMBER	C702



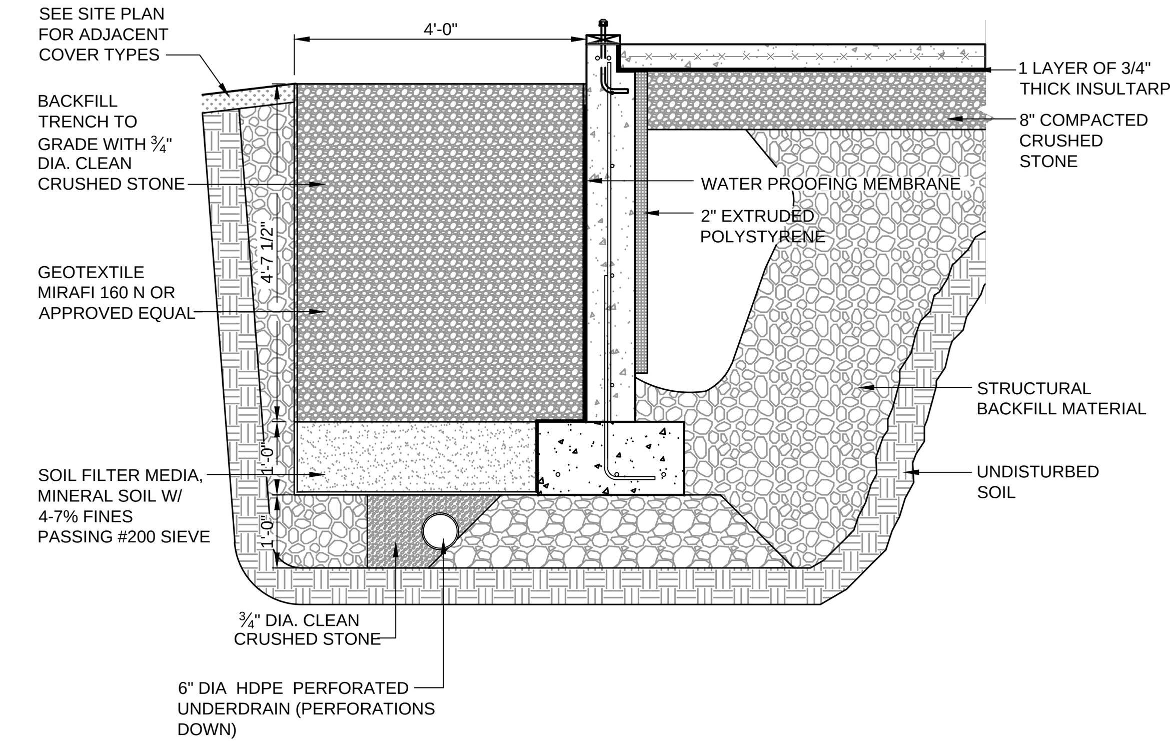
TYPICAL ROADWAY/SIDEWALK BUILDUP DETAIL

N.T.S.



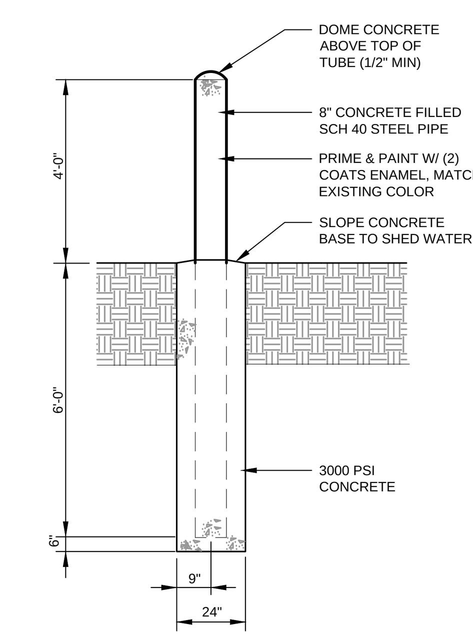
TYPICAL RETAINING WALL DETAIL

N.T.S.



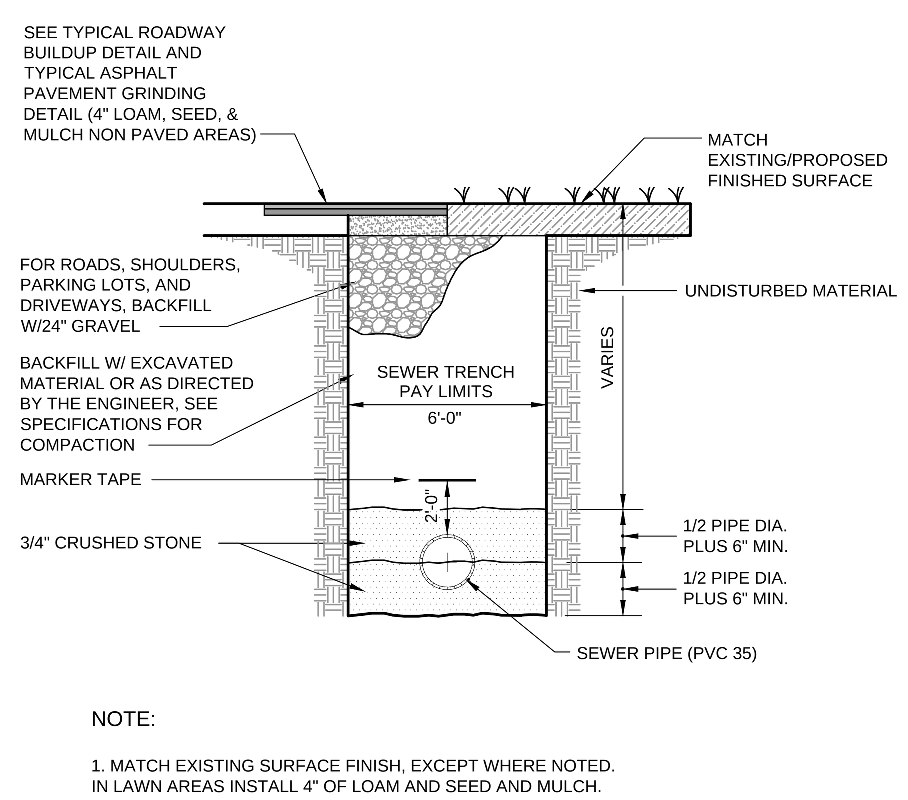
TYPICAL FROST WALL BACKFILL & DRIP EDGE DETAIL

N.T.S.



STEEL BOLLARD DETAIL

N.T.S.

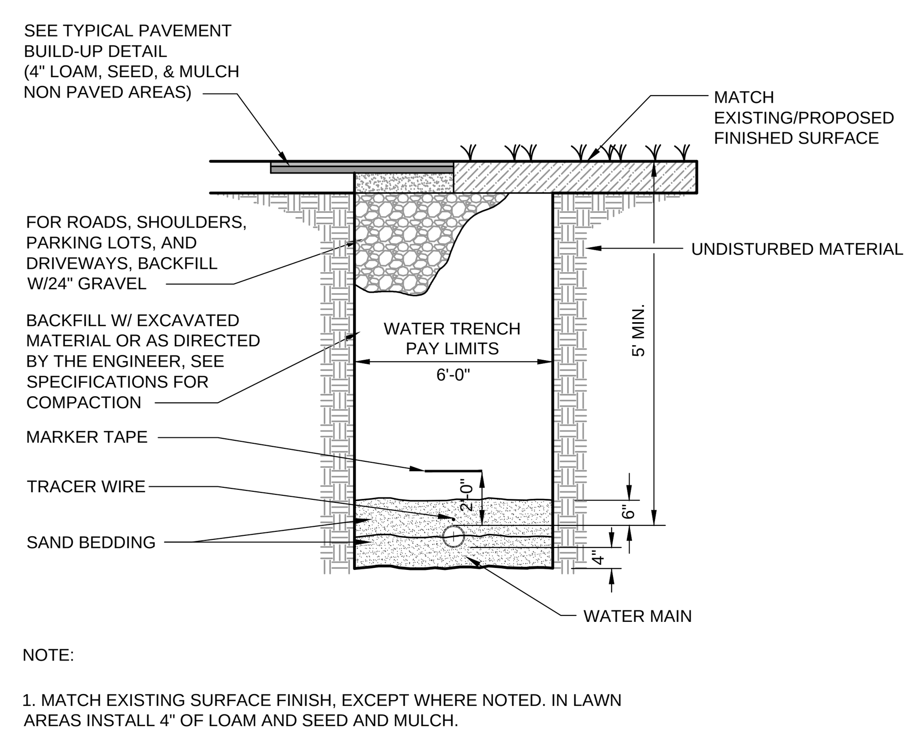


NOTE:

1. MATCH EXISTING SURFACE FINISH, EXCEPT WHERE NOTED. IN LAWN AREAS INSTALL 4" OF LOAM AND SEED AND MULCH.

TYPICAL SEWER TRENCH DETAIL

N.T.S.

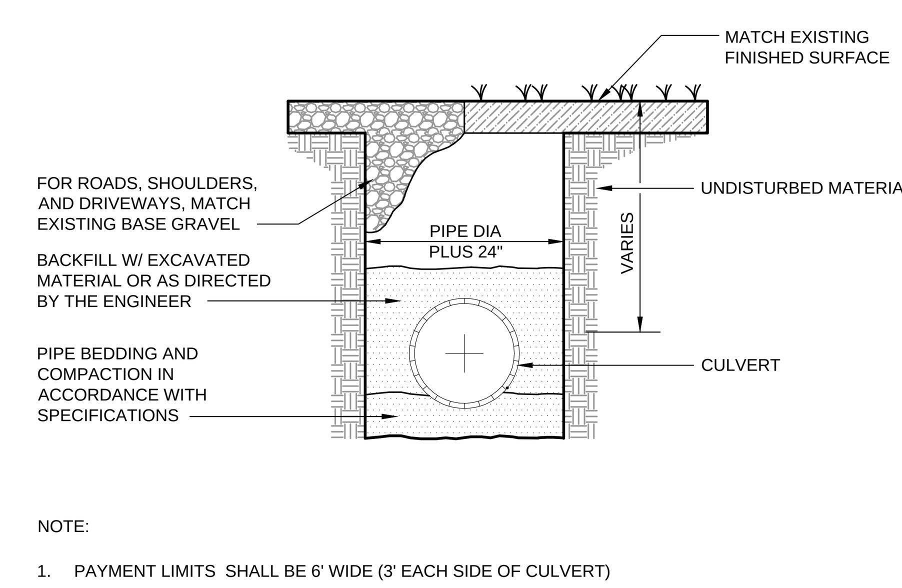


NOTE:

1. MATCH EXISTING SURFACE FINISH, EXCEPT WHERE NOTED. IN LAWN AREAS INSTALL 4" OF LOAM AND SEED AND MULCH.

TYPICAL TRENCH DETAIL - WATER MAIN

N.T.S.

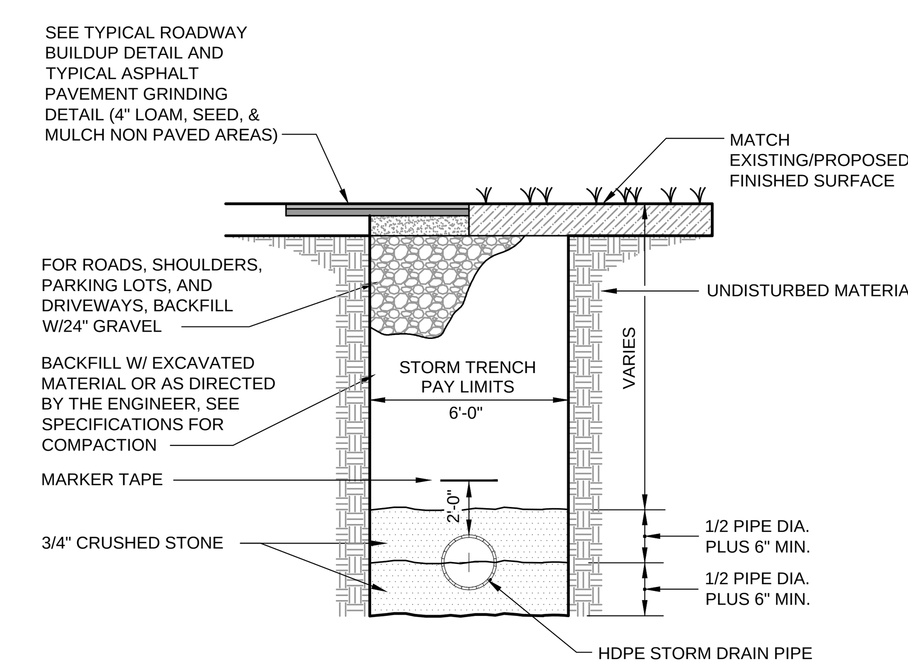


NOTE:

1. PAYMENT LIMITS SHALL BE 6' WIDE (3' EACH SIDE OF CULVERT)

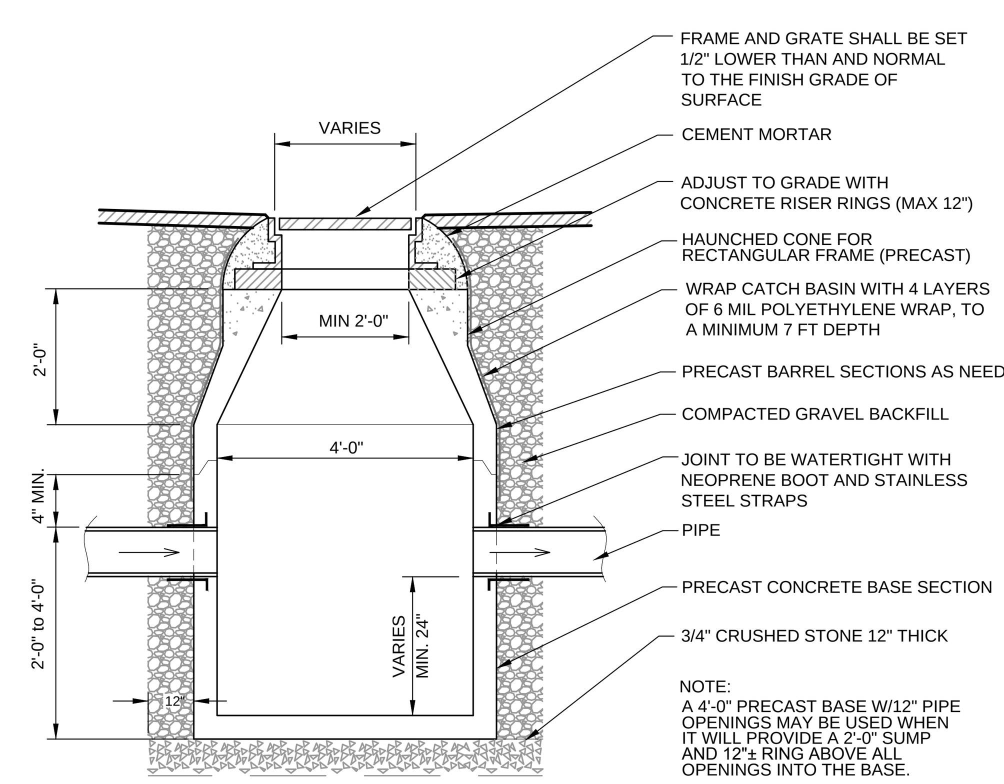
TYPICAL CULVERT TRENCH DETAIL

NTS



TYPICAL STORM DRAIN TRENCH DETAIL

N.T.S.



TYPICAL CATCH BASIN DETAIL

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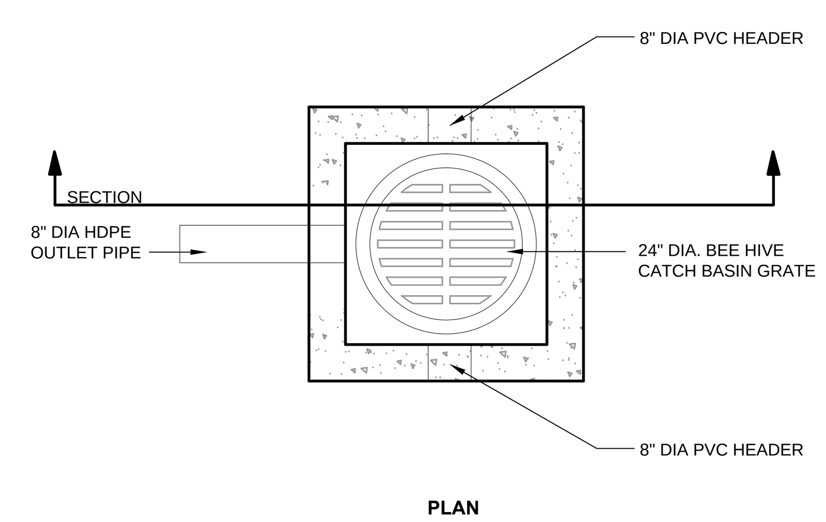

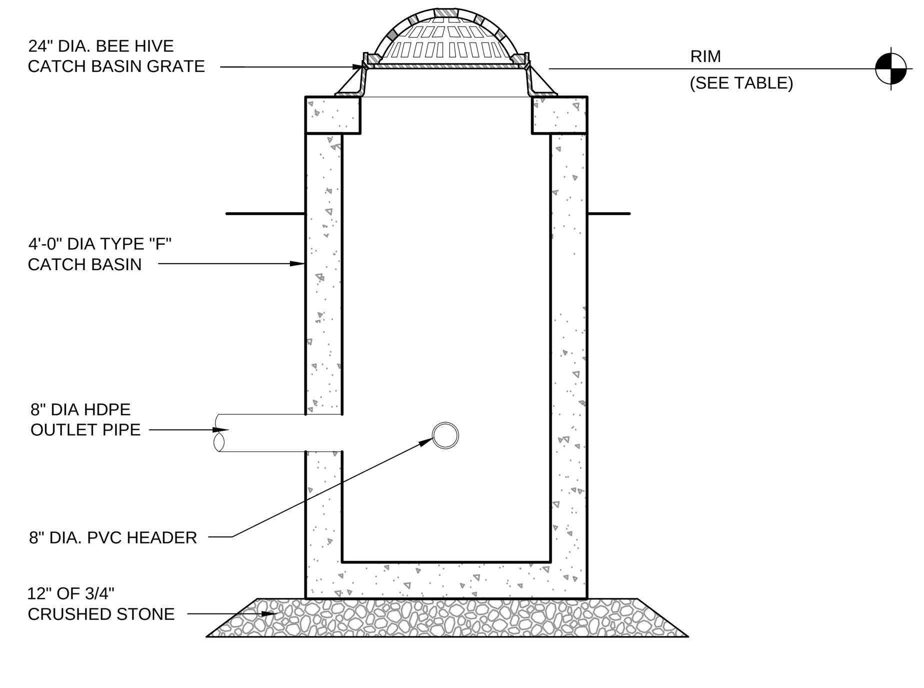

OVERFLOW OUTLET STRUCTURE DETAIL

N.T.S.

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PROJECT TITLE
MRC / FIBERIGHT SOLID WASTE PROCESSING FACILITY
HAMPDEN, MAINE

SHEET TITLE
SITE DETAILS

REV	DESCRIPTION	DATE	DRAWN BY	CHECKED BY
R7				
R6				
R5				
R4				
R3				
R2				
R1				

STATE OF MAINE
SEAN M. THIES
No. 10139
5-13-2015
LICENSED
PROFESSIONAL ENGINEER

ISSUED FOR PERMITTING

SCALE	NO SCALE
DATE	2015-05-11
DRAWN BY: BLQ	CHECKED BY: SMT
DESIGNED BY: ACH	APPROVED BY: SMT
JOB NUMBER	10973.003
DRAWING NUMBER	C501

EROSION CONTROL NOTES

1. ALL SEDIMENTATION AND EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE MAINE EROSION AND SEDIMENTATION CONTROL BMPS, PUBLISHED BY THE BUREAU OF LAND AND WATER QUALITY, MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, LATEST EDITION.

2. SILT FENCE WILL BE INSPECTED, REPLACED AND/OR REPAIRED IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL OR SNOW MELT OR LOSS OF SERVICEABILITY DUE TO SEDIMENT ACCUMULATION. AT A MINIMUM, ALL EROSION CONTROL DEVICES WILL BE OBSERVED WEEKLY.

3. DURING THE CONSTRUCTION PHASE, INTERCEPTED SEDIMENT WILL BE RETURNED TO CONSTRUCTION SITE.

4. SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL AREAS UPSLOPE ARE STABILIZED BY A SUITABLE GROWTH OF GRASS. ONCE A SUITABLE GROWTH OF GRASS HAS BEEN OBTAINED, ALL TEMPORARY EROSION CONTROL ITEMS SHALL BE REMOVED BY THE CONTRACTOR. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THEY ARE REMOVED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED, SEEDED, AND MULCHED IMMEDIATELY.

5. ALL DISTURBED AREAS WILL BE SEEDED WITH 2.5 LBS. RED FESCUE AND 0.5 LBS. RYE GRASS PER 1,000 SQUARE FEET AND MULCHED AT A RATE OF 90 LBS. PER 1,000 SQUARE FEET OR EQUIVALENT APPLICATION OF SEED AND MULCH.

6. A SUITABLE BINDER SUCH AS CURASOL OR TERRTACK WILL BE USED ON THE HAY MULCH FOR WIND CONTROL.

7. IF FINAL SEEDING OF DISTURBED AREAS IS NOT COMPLETED BY SEPTEMBER 15th OF THE YEAR OF CONSTRUCTION, THEN ON THAT DATE THESE AREAS WILL BE GRADED AND SEEDED WITH WINTER RYE AT THE RATE OF 112 POUNDS PER ACRE OR 3 POUNDS PER 1000 SQUARE FEET. THE RYE SEEDING WILL BE PRECEDED BY AN APPLICATION OF 3 TONS OF LIME AND 800 LBS. OF 10-20-20 FERTILIZER OR ITS EQUIVALENT. MULCH WILL BE APPLIED AT A RATE OF 90 POUNDS PER 1000 SQUARE FEET.

8. IF THE RYE SEEDING CANNOT BE COMPLETED BY OCTOBER 1st OR IF THE RYE DOES NOT MAKE ADEQUATE GROWTH BY DECEMBER 1st, THEN ON THOSE DATES, HAY MULCH WILL BE APPLIED AT 150 POUNDS PER 1000 SQUARE FEET.

9. ALL CATCH BASINS ARE TO BE PROTECTED BY STRAW BALE OR SILTFENCE IN ACCORDANCE WITH SECTION B-3 STORM DRAIN INLET PROTECTION OF THE MAINE BMP HANDBOOK. SURROUNDING AREAS CAN BE EXCAVATED OR LEFT LOW AS A SEDIMENT TRAP. CURB INLETS SHALL BE PROTECTED BY GUTTERGATORS, OR APPROVED EQUIVALENT.

10. INTERIOR SILT FENCES ALONG CONTOUR DIVIDING FLAT AND STEEP SLOPES, AREAS WITH DIFFERENT DISTURBANCE SCHEDULES, AROUND TEMPORARY STOCKPILES OR IN OTHER UNSPECIFIED POSSIBLE CIRCUMSTANCES SHOULD BE CONSIDERED BY THE CONTRACTOR. THE INTENT OF SUCH INTERIOR SILT FENCES IS TO LIMIT SEDIMENT TRANSPORT WITHIN THE SITE TOWARD THE PROTECTED CATCH BASIN INLETS TO MINIMIZE SEDIMENT REMOVAL REQUIRED BY THE EROSION CONTROL NOTE 9 PROTECTIONS AND EXTEND LIFE OF SUCH DEVICES.

11. THE CONTRACTOR SHALL PROVIDE A SEDIMENT BASIN FOR ALL WATER PUMPED FROM EXCAVATIONS. BASIN SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE "MAINE EROSION AND SEDIMENT HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES". THE CONTRACTOR SHALL SUBMIT FOR REVIEW/APPROVAL PRIOR TO BEGINNING ANY PROJECT WORK.

12. CONSTRUCTION OVERSIGHT:
THE OWNER WILL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER TO INSPECT THE CONSTRUCTION AND STABILIZATION OF ALL STORMWATER MANAGEMENT STRUCTURES. IF NECESSARY, THE INSPECTING ENGINEER WILL INTERPRET THE POND'S CONSTRUCTION PLAN FOR THE CONTRACTOR. ONCE ALL STORMWATER MANAGEMENT STRUCTURES ARE CONSTRUCTED AND STABILIZED, THE INSPECTING ENGINEER WILL NOTIFY THE DEPARTMENT IN WRITING WITHIN 30 DAYS TO STATE THAT THE WORK HAS BEEN COMPLETED. ACCOMPANYING THE ENGINEER'S NOTIFICATION MUST BE A LOG OF THE ENGINEER'S INSPECTIONS GIVING THE DATE OF EACH INSPECTION, THE TIME OF EACH INSPECTION, AND THE ITEMS INSPECTED ON EACH VISIT, AND INCLUDE ANY TESTING DATA OR SIEVE ANALYSIS DATA OF EVERY MINERAL SOIL AND SOIL MEDIA SPECIFIED IN THE PLANS AND USED ON SITE.

13. UNDERDRAINED FILTER BASINS:
CONSTRUCTION SEQUENCE: THE SOIL FILTER MEDIA AND VEGETATION MUST NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE FILTER HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURE, 90% VEGETATION COVER, OR OTHER PERMANENT STABILIZATION UNLESS THE RUNOFF FROM THE CONTRIBUTING DRAINAGE AREA IS DIVERTED AROUND THE FILTER UNTIL STABILIZATION IS COMPLETED.
COMPACTION OF SOIL FILTER: FILTER SOIL MEDIA AND UNDERDRAIN BEDDING MATERIAL MUST BE COMPACTED TO BETWEEN 90% AND 92% STANDARD PROCTOR. THE BED SHOULD BE INSTALLED IN AT LEAST 2 LIFTS OF 9 INCHES TO PREVENT POCKETS OF LOOSE MEDIA.
CONSTRUCTION OVERSIGHT: INSPECTION BY A PROFESSIONAL ENGINEER WILL OCCUR AT A MINIMUM:
- AFTER THE PRELIMINARY CONSTRUCTION OF THE FILTER GRADES AND ONCE THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED,
- AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE FILTER MEDIA,
- AFTER THE FILTER MEDIA HAS BEEN INSTALLED AND SEEDED. BIO-RETENTION CELLS MUST BE STABILIZED PER THE PROVIDED PLANTING SCHEME AND DENSITY FOR THE CANOPY COVERAGE OF 30 AND 50%.
- AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS, AND
- ALL THE MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN MUST BE CONFIRMED AS SUITABLE BY THE DESIGN ENGINEER. TESTING MUST BE DONE BY A CERTIFIED LABORATORY TO SHOW THAT THEY ARE PASSING DEP SPECIFICATIONS.

TESTING AND SUBMITTALS: THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE OF EACH COMPONENT OF THE FILTER MEDIA. ALL RESULTS OF FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR CONFIRMATION. THE CONTRACTOR SHALL:
- SELECT SAMPLES FOR SAMPLING OF EACH TYPE OF MATERIAL TO BE BLENDED FOR THE MIXED FILTER MEDIA AND SAMPLES OF THE UNDERDRAIN BEDDING MATERIAL. SAMPLES MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT FACE. SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY.
- PERFORM A SIEVE ANALYSIS CONFORMING TO STM C136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COURSE AGGREGATES 1996A) ON EACH TYPE OF THE SAMPLE MATERIAL. THE RESULTING SOIL FILTER MEDIA MIXTURE MUST HAVE 8% TO 12% BY WEIGHT PASSING THE #200 SIEVE, A CLAY CONTENT OF LESS THAN 2% (DETERMINED HYDROMETER GRAIN SIZE ANALYSIS) AND HAVE 10% DRY WEIGHT OF ORGANIC MATTER.
- PERFORM A PERMEABILITY TEST ON THE SOIL FILTER MEDIA MIXTURE CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90-92% OF MAXIMUM DRY DENSITY BASED ON ASTM D698.

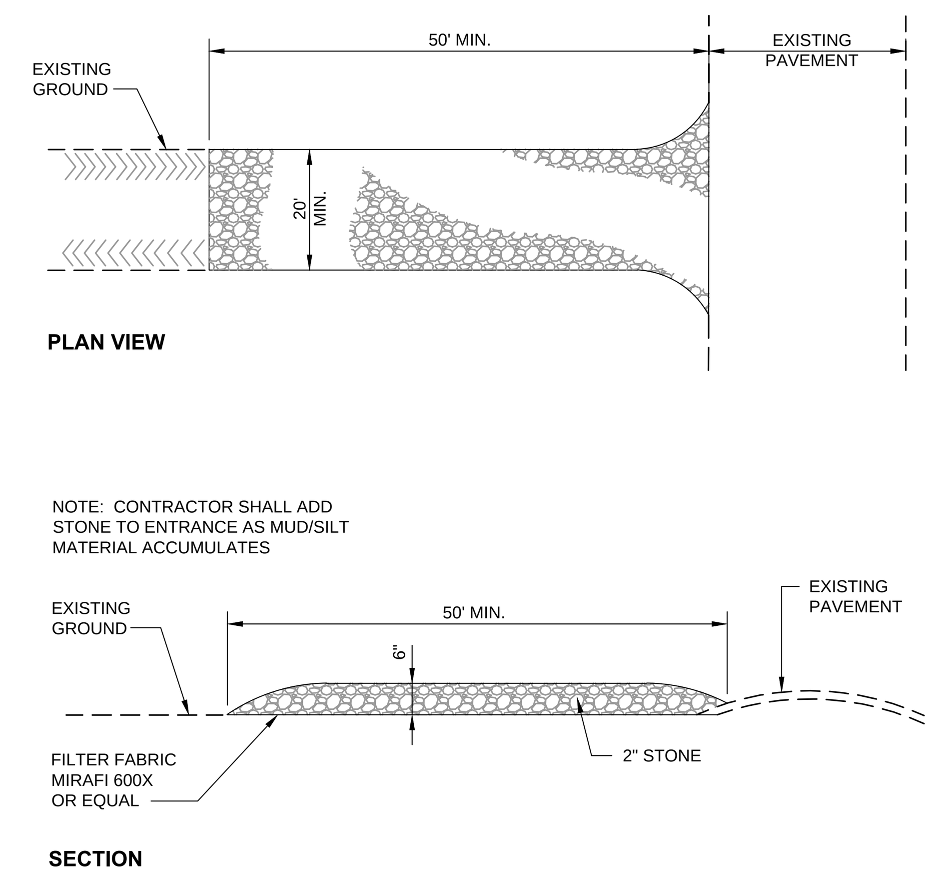
14. STONE BERMED LEVEL LIP SPREADER
INSPECTIONS BY A PROFESSIONAL ENGINEER SHALL CONSIST OF WEEKLY VISITS TO THE SITE TO INSPECT EACH LEVEL SPREADERS CONSTRUCTION, STONE BERM MATERIAL AND PLACEMENT, SETTLING BASIN FROM INITIAL GROUND DISTURBANCE TO FINAL STABILIZATION OF THE LEVEL SPREADER.

21. ROOF DRIP EDGE FILTERS:
INSPECTIONS BY A PROFESSIONAL ENGINEER SHALL CONSIST OF WEEKLY VISITS TO THE SITE TO INSPECT EACH THE ROOF DRIP EDGE FILTER'S UNDERDRAIN CONSTRUCTION, FILTER MATERIAL PLACEMENT, AND OVERFLOW FROM INITIAL GROUND DISTURBANCE TO FINAL STABILIZATION OF THE FILTER.

22. DEWATERING
A DEWATERING PLAN IS NEEDED TO ADDRESS EXCAVATION DE-WATERING FOLLOWING HEAVY RAINFALL EVENTS OR WHERE THE EXCAVATION MAY INTERCEPT THE GROUNDWATER TABLE DURING CONSTRUCTION. THE COLLECTED WATER NEEDS TREATMENT AND A DISCHARGE POINT THAT WILL NOT CAUSE DOWNGRADIENT EROSION AND OFFSITE SEDIMENTATION OR WITHIN A RESOURCE. PLEASE FOLLOW THE DETAILS OF SUCH A PLAN.

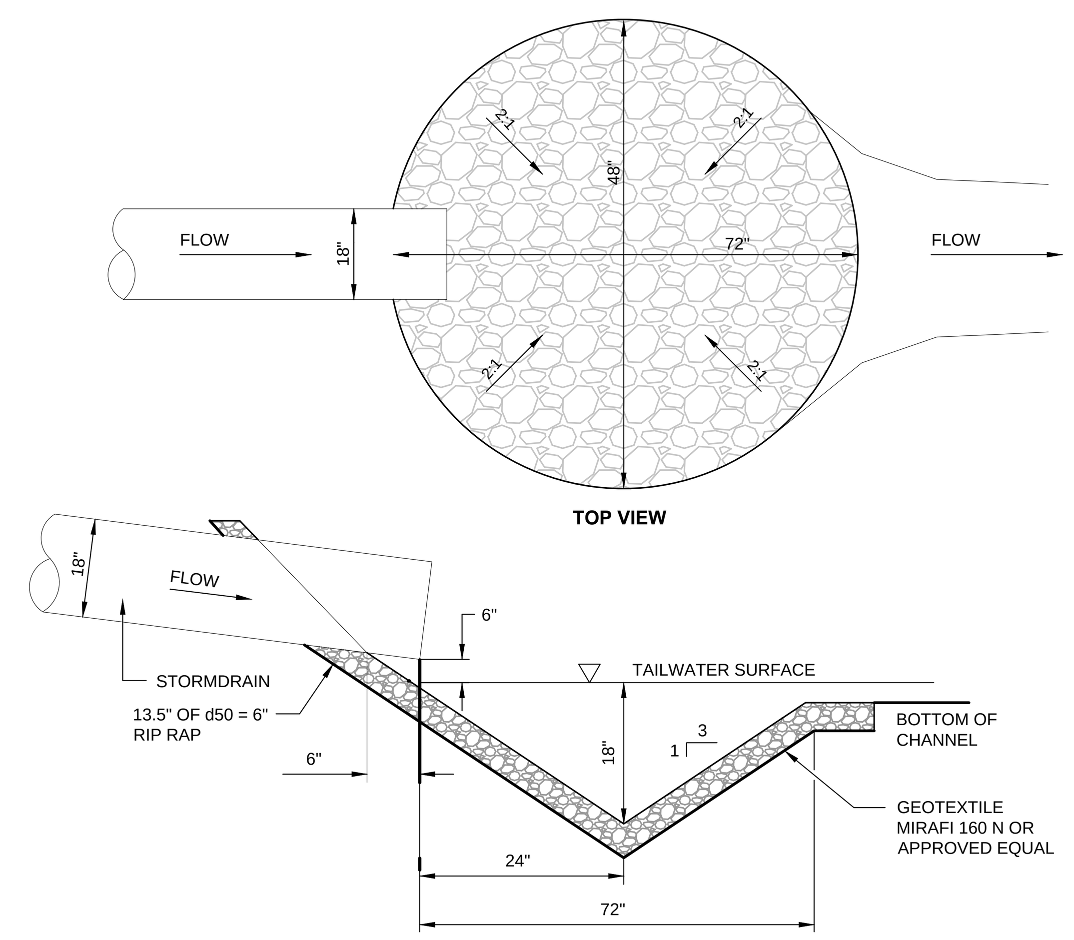
23. BASIC STANDARDS - EROSION CONTROL MEASURES:
MINIMUM EROSION CONTROL MEASURES WILL NEED TO BE IMPLEMENTED AND THE CONTRACTOR WILL BE RESPONSIBLE TO MAINTAIN ALL COMPONENTS OF THE EROSION CONTROL PLAN UNTIL THE SITE IS FULLY STABILIZED. HOWEVER, BASED ON SITE AND WEATHER CONDITIONS DURING CONSTRUCTION, ADDITIONAL EROSION CONTROL MEASURES MAY NEED TO BE IMPLEMENTED. ALL AREAS OF INSTABILITY AND EROSION MUST BE REPAIRED IMMEDIATELY DURING CONSTRUCTION AND NEED TO BE MAINTAINED UNTIL THE SITE IS FULLY STABILIZED OR VEGETATION IS ESTABLISHED. A CONSTRUCTION LOG MUST BE MAINTAINED FOR THE EROSION AND SEDIMENTATION CONTROL INSPECTIONS AND MAINTENANCE

THE MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES AS PUBLISHED IN 1991 BY THE CUMBERLAND COUNTY SOIL AND WATER CONSERVATION DISTRICT AND THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION HAS BEEN CHANGED TO THE “MAINE EROSION AND SEDIMENT CONTROL BMPS” PUBLISHED BY THE MAINE DEP IN 2003. ALL REFERENCES SHOULD BE CHANGED TO THE NEW MANUAL. HTTP://WWW.MAINE.GOV/DEP/BLWQ/DOCSTAND/ESCBMPS/INDEX.HTM



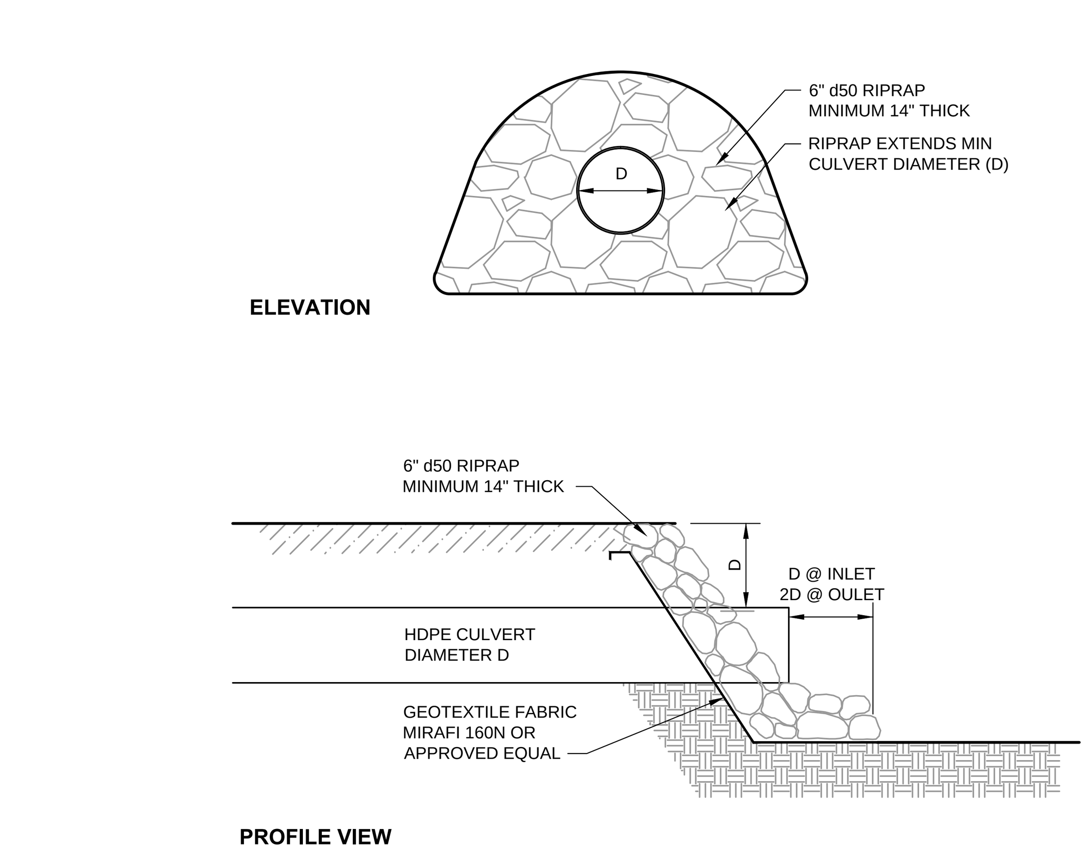
STABILIZED CONSTRUCTION ENTRANCE DETAIL

N.T.S.



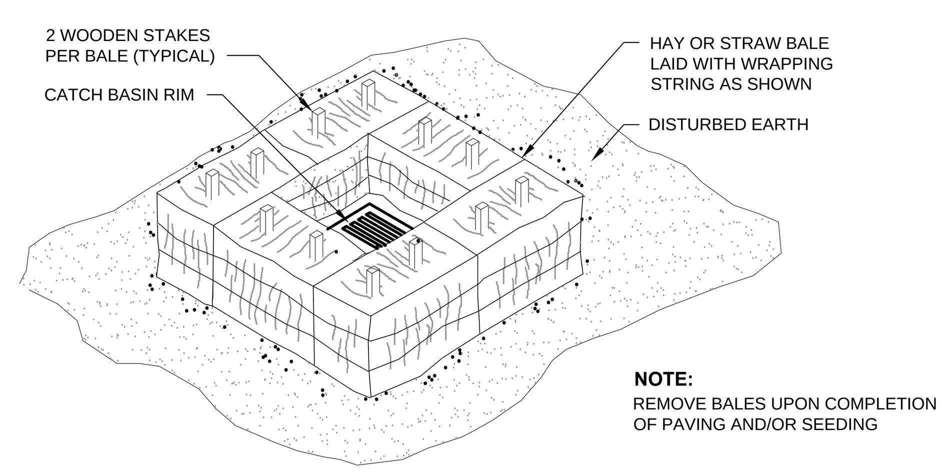
TYPICAL PLUNGE POOL DETAILS

N.T.S.



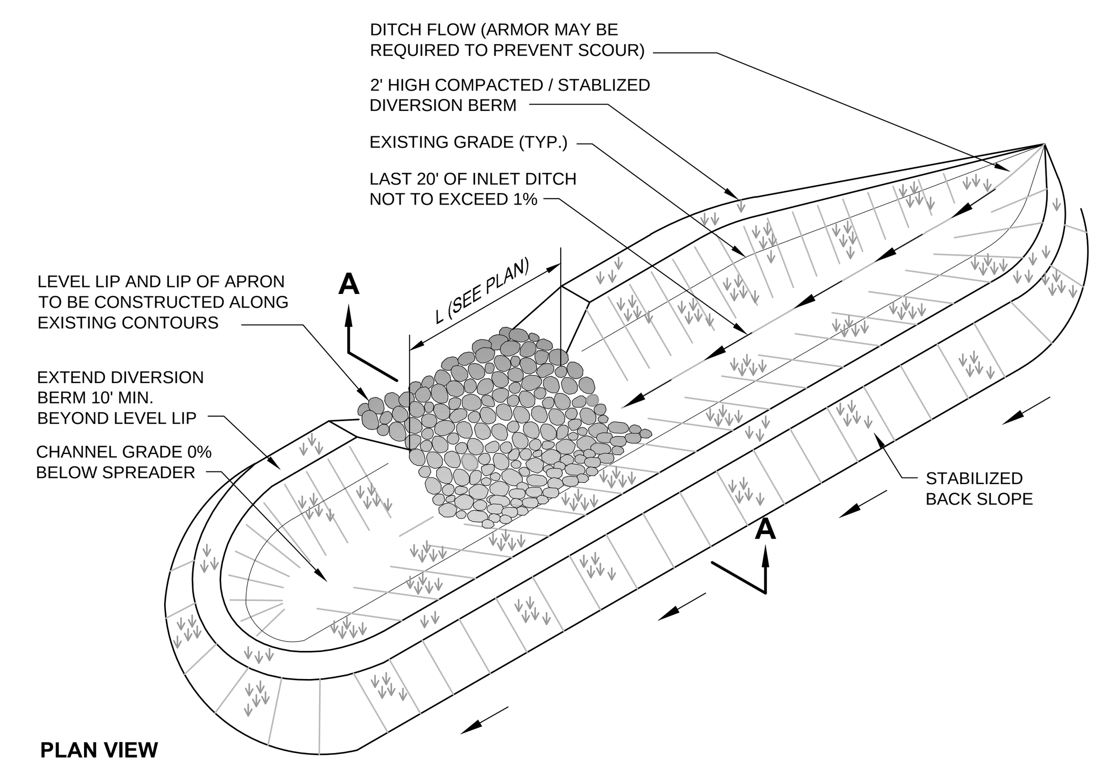
TYPICAL CULVERT INLET/OUTLET PROTECTION DETAIL

N.T.S.



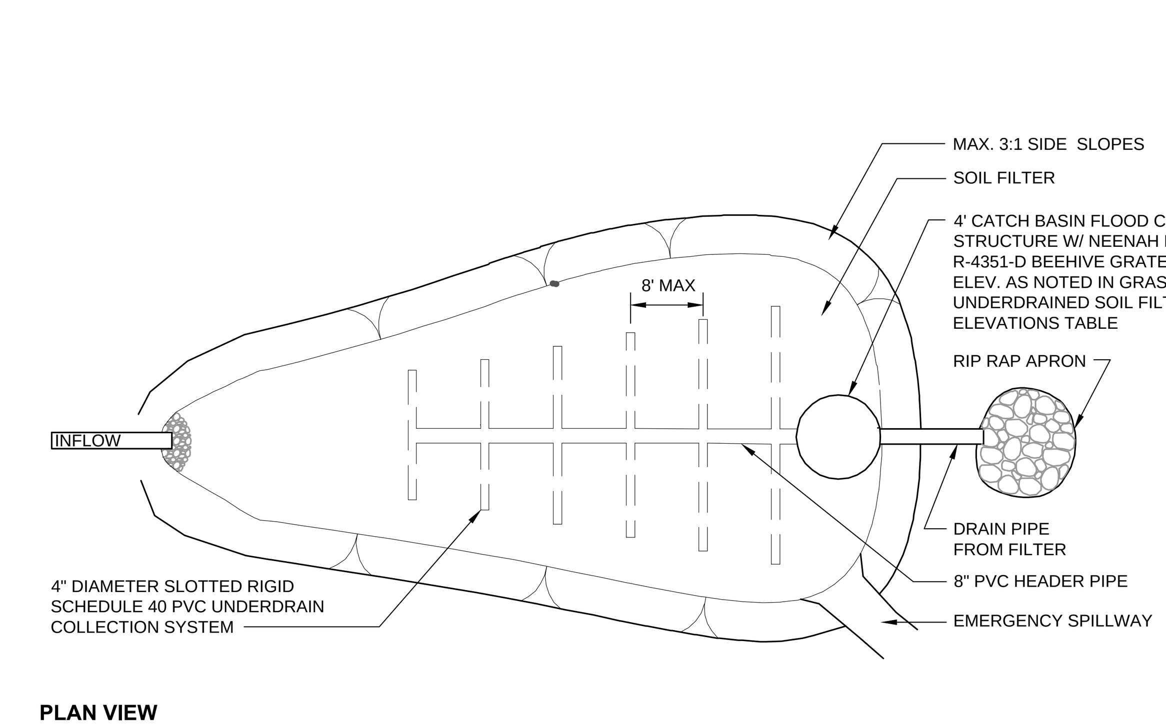
LOW POINT SEDIMENTATION CONTROL BARRIER DETAIL

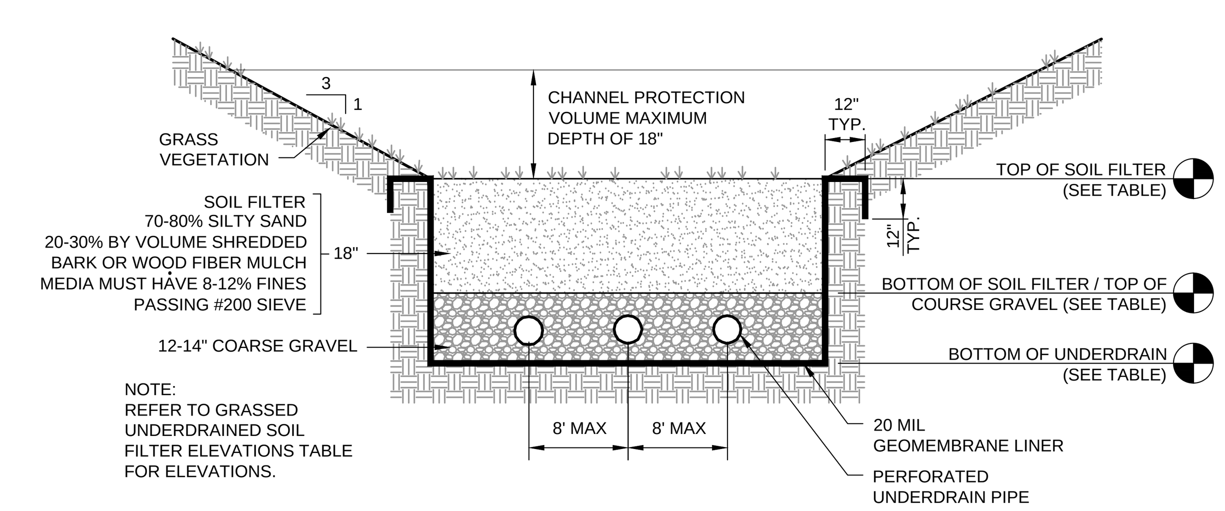
N.T.S.



NOTES:

1. SPREADERS SHALL BE INSTALLED WITH A LEVEL INSTRUMENT. CONSTRUCT LEVEL LIP TO 0% GRADE TO ENSURE UNIFORM SHEET FLOW. LEVEL SPREADER SHALL BE CONSTRUCTED ON UNDISTURBED SOIL (NOT FILL).
2. SELECT GEOTEXTILE FABRIC BASED ON UNDISTURBED SOILS (SANDS, SILTS, CLAYS, ETC.)
3. PLACE 6" LAYER OF UNIFORMLY GRADED STONE 2" TO 3" IN DIA. RAKE TO FORM SMOOTH UNIFORM SURFACE. DO NOT FILL VOIDS IN STONE.
4. THE INLET DITCH SHALL NOT EXCEED A 1% GRADE FOR AT LEAST 20 FEET BEFORE ENTERING THE SPREADER.
5. STORM RUN-OFF CONVERTED TO SHEET FLOW ACROSS OUTLET APRON SHALL FLOW ONTO STABILIZED AREAS. RUN-OFF SHALL NOT BE RECONCENTRATED IMMEDIATELY BELOW THE POINT OF DISCHARGE.
6. PERIODIC INSPECTION AND REQUIRED MAINTENANCE SHALL BE PROVIDED.
7. CONSTRUCTION OF LEVEL LIP SPREADER SHALL BE FROM UPHILL SIDE ONLY. LEVEL LIP & AREA BELOW SPREADER SHALL BE AT EXISTING GRADES & UNDISTURBED BY EARTHWORK OR EQUIPMENT.
8. CONSTRUCT SPREADER WITH LIP AT EXISTING ELEVATION AS SPECIFIED.
9. DOWNGRADIENT RECEIVING AREA MUST BE NATURALLY WELL VEGETATED.
10. DISCHARGE NOT PERMITTED WITHIN 25' OF A STREAM OR WETLAND. CONSULT DEP IF STRUCTURE MUST BE WITHIN 75' OF STREAM OR WATER BODY.

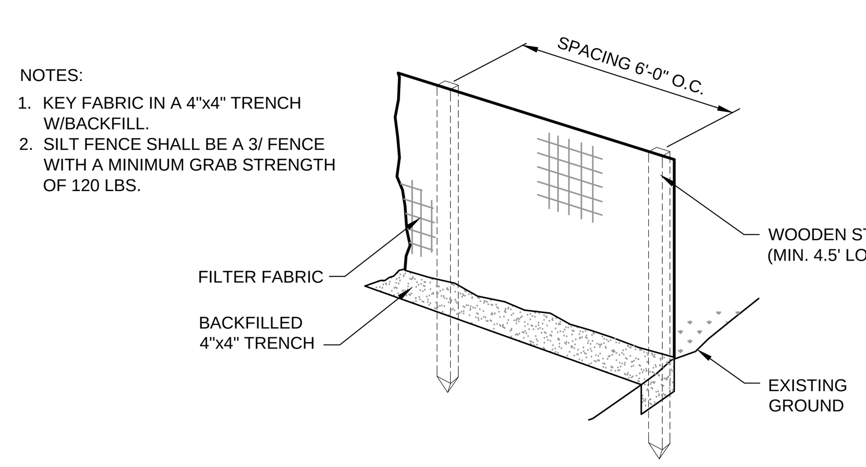




SECTION

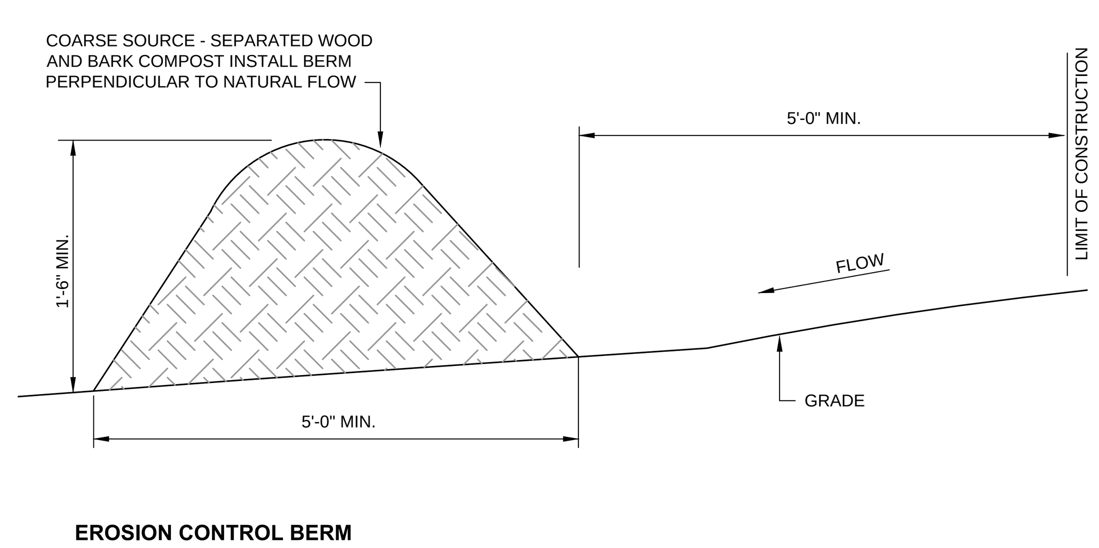
GRASSED UNDERDRAINED SOIL FILTER ELEVATIONS

I.D.	APPROXIMATE EXISTING ELEVATION (FT)	EMERGENCY SPILLWAY ELEVATION (FT)	OUTLET CONTROL STRUCTURE ELEVATION (FT)	PROPOSED TOP OF SOIL FILTER (FT)	PROPOSED BOTTOM OF SOIL FILTER / TOP OF COARSE GRAVEL (FT)	PROPOSED ELEVATION OF PIPE BED (FT)	PROPOSED BOTTOM OF COARSE GRAVEL (FT)	STRUCTURE LINED (YES/NO)	FLOOD CONTROL STRUCTURE RIM ELEVATION (FT)	25 YEAR STORM ELEVATION (FT)
USF1	143.0	144.0	143.0	142.0	140.5	139.8	139.5	YES	N/A	144.0
USF2	138.0	139.5	139.0	137.5	136.0	135.3	135.0	YES	N/A	139.1
USF3	138.0	139.5	139.0	138.0	136.5	135.8	135.5	YES	139.0	139.4



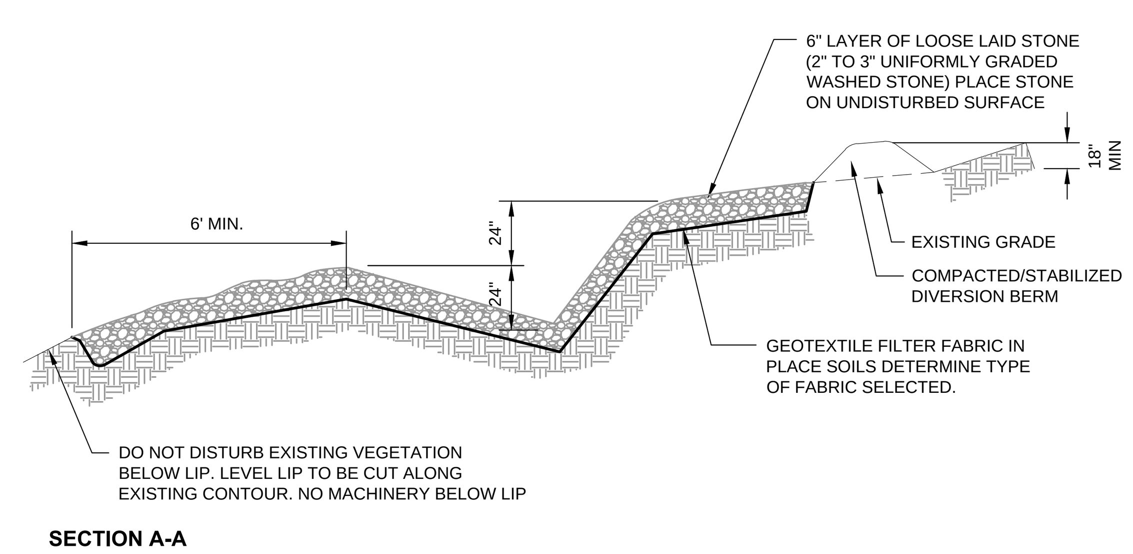
SILT FENCE DETAIL

N.T.S.



EROSION CONTROL BERM DETAIL

N.T.S.



LEVEL LIP SPREADER DETAILS

N.T.S.

GRASSED UNDERDRAIN SOIL FILTER FIELD DETAIL

N.T.S.

CES INC
Engineers • Environmental Scientists • Surveyors

Brewer
465 South Main Street
PO Box 639
Brewer, ME
T.207-989-4824
F.207-989-4881

Machias
61 Dublin Street
PO Box 587
Machias, ME
T.207-255-3270
F.207-255-8367

Presque Isle
549 Main Street
PO Box 827
Presque Isle, ME
T.207-764-8412
F.207-764-8414

Bar Harbor
1366 State Hwy 102
Bar Harbor, ME
T.207-288-0587
F.207-288-0588

Waterville
44 Main Street
Suite 204
Waterville, ME
T.207-680-2202
F.207-680-2204

Lewiston
640 Main Street
Lewiston, ME
T.207-795-6009
F.207-795-6128

PROJECT TITLE
MRC / FIBERIGHT SOLID WASTE PROCESSING FACILITY
HAMPDEN, MAINE

SHEET TITLE
EROSION CONTROL
DETAILS AND NOTES

REV	DESCRIPTION	DATE	DRAWN BY	CHECKED BY
R1				
R2				
R3				
R4				
R5				
R6				
R7				

STATE OF MAINE
SEAN M. THIES
No. 10139
5-13-2015
LICENSED
PROFESSIONAL ENGINEER

ISSUED FOR PERMITTING

SCALE	NO SCALE
DATE	2015-05-12
DRAWN BY	BLQ
CHECKED BY	SMT
DESIGNED BY	ACH
APPROVED BY	SMT
JOB NUMBER	10973.003
DRAWING NUMBER	C502

CES INC

ATTACHMENT 22

RESIDUALS AND WASTE DERIVED PRODUCT DISTRIBUTION PLAN

ATTACHMENT 22

RESIDUALS AND WASTE DERIVED PRODUCT DISTRIBUTION PLAN

Fiberight anticipates generating 30,000 to 40,000 tons per year of process residue waste and ash generated in the biomass boilers that will require off-site disposal. Additionally, Fiberight has made provisions for the disposal of 37,500 to 50,000 tons per year of MSW bypass waste. MRC has obtained letters of intent to accept this waste from Waste Management's Crossroads Landfill located in Norridgewock, Maine, Tri-Community Landfill located in Fort Fairfield, Maine and Juniper Ridge Landfill located in Old Town, Maine. Included in this Attachment are copies of the letters of intent to accept this waste from these entities.

Other materials removed from the waste stream include: recyclables which will be washed, mechanically separated, baled, and sold on the commodities market (Fiberight proposes to work with the Maine Resource Recovery Association (MRRA) to broker recyclables removed from the waste stream); other larger metal recyclables which will be separated out and sold on the open commodities market; bio-methane gas, which will be piped into the adjacent Bangor Natural Gas line; post hydrolysis solids which will be used as fuel for the on-site boilers; and liquid sugars which will be solid on the open commodities market to be converted to ethanol or to provide feedstock for a range of other manufacturing process uses. In addition, the industrial sugars may be fed into the anaerobic digester facility system for production of additional bio-methane gas.

The O&M Manual includes procedures for characterization of waste that will require off-site disposal in the landfill. Refer to Attachment 23 for a copy of the O&M Manual.

WASTE MANAGEMENT

WASTE MANAGEMENT
Crossroads Landfill
P.O. Box 629
357 Mercer Road
Norridgewock, ME 04957
(207) 634-2714
(207) 634-4519 Fax

April 15, 2015

Mr. Greg Lounder
Municipal Review Committee, Inc.
395 State Street
Ellsworth, ME 04605

Re: Crossroads Landfill - Licensed Capacity and Willingness to Accept Waste

Dear Mr. Lounder:

Please be advised that **Waste Management Disposal Services of Maine, Inc. - Crossroads Landfill** is a commercial solid waste disposal facility located in Norridgewock, Maine. At this time, we have approximately 3.1 million cubic yards of licensed capacity remaining in our landfill, which represents approximately 9.4 years of remaining capacity until October of 2024 at present and planned fill rates.

We understand that beginning on April 1, 2018, the proposed MRC/Fiberight Municipal Solid Waste (MSW) processing facility to be located in Hampden, Maine will generate an estimated quantity of 30,000 to 40,000 tons of processed residual waste per year. This represents approximately 20% of the anticipated 150,000 to 200,000 tons of MSW per year to be accepted at the facility for processing. In addition, we understand that the processing facility is required to demonstrate to the Maine DEP that it will have disposal capacity for MSW bypass services to be prepared for cases where the new processing facility could not accept MSW due to insufficient capacity, scheduled or unscheduled downtime, malfunctions or other reasons the facility is unable to process all acceptable waste that is being delivered. If such bypass MSW represents 25% of the MSW that would otherwise be accepted at the processing facility, then the total amount could be in the range of be 37,500 to 50,000 tons per year.

Please be advised, that Waste Management has sufficient licensed capacity, willingness, ability and interest to accept both residual waste and bypass MSW from the proposed MRC/Fiberight processing facility to meet the requirements of the Maine DEP on a long term basis (at least 10 years). Moreover, in the event that existing capacity at the Crossroads facility could not provide service for at least ten years, we have back up capacity available at our Turnkey commercial solid waste disposal facility located in Rochester, New Hampshire and at a number of former

Wheelabrator waste to energy facilities located in New England formally owned by Waste Management, but at which we retain MSW delivery rights for at least ten years.

Sincerely,

Jeff McGown
Sr. District Manager

P.O. Box 605
Caribou, Maine 04736-0605
Murphy Road
Fort Fairfield, Maine 04742

TRI COMMUNITY
RECYCLING AND SANITARY LANDFILL
"Recycling & You, It's The Smart Thing To Do!"

Phone: 207-473-7840
FAX: 207-472-1619
www.tricommunitylandfill.com
E-mail: tcl@ainop.com

April 20, 2015

Mr. Greg Lounder
Municipal Review Committee, Inc.
395 State Street
Ellsworth, ME 04605

Re: Tri-Community Landfill - Licensed Capacity and Willingness to Accept Waste

Dear Mr. Lounder:

Please be advised that the **Tri-Community Landfill ("TCL")** is a municipally-owned solid waste disposal facility located in Fort Fairfield, Maine. At this time, we have approximately 1.6 million cubic yards of licensed capacity remaining in our landfill, which represents approximately 35-50 years of remaining capacity at present and planned fill rates.

We understand that beginning on April 1, 2018, the proposed MRC/Fiberight Municipal Solid Waste (MSW) processing facility to be located in Hampden, Maine will generate an estimated quantity of 30,000 to 40,000 tons of processed residual waste per year. This represents approximately 20% of the anticipated 150,000 to 200,000 tons of MSW per year to be accepted at the facility for processing. In addition, we understand that the processing facility is required to demonstrate to the Maine DEP that it will have disposal capacity for MSW bypass services to be prepared for cases where the new processing facility could not accept MSW due to insufficient capacity, scheduled or unscheduled downtime, malfunctions or other reasons the facility is unable to process all acceptable waste that is being delivered. If such bypass MSW represents 25% of the MSW that would otherwise be accepted at the processing facility, then the total amount could be in the range of be 37,500 to 50,000 tons per year.

At its' meeting on April 17, 2015, the TCL Board of Directors discussed options for providing disposal capacity for the anticipated wastes and residuals from the proposed MRC/Fiberight project; and determined that certain scenarios exist by which beginning on April 1, 2018, the Tri-Community Landfill has sufficient licensed capacity, willingness, ability and interest to accept both residual waste and bypass MSW from the proposed MRC/Fiberight processing facility on a long term basis (at least 10 years).

Sincerely,

Mark Draper, Solid Waste Director

April 30, 2015

Mr. Greg Lounder
Municipal Review Committee, Inc.
395 State Street
Ellsworth, ME 04605

Re: Juniper Ridge Landfill - Licensed Capacity and Willingness to Accept Waste

Dear Mr. Lounder:

We understand that beginning on April 1, 2018, the proposed MRC/Fiberight Municipal Solid Waste (MSW) processing facility to be located in Hampden, Maine will be operational and generate an estimated quantity of 30,000 to 40,000 tons of processed residual waste per year. This represents approximately 20% of the anticipated 150,000 to 200,000 tons of MSW per year to be accepted at the facility for processing. In addition, we understand that the processing facility is required to demonstrate to the Maine DEP that it will have disposal capacity for MSW bypass services to be prepared for cases where the new processing facility could not accept MSW due to insufficient capacity, scheduled or unscheduled downtime, malfunctions or other reasons the facility is unable to process all acceptable waste that is being delivered. Assuming such bypass MSW represents approximately 25% of the MSW that would otherwise be accepted at the processing facility, then the total amount of MSW bypass could be in the range of 37,500 to 50,000 tons per year.

NEWSME Landfill Operations, LLC (NEWSME) operates the Juniper Ridge Landfill (JRL), a state-owned (Bureau of General Services, or BGS) solid waste disposal facility located in Old Town, Maine. As of December 31, 2014, approximately 3.2 million cubic yards of disposal capacity remained at JRL, which represents approximately five years of remaining disposal capacity at present and planned fill rates. BGS and NEWSME expect to file an application for a 9.35 million cubic yard expansion in July 2015. Assuming timely approval, we expect to construct the first expansion cell in 2018. At projected fill rates, this expansion would provide disposal capacity at JRL until approximately 2032.

Under JRL's DEP license amendment that was approved in 2013, JRL is licensed to accept up to 81, 800 tons per year of unprocessed MSW from Maine sources until March 31, 2018. JRL may also accept MSW bypassed from MSW incinerators located in Maine, but is not currently licensed to accept MSW bypassed from any other facilities. Also as a result of the 2013 license amendment, JRL may accept processing residues from new processing facilities located in Maine that do not accept waste from out of State, although material characterization data would need to be reviewed and approved prior to acceptance of such material.

Bypassed MSW and processed residual waste from the MRC/Fiberight MSW processing facility are not currently contemplated in the JRL expansion application that is being prepared. The public benefit determination (PBD) approval for the proposed JRL expansion, and the expansion application itself, might have to be modified for these waste streams to be included in this future disposal capacity.

Please be advised that, provided the proposed expansion is approved, and JRL is approved to accept bypassed MSW and processed residual waste from the MRC/Fiberight MSW processing facility in both the PBD (if required) and the expansion, the JRL will have sufficient licensed capacity, willingness, ability and interest to accept the projected amount of these materials from the proposed MRC/Fiberight processing facility beginning on April 1, 2019 and on a long term basis of at least 10 years at existing and projected fill rates at JRL.

Sincerely,

Jeremy Labbe, P.E.
Engineer & Environmental Manager

CES INC

ATTACHMENT 23

OPERATIONS MANUAL

ATTACHMENT 23

OPERATIONS AND MAINTENANCE MANUAL

Included in this Attachment is a Draft Operations and Maintenance (O&M) Manual which has been prepared for the facility. The O&M Manual includes necessary information to enable supervisory and operating personnel, and persons evaluating the operation of the facility, to determine what sequence of operation, plans, diagrams, policies, procedures, and legal requirements are to be followed for orderly and successful operation on a daily and yearly basis. The O&M Manual is intended to address all the applicable requirements specified in Chapter 409, Section 4 of the Solid Waste Management Rules. After review and approval of the O&M Manual is complete, a final stand-alone document will be provided to Fiberight.

OPERATION AND MAINTENANCE MANUAL

FOR

FIBERIGHT, LLC
HAMPDEN, MAINE

DRAFT

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

MAY 2015
JN: 11293.001

TABLE OF CONTENTS

FOREWORD

The purpose of this Operations and Maintenance (O&M) Manual, hereinafter referred to as "Manual" is to provide guidance to Fiberight, LLC (Fiberight) management and operating personnel for the operations and maintenance of the proposed processing facility (facility) located on a 95 +/- acre parcel in Hampden, Maine. This facility will be owned and operated by Fiberight. The Municipal Review Committee, Inc. (MRC) and Fiberight have an agreement as such that the MRC and its member communities will supply the Municipal Solid Waste (MSW) required to operate the facility. Fiberight submitted a Solid Waste Processing Facility License Application to the Maine Department of Environmental Protection (MDEP) in May 2015. This Manual is intended to ensure that Fiberight operates its facility in accordance with their Solid Waste License and the operational requirements specified in 06 096 CMR Chapter 409.4, last revised July 27, 2014. The facility is located off the Coldbrook Road approximately 0.6 miles to the south of Interstate 95. Refer to the Location Map in **Appendix A**.

This Manual has been prepared to conform with the Maine Solid Waste Management Regulations (MSWRs) effective November 2, 1998. Refer to a copy of the appropriate regulations in **Appendix B**.

Personnel involved in the daily operation of the facility consist of management and employees retained by Fiberight.

Fiberight is responsible for ensuring that operations are carried out in accordance with the current SWMRs, the Facility's Solid Waste License, and this Manual. This responsibility includes policy decisions, contractual arrangements, maintenance, accounting, fiscal, and other operations pertinent to the management and operation of the facility.

All on-site work will be performed by employees of Fiberight. Personnel operating the facility shall be familiar with, and follow, this Manual's intent and general direction. No Manual can provide complete details or answers to all day-to-day problems and situations. Each operation is different. The Site Supervisor or Manager shall record any operational challenges that may arise and ensure corrective measures are taken as required. This information can be used to refine the Manual and provide guidance for facility operational changes if necessary. **Appendix G** contains a list of agencies, firms, and personnel that can provide assistance and answer any questions you may have regarding this Manual and basic operation of the facility.

GENERAL FACILITY OPERATIONS

A. OPERATIONS MANUAL

The Fiberight facility must be operated in accordance with this Manual which incorporates the operating requirements of its license and the Solid Waste Management Regulations (SWMRs). This Manual must be available for inspection by the Maine Department of Environmental Protection (MDEP) staff during normal business hours. This Manual must be updated to keep current with operational changes implemented at the processing facility.

This Manual includes the information that would enable supervisory and operating personnel, and persons evaluating the operation of the facility, to determine the manner in which policies, procedures, monitoring, maintenance, inspection, and legal requirements that are followed to ensure safe and environmentally sound operation on a daily and yearly basis.

A copy of the facility license, including amendments and revisions to that license, and a copy of the applicable sections of the most recent SWMRs can be found in **Appendices B** and **C**, respectively.

B. GENERAL OPERATIONS

The Fiberight facility in Hampden is designed to process 650 tons per day of Municipal Solid Waste (MSW). The MSW generated within area communities, including 187 member communities of the Municipal Review Committee (MRC), will be delivered to the facility on a 5½ day basis in such volumes to support the daily processing rate. The facility has been designed to be able to accept a peak daily delivery of 950 tons per day of MSW. The as-delivered MSW is first pre-sorted to remove waste which cannot be processed ("Non-processible Waste"), such as inert materials large bulky items and waste which, in the reasonable judgment of the operator based upon visual inspection at the time of delivery could, if processed, result in damage to the facility, interruption of normal facility operations, or cause extraordinary processing or maintenance costs, solely by the virtue of the physical or chemical properties of such waste.

The pre-sorted material is then conveyed to a primary trommel where the processible waste over 20 inches is removed and routed to a shredder for size reduction[1]. The 1½-2-inch post shredder material is then sent to the fines processing system. The 20-inch minus material is routed to a screen where the 2-inch minus fines containing glass, grit and small organic materials are removed and routed to the fines processing system. The over 2-inch material is sent to a continuous pulper undergoing a pulping process which produces a biomass pulp and a reject stream containing the majority of the recyclables. The pulper reject stream is then subjected to a second sort process in which the recyclables in the stream are segregated into their individual components for sale to the marketplace. The recyclables to be produced from the second sorting process and sold will be plastic films, rigid plastics, and ferrous and non-ferrous metals. The remaining residue from the second sort process is deposited into staged roll-off containers or walking floor trailers for removal and eventual disposal.

The biomass pulp exiting the continuous pulper is routed to the wash system where any remaining soluble organic material, including solubilized food waste, as well as any remaining non-solubilized food waste, small inorganic materials, ash, sand, glass, small plastic particles

[1] The 20" screen size referred to above may be altered periodically depending on experienced waste composition and seasonal adjustments.

and/or grit ("wash system rejects") are removed from the biomass pulp producing a clean cellulosic pulp. The solubilized organic material is pumped to the anaerobic digestion system where it is converted to biogas in a high rate Anaerobic Digester (AD) and the wash system rejects are conveyed to the fines processing system. The fines processing system is fed material from the post primary trommel overs shredder, the post trommel unders screen minus fraction, and the wash system rejects. In this system, the fines are separated into individual component streams of small plastics, metals, un-pulped material, wood and soluble organics and residue. The small plastics are combined to make an energy bale or engineered fuel pellet and sold, the metals are recovered and sold, the un-pulped material is sent back to the pulper, the wood is mixed with the PHS and processed in the PHS boilers and the soluble organics are sent to the AD.

The clean cellulosic pulp from the wash system is then routed to be further processed in the pre-treatment system and finally the hydrolysis system. The pre-treatment system prepares the cellulosic pulp for hydrolysis by heat pasteurizing it and mechanically treating to facilitate the hydrolysis process. In the hydrolysis system, the pretreated pulp is exposed to enzymes thereby converting carbohydrates contained in the cellulose to sugars. The hydrolysate from the hydrolysis process is sent to a set of large filter presses where the unconverted cellulose or post hydrolysis solids (PHS) is removed from the stream with the purified industrial sugars being sent to either the AD or sold as industrial sugars dependent on market conditions. Sugars sent to the AD are converted to biogas, along with the soluble organics, purified, and injected in to the nearby natural gas pipeline. Residue materials from the secondary sort process and fines processing system are loaded into roll-off containers or transfer trailers and land filled.

B.1 Operations

The facility must be operated and maintained in a manner that ensures it will meet the approved design requirements, will not contaminate ground or surface water, contaminate the ambient air, constitute a hazard to health or welfare, create a nuisance, and will meet the standards in Chapter 06 096 CMR Chapter 400, section 4.

Good housekeeping practices will be implemented as necessary to meet the standards described above. In addition, the following shall also be implemented or maintained:

1. All waste products received by the facility shall be handled inside the Facility within the site confines, and stored and processed indoors within approved infrastructure. Waste handling, sorting activities, and storage will occur within the processing building. Refer to the Site Plan in **Appendix A** for the handling and processing areas. Material storage may be rotated between the different storage areas to allow for increases or decreases in demand of a particular product received by the facility.

2. A paved road provides access to the Facility. If necessary during dry periods, the access ways may need to be wetted to control excessive dust generation resulting from facility activities. The access road will be kept free of excessive dirt and debris by sweeping or other methods, to ensure a clear travel way.

3. A Stormwater and Erosion and Sediment Control Plan has been prepared under separate cover.

4. Sequencing: All material received at the Facility after weighing shall be delivered directly to the tipping area inside the Facility (refer to Site Plan, **Appendix A)**. Sequencing of material stored at the facility is not anticipated to occur.

5. Outgoing: Outgoing residue waste to be landfilled shall be loaded into roll-off containers or transfer trailers on an ongoing basis as for approximately 16 hours of each day of operations. On-site storage is not anticipated at the facility for durations requiring special licensing.

6. Parking and yard areas shall be maintained free of excessive dirt or debris.

B.2 Personnel

The operation of the Facility must be under the overall supervision and direction of a Site Supervisor or Manager qualified and experienced in the Facility's operation, maintenance requirements, and safety procedures. The Site Supervisor or Manager must take whatever measures necessary to familiarize all personnel responsible for operation of the Facility with relevant sections of this Manual.

B.3 Equipment

Fiberight maintains equipment sufficient to meet the operational requirements of the Facility. Routine maintenance of all equipment is provided as necessary. Below is a list of equipment maintained at the site.

1. ________________
2. ________________
3. ________________
4. ________________
5. ________________
6. ________________
7. ________________
8. ________________
9. ________________

B.4 Environmental Monitoring

The Facility currently does not maintain a Storm Water Pollution Prevention Plan (SWPPP) because all processing activities will occur within a 144,000 square foot building. A facility qualifies for "no exposure" when all industrial activities and materials are protected by a storm resistant shelter designed to prevent exposure to stormwater, and the discharge satisfies the conditions at 40 CFR 122.26(g) and Appendix AE of the General Permit.

Fiberight will not be processing wastewater treatment sludge or septage; therefore, odor monitoring is not proposed at the facility. All processing at the facility will take place inside of a 144,000 square foot building and it is not expected that nuisance odors will materially exist outside of the facility.

No other environmental monitoring is proposed for this facility.

B.5 Fire Protection

The Site Supervisor should make sure that the Town of Hampden Fire Department is familiar with the operations of the facility, and in conjunction with them, develop a Fire and Rescue Plan.

Fiberight shall prevent and control fires at the facility by complying with at least the following:

1. Arrangements shall be made with the Town of Hampden Fire Department to provide emergency service whenever needed in accordance with the Fire and Rescue Plan.

2. Both the Occupations Safety and Health Administration (OSHA – 29 CFR 1910.252(a) Fire Prevention and Protection Basic Precautions) and the National Fire Protection Association (NFPA - 51B Standard for Fire Prevention during Welding, Cutting, and Other Hot Work) have established specific requirements for conducting cutting operations (or other "hot" work). Both standards hold management and supervisors responsible for conducting overall safe cutting operations, providing fire protection equipment, and authorizing hot work. At a minimum, OSHA and NFPA fire prevention and protection standards should be utilized during "hot" work at the site.

3. Provide and maintain sufficient on-site fire equipment, such as detachable fire extinguishers for minor fires. Fire extinguishers shall be maintained in the facility at a number of locations, the office building, and on all mobile equipment.

B.6 Vector Control

Vectors are considered to be any insect, bird, rodent, or other organisms capable of transmitting or carrying germs and disease. Vectors are usually only problematic at facility's that store putrescible waste. Based on the nature of the materials processed at Fiberight, vectors will need to be controlled by means that eliminate the potential for transmitting germs and or disease. Therefore, Fiberight will contract with a licensed 3rd party contractor to create and operate a vector management plan designed to reasonably control vectors at the Facility. Fiberight does not anticipate storing putrescible waste for long periods of time because reserve waste supplies are not required for Facility operations; therefore, nesting and reproduction opportunities for vectors may be managed.

B.7 Dust Control

Section B.1 of this Manual provides dust control measures utilized at the facility.

B.8 Material Storage

MSW Storage: The tipping floor in the facility is capable of storing MSW for up to two days prior to processing. MSW will be turned over every two days as it is received at the facility.

Residue Storage: Residues generated from sorting thru normal operations which results in material needing to be landfilled will not be stored on site for any longer than 24 hours. Once a container or trailer is filled it will be transferred within 24 hours to a licensed solid waste facility for landfilling.

Recyclables Storage: Recyclables generated from sorting will only be stored on site long enough to fill transport trailers and then sold as commodities on the open market.

B.9 Routine Maintenance and General Cleanliness

Fiberight must provide for routine maintenance and general cleanliness of the entire Facility site. This is accomplished through good housekeeping practices utilized at the site as described in Section B.1 of this Manual.

B.10 Erosion and Sedimentation Control

The Facility must control sedimentation and erosion during operation of the facility as required by the facility's Stormwater and Erosion and Sediment Control Plan.

C. ACCESS TO FACILITIES

Fiberight shall provide, and maintain in good repair, access roads at the Facility site as well as maintain adequate space to allow the unobstructed movement of emergency personnel and equipment to operating areas of the Facility.

Fiberight's normal operational hours are:

Monday - Friday: 6:00 AM to 6:00 PM
Saturday 6:00 AM to 2:00 PM

D. ACCEPTANCE AND DISTRIBUTION OF SOLID WASTE

D.1 Acceptable Waste

Fiberight may only accept wastes for which the Facility has been specifically designed and permitted to accept by the MDEP. Incoming wastes must undergo a visual inspection and, if appropriate, analysis to ensure that only wastes allowed by the facility license are accepted at the Facility. All MSW shall be free of liquids before being accepted at the Facility. All other wastes must be removed and handled at an approved Facility. In general, MSW that is accepted at the Facility includes solid waste emanating from household and normal commercial sources. Municipal solid waste includes front end process residue from the processing of municipal solid waste. Fiberight will install a Closed Circuit Television (CCTV) system that will include cameras positioned to view the tip floor. To the extent practicable, Fiberight will use this system to augment visual inspections, and to track the source of any unacceptable waste.

D.2 Hazardous and Special Waste Handling and Exclusion Plan

A Hazardous and Special Waste Handling and Exclusion Plan is included in **Appendix D** of this Plan.

D.3 Secondary Materials

Secondary materials consist of post hydrolysis solids (PHS) resulting from the gasification of biomass residues. Solid residues from the hydrolysis process will be used in the facility's gasification boiler to serve the Facility's electrical and heating needs. A Beneficial Use License (refer to 06 096 CMR Chapter 418.3.G) is not anticipated because the secondary materials are generated at the facility and will be combusted in the Facility's boiler.

Secondary materials must be distributed in accordance with the provisions of this Manual (refer to Section D.4 below), or other applicable solid waste standards.

D.4 Waste Disposal

The Operator must have procedures in place for disposal of residues and other solid waste generated by the processing facility, including contingency procedures for implementation during emergencies and shutdown periods. The Operator must also maintain a valid contract with a solid waste facility that has MDEP approval to accept the waste.

Residue waste generated at the facility generally includes non-processibles, materials processing residue, and ash from the gasification of post hydrolysis solids/wood residues which will be used as boiler fuel at the Facility, all of which will be landfilled at licensed solid waste facilities. Biofuel will be sold as Compressed Natural Gas (CNG). All residues separated from MSW will be transferred to a licensed disposal company in the State of Maine. Fiberight currently anticipates transporting all residues and bypass MSW to Crossroads Landfill in Norridgewock, and/or the Juniper Ridge Landfill in Old Town, and /or the Tri Community Landfill in Fort Fairfield; and/or the Hatch Hill Landfill in Augusta.

No liquid waste will be generated except for a process wastewater stream caused by periodically purging the plant water system. This process wastewater stream is collected in a tank, tested and discharged to the local wastewater treatment plant for processing.

Any other waste resulting from cleaning and maintenance of the Facility will be processed or landfilled as described above.

D.5 Treated Wood

Wood accepted at the Fiberight Facility will only be the small fraction that is expected to be included with incoming MSW. Fiberight will not accept separate supplies of woodwaste or process woodwaste such that it will be marketed and sold as biomass wood fuel, mulch or alternative daily landfill covers.

Fiberight does not accept construction and demolition debris wood or any source-separated treated wood for processing at their Facility.

E WASTE CHARACTERIZATION

E.1 Analytical Requirements

In accordance with 06 096 CMR Chapter 405.6.C. solid wastes proposed to be disposed at a solid waste disposal facility must be characterized in conformance with the requirements listed in 06 096 CMR Chapter 405.6.C. Fiberight will be producing non-organic residues and ash requiring disposal at a licensed solid waste facility. Non-organic residues which may be classified as “Miscellaneous Wastes” listed in 06 096 CMR Chapter 405.6.C.(2). The analytical requirements listed include the following:

- Complete Toxicity Characteristic Leaching Procedure (TCLP) (per US EPA Method 1311, Federal Register/Volume 55, No. 126, 1992);

- Totals for Aluminum, Arsenic, Barium, Boron, Cadmium, Chromium, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium, Silver, and Zinc (per Methods in US EPA SW-846);
- Chloride, percent carbon, percent moisture, pH, phosphorus;
- Reactivity Characteristics;
- Ignitability Characteristics; and
- Additional parameters as identified by the applicant or the Department. These additional parameters must be based upon the raw material, the proposed activity, or the facility.

Fiberight anticipates generating between 3,000 and 4,000 tons of ash per year in the facility's biomass boiler. Ash will be disposed of in a landfill licensed to accept it and will be characterized in accordance with 06 096 CMR Chapter 405.6.C(4) and sampled for those parameters listed for biomass and fossil fuel boiler ash. Prior to initial acceptance at a solid waste facility, a sufficient number of samples to meet the requirements for statistical analysis as required by US EPA SW-846 must be analyzed as follows:

- TCLP Metals (Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver) per US EPA Method 1311, Federal Register/Volume 55, No. 126, 1992;
- Chloride, percent carbon, percent moisture, pH, phosphorus.

After initial characterization is complete, ash must be analyzed for the parameters listed above at a frequency of one representative sample quarterly.

Additional analytical requirements may be required by the disposal facility receiving waste for disposal.

F. ODOR CONTROL

Due to the nature of the material stored and processed at Fiberight, odors are anticipated to exist and be contained within the Facility building. Odors are not anticipated outside of the Facility in any material amounts because no waste will be handled outdoors. Further, Fiberight will install a negative pressure odor control system at the Facility to assist with odor management. Fiberight does not accept process wastewater treatment sludge or septage; however, if odor issues should arise, Fiberight must immediately contact the MDEP to report odors detected by Facility personnel. Any odor complaints received at the Facility by other persons will be reported to the MDEP. The MDEP, after investigation, will determine whether the Facility has caused a nuisance odor at the site. Facility personnel must, within 30 days of a Department Determination of an off-site odor nuisance, report to the MDEP, in writing, causes of odor generation and completed or planned follow-up action to minimize, control, and treat the odors from the facility.

G. RECORD KEEPING

Fiberight must make provisions to keep the following records and make them available for MDEP inspection and copying for the duration of the facility operation and a minimum of two years after facility closure:

1. When applicable, as-built engineering drawings of the Facility, including a schematic showing the relationship of the various subsystems;

2. Analytical data results required by these rules or license conditions;

3. An Operation and Maintenance Manual meeting the requirements of this section 4.A; and

4. Copies of periodic and annual reports submitted to the MDEP.

Other records that should be kept so that easy preparation of the Annual Report required to be submitted to the MDEP are discussed in Section I below.

H. PERIODIC REPORTING

Fiberight shall submit periodic reports to the MDEP containing the results of environmental monitoring, including waste characterization and any other information required in accordance with the facility license.

I. ANNUAL REPORT

By February 28th of each year, the Facility Operator must pay an annual facility reporting fee to the State of Maine, as established by the Department, and submit an Annual Report to the MDEP for review and approval for the previous calendar year. The Annual Report must include a summary of activity at the Facility during the past year, including a discussion of any odor problems, and a discussion of any factors, either at the Facility or elsewhere, which affected the operation, design, or environmental monitoring program of the facility. The Annual Report must summarize the Facility's activities, and at a minimum include the following:

1. Weight or volume and type of wastes received by the facility;

2. Weight or volume of product and secondary material produced;

3. Weight or volume of secondary material used on-site and distributed off-site;

4. Weight or volume of waste and secondary material stored on-site as of December 31;

5. A general summary of the processing operation including problems encountered and follow-up actions, changes to the Facility operation, and a summary of odor or other complaints received by the Facility during the previous year; and

6. Other alterations to the facility site, not requiring MDEP approval, that occurred during the reporting year. Minor aspects of the facility site proposed to be changed in the current year may be described in the Annual Report. Changes handled in this manner are those that do not require licensing under minor revision or amendment provisions of Chapter 400.

J. FACILITY CLOSURE

J.1 Closure Plan

Fiberight shall submit a Closure Plan to the MDEP a minimum of 90 days prior to the proposed date of the permanent closure of a solid waste processing facility. This must be submitted as a proposed minor revision to the existing Facility license. The Plan must include:

a. An outline of the proposed closing operation;
b. A schedule for the removal of all stored wastes and secondary materials; and
c. The intended destination of all stored wastes and secondary materials.

J.2 Closure Performance Standard

The Facility must be closed in a manner that minimizes the need for further maintenance; and so that the closed Facility will not pollute any waters of the State, contaminate the ambient air, constitute a hazard to health or welfare, or create a nuisance. At a minimum, the Applicant must remove all wastes and secondary materials from the facility; and broom-clean the Facility structures and equipment.

APPENDIX A

LOCATION MAP and SITE PLAN

APPENDIX B

SOLID WASTE LICENSE

APPENDIX C

MAINE SOLID WASTE MANAGEMENT REGULATIONS

APPENDIX D

HAZARDOUS AND SPECIAL WASTE HANDLING AND EXCLUSION PLAN

HAZARDOUS AND SPECIAL WASTE HANDLING AND EXCLUSION PLAN

Facility Safety Officer

The facility Supervisor shall be designated as the "Facility Safety Officer." Annually, the Facility Safety Officer shall work with the Hampden Fire Department to provide training to the operation staff on:

- Detection of hazardous and special waste;
- Appropriate notification procedures; and
- Appropriate handling procedures.

Identification/Notification of Unpermitted Wastes

Unpermitted hazardous and special wastes shall not be accepted at the Fiberight facility. To ensure this, employees shall check all waste being deposited at the facility. The type of container and origin of the waste can help identify hazardous wastes and special wastes. Under no circumstances are people allowed to deposit any waste other than those listed in Section D.1 of this Manual.

If an unknown waste is observed by employees, the following list shall be used as guidance to help identify and handle materials of concern. Excluded items are not limited to those specifically listed below.

- <u>Calcium Hypochlorite</u>**:** Used for disinfecting pools but is reactive when wet. Can release chlorine gas and cause fire when wetted. Treat as hazardous; prevent wetting or contact with moisture; if wetted, evacuate area. Keep away from petroleum and other organic materials.

- <u>Asbestos</u>: Friable asbestos insulation which can easily become airborne is of the most concern. However, asbestos can take many forms and can be combined with other materials to sometimes make non-friable asbestos siding, flooring, or other products. If suspected to be or contain friable asbestos, contact the MDEP asbestos abatement program personnel at telephone number 207-287-2651. Avoid inhalation of particles.

- <u>Bio-Medical Wastes</u>: May be red bag waste from hospitals, laboratories, clinics, nursing homes, and occasionally doctors' offices. These wastes include blood, body parts, disposable instruments, linens, and other soiled items. Keep people away, follow hazardous waste procedures, including notifying the appropriate responder either a qualified Fire Department or the MDEP. If accidentally contacted, disinfect contact area with 1:3 bleach to water solution.

- <u>Industrial Chemicals</u>: Generally, liquid in 5 gallon or larger pails or drums of either plastic or steel. Occasionally lined cardboard barrels are used. Also some solids, especially flakes or granular materials, can cause excessive corrosion or be reactive with liquids. Solids may be in any form of container including loose. Avoid skin contact and breathing exposure; treat as hazardous.

- Laboratory Chemicals: Usually in smaller containers of one pint to one gallon, glass or plastic bottles. Laboratory Chemicals can be severe irritants, highly toxic or explosive. Avoid skin contact and breathing exposure; do not open or jar containers. Treat as hazardous.

- Sandblast Grit: Generally fine sand or garnet mixed with paint, brick, and/or masonry chips. Avoid breathing; handle as special waste.

- Waste Oil: Includes used motor oils, hydraulic fluid, or other lubrication oils from individuals, farm operations, and vehicle and heavy equipment repair firms. Avoid skin contact; direct this material to the on-site used oil collection area.

Finding and Reacting to an Unknown Waste

When unknown material is found at the facility, Fiberight shall identify the material to determine whether it is a licensed solid waste, special waste, universal, or hazardous waste. If the identified material is a hazardous waste, Fiberight shall attempt to identify the person who has left, delivered, or attempted to deliver the hazardous waste and notify the MDEP.

- While keeping a safe distance upwind from the material, the employees may attempt to determine the following, if safe to do so:
  - Look for container or waste labeling.
  - Determine the physical state of the material (solid, liquid, or gas).
  - Estimate container size or amount of waste.
  - Determine the type and condition of the container or packaging.

- If the material is determined to potentially be hazardous, the employees shall:
  - Evacuate and secure the area of the facility around the material.
  - If safely feasible, determine if there is any release of the material to the soil, water, or air.
  - If safely feasible, determine if any release found has been confined or is ongoing.
  - Undertake the appropriate notification procedure below.

Notification

When hazardous waste or suspected hazardous waste is found left at the facility, employees shall:

- Notify the Hampden Fire Department at 862-4586

- Notify the MDEP anytime at 1-800-482-0777 or the Maine State Police at 1-800-452-4664.

When unpermitted special waste is found left at the facility, Fiberight shall notify a Solid Waste Staff person at the MDEP regional office between 8:00 a.m. to 5:00 p.m., Monday through Friday. Once approved by MDEP, Fiberight shall authorize removal of any unpermitted waste.

If Fiberight cannot identify the material; notify the Hampden Fire Chief and the MDEP at the number listed above for assistance in identification. If sampling and further detection of hazardous or special waste is required, a qualified hazardous waste handling firm or solid waste contractor must be used, as appropriate.

Clean-up/Decontamination

Only trained personnel shall handle hazardous wastes. Such training shall follow the guidelines of 29 CFR Part 1910.120. Unpermitted special wastes shall be removed from the area where found and transported to a special waste disposal facility licensed to accept that special waste within 60 days. Because hazardous wastes require special training to handle, and to minimize the area of potential, it is recommended that any hazardous waste found at the solid waste facility be removed by qualified personnel from the site directly.

Emergency Information

Fiberight shall have the following telephone numbers available at the facility for telephone notifications:

MDEP-Bureau of Remediation & Waste Management, Bangor Office	941-4570	Normal business hours
MDEP-Emergency Spill Hot Line	1-800-482-0777	After hours or weekends
Hampden Fire Department	862-4586	
Hampden Police Department	862-4000	
Ambulance	911	
Maine State Police	1-800-452-4664	For reporting hazardous waste
Maine Poison Center	1-800-442-6305	

The closest location for emergency medical care is Eastern Maine Medical Center (EMMC) in Bangor.

Directions to EMMC

1. North on Interstate 95.
2. Take Hogan Road exit in Bangor and turn right onto Hogan Road.
3. Follow Hogan Road approximately 1 mile and merge onto State Street.
4. Continue following State Street for approximately 8/10 mile.
5. Turn Left into EMMC Emergency Room.

Written Reports

A written report shall be filed with the MDEP-Bureau of Remediation & Waste Management within 15 days of any incident involving hazardous waste or material.

The report must indicate:

- Date and time of incident;
- Location;
- Material lost or spilled;
- Amount lost or spilled;

- Amount recovered;
- Cause of the incident;
- Corrective action taken;
- Clean-up method used;
- Disposition of recovered materials;
- List of agencies notified; and
- Time agency responded on site.

APPENDIX E

HAZARDOUS and SPECIAL WASTE EXCLUSION REPORTS

APPENDIX F

OPERATING RECORDS

APPENDIX G

SOURCES OR ASSISTANCE

Consultant:
CES, Inc.
Denis St. Peter, P.E.
465 South Main Street
Brewer, Maine 04412
Office: 989-4824

Owners:
Fiberight, LLC
853 Industrial Park Drive
Lawrence, VA 23868
Office: 410-340-9387

Municipal Review Committee, Inc.
395 State Street
Ellsworth, ME 04605
Office: 207-664-1700

Police:
Hampden Police Department
106 Western Avenue
Emergency Tel: 911
Non-Emergency Tel: 862-4000

Fire:
Hampden Fire Department
106 Western Avenue
Tel: 862-4586

Asbestos Handling & Disposal:
Asbestos Removal, Inc.
739 Odlin Road
Bangor, ME 04401
Tel: 947-4035

Hazardous Waste:
Bureau of Remediation and Waste Management
Maine Department of Environmental Protection
17 State House Station
Augusta, ME 04333-0017
Office: 287-7800

Solid Waste Facilities Regulation:
Bureau of Remediation and Waste Management
Maine Department of Environmental Protection
106 Hogan Road
Bangor, ME 04401
Attn: Karen Knuuti
Office: 941-4570

ATTACHMENT 24

VARIANCES

ATTACHMENT 24

VARIANCE REQUESTS

There are currently no variance requests made in connection this project application.

CES INC

ATTACHMENT 25
SOLID WASTE MANAGEMENT HIERARCHY

ATTACHMENT 25

SOLID WASTE MANAGEMENT HIERARCHY

Consistency of the Planned System with the Hierarchy

The Waste Disposal Agreements between the MRC member municipalities and the entity that owns the PERC facility are scheduled to expire on March 31, 2018. The PERC Partnership Agreement also expires on December 31, 2018. Development of the successor arrangements to these agreements provides a rare opportunity to reconsider how the entire MSW system can be restructured and redefined after such date to best serve the MRC municipalities in compliance with MRC's mission and to be consistent with the State's solid waste management hierarchy set forth in 38 M.R.S.A. §2101. In this context, MRC has been working to develop a system involving facility component parts that comprise a holistic and integrated approach.

As part of MRCs planned system for management of solid waste, MRC has entered into a Development Agreement (refer to Attachment 4) with Fiberight, LLC to develop a solid waste processing facility. The Facility will serve to remove recyclables currently not being removed from the waste stream and convert remaining organics into renewable fuels. To that end, MRC's planned system will divert additional material from the waste stream and will overall reduce the volume of MSW waste requiring land disposal in the State of Maine.

The Fiberight facility's proposed system for management of MSW complies with the *State of Maine Solid Waste Management Hierarchy* (38 M.R.S.A § 2101), which consists of the following methods of solid waste management to the extent practical in order of priority:

1. Reduction of waste generated at the source;
2. Reuse of waste;
3. Recycling of waste;
4. Composting of biodegradable waste;
5. Waste processing that reduces the volume of waste needing land disposal; and
6. Land disposal of waste.

The interrelationship of each of the management methods in the hierarchy with the elements of the MRC and Fiberight facility's proposed system and its overall management, are discussed in the sections below.

Reduction of Waste Generated at the Source

Generally, programs to encourage waste reduction are implemented at the local level by municipalities in order to reduce the quantity of waste being generated and requiring collection. Such programs typically include education, outreach, and technical assistance programs regarding direct actions to reduce waste creation, as well as pay-as-you-throw (PAYT), and other programs that provide financial incentives for generators not to generate waste.

MRC has supported, and will continue to support the incorporation of waste reduction into its future management of solid waste in the following ways.

- Appropriate contract terms, facility scale, and processing capacities. Development of a solid waste processing facility requires infusions of capital from lenders or equity investors, which need a sufficient level of assurance or guaranty regarding the quantities of MSW to be delivered to the facility. MRC has deep knowledge of such assurances and guarantees by virtue of its long experience representing municipalities in discussions of the guaranteed annual tonnage requirements in the disposal contracts for the PERC facility. Stemming from that experience, MRC is committed to ensure that agreements supporting the development of the Fiberight facility will avoid business arrangements, such as minimum tonnage delivery guarantees set at levels that are too high or with insufficient flexibility, that might undermine or conflict with municipal efforts to reduce the amount of waste generated within their borders. Similarly, MRC has ensured that the Fiberight facility has capacities that can be reasonably supported by delivery commitments that are compatible with municipal waste reduction efforts, and are not so large as to undermine efforts at waste reduction.

Re-use of Waste

Generally, programs to encourage waste re-use are comparable to those that encourage waste reduction, in that they are implemented at the local level by municipalities in order to reduce the quantity of waste being generated and requiring collection. Such programs typically include education, outreach, and technical assistance programs regarding direct actions for waste re-use, as well as establishment of local swap shops and forums to facilitate re-use.

The measures described above for MRC to support the incorporation of waste including designation of appropriate contract terms and facility processing capacities, as well as appropriate technical support from MRC for local programs, will also serve to support the incorporation of local waste re-use programs.

Recycling of Waste

MRC municipalities already sponsor a wide variety of local programs to collect and process recyclables through operation of collection programs, drop-off programs, and operation of transfer stations and other facilities. The measures described above for MRC to support the incorporation of waste re-use and reduction, including designation of appropriate contract terms and facility processing capacities, as well as appropriate technical support from the MRC for local programs, will also serve to support the incorporation of local recycling. Recyclables that are not captured at the local level will subsequently be captured at the Fiberight facility which will have a very favorable impact in the total quantity of recyclable materials collected in the region. As a regional entity the Fiberight facility will provide a level of recycling service beyond what any individual municipality in its service territory would be likely to develop.

Composting of Biodegradable Waste

Generally, programs to encourage composting of bio-degradable waste are comparable to those that encourage waste reduction and re-use, in that they are implemented at the local level by municipalities and businesses in order to reduce the quantity of waste being generated and requiring collection. Such programs typically include education, outreach, and technical assistance programs regarding direct actions for backyard and local composting, as well as diversion of compatible materials to existing operations for composting or digestion of farm wastes, agricultural wastes, or wastewater treatment facilities with appropriate capability. In light of the new efficiency provided by the Fiberight facility for the conversion of organics to high value fuel products, MRC expects that some local programs will transition their organics management activity to the Fiberight facility.

The measures described above for MRC to support programs for incorporation of local waste reduction and re-use programs, including designation of appropriate contract terms and facility processing capacities, as well as appropriate technical support from MRC for local programs, will also serve to support the incorporation of locally managed biodegradable waste into the Fiberight processing facility. With the proposed Fiberight facility, MRC will encourage municipalities to commit to deliver organic materials generated locally to this regional facility for conversion into high-value products.

Waste Processing

The measures described above for the MRC to support programs for incorporation of local waste reduction and re-use programs, including designation of appropriate contract terms and facility processing capacities, as well as appropriate technical support from MRC for local programs, will also serve to support the incorporation of local programs to promote waste processing by encouraging municipalities to commit to deliver materials generated locally to the regional Fiberight facility for conversion into high-value products.

Land Disposal of Waste

MRC notes that the availability of a secure landfill disposal capacity is an integral part of development of an integrated system for solid waste management in accordance with the hierarchy of management methods described above. Landfill capacity is necessary to provide MRC and Fiberight the flexibility to accept a range of types and quantities of waste that might need to be land filled in the event measures for achieving the maximum practical level of diversion are less successful than had been projected.

MRC and Fiberight estimate that 80 percent of all incoming waste will be recycled and processed at the facility. The remaining 20 percent will result in process residue that will require land disposal. In addition, landfill disposal capacity will also be necessary for scheduled and unexpected shut downs of the processing facility. MRC and Fiberight have received letters of intent (refer to Attachment 22) to accept residue waste generated at the processing facility as well as bypass waste that will need disposal during facility shut downs. As defined in the solid waste regulations, "Bypass" means any solid waste that is destined for disposal, processing, or beneficial use at a solid waste facility, but which cannot be disposed, processed, or beneficially used at that facility because of malfunction, insufficient capacity, inability of the facility to process or burn, down-time, or any other reason. Refer to Attachment 22 for copies of these letters of intent to accept residue and bypass waste generated at the processing facility.

Conclusion

Based on the above, the Fiberight facility's planned system is consistent with the State of Maine Solid Waste Management Hierarchy because (i) MRC, as a project participant, is committed to continuing its support of reducing solid waste at its source; (ii) the conversion of solid wastes to renewable fuels at the Fiberight facility promotes the reuse of wastes, (iii) a portion of solid waste not converted to renewable fuels at the Fiberight facility will be sold as recyclables, promoting the recycling of waste, (iv) for any organics, the Fiberight facility will have the capability to convert biodegradables into renewable fuels, and (v) the overall Fiberight waste processing system significantly reduces the volume of solid waste needing land disposal.