

**Section 11**  
**Soils**

Maine GenLead, LLC proposes an approximately 59 mile 115 kilovolt (kV) generator lead transmission line extending from Bangor Hydro-Electric Company's existing Keene Road substation in Chester to a new substation servicing the Oakfield Wind Project in Oakfield. The original Oakfield Wind Project, Maine Department of Environmental Protection (MDEP) Permit #L-24572-A-N and L-24572-TF-B-N (January 21, 2010) is being amended through a separate application to expand its generating capacity. Together, the amendments constitute the Revised Oakfield Wind Project. The purpose of the proposed 115-kV generator lead transmission line is to provide a direct interconnect between the Oakfield Wind Project and the Bangor Hydro-Electric and ISO New England transmission system to accommodate the energy output of the expanded Oakfield Wind Project.

Initially, Stantec created a Class D soils survey associated with the proposed transmission line project. In addition, Stantec conducted a hybrid Class L site investigation for areas where hydrologically sensitive soils or soil conditions were suspected based on wetland delineations and the Class D soils analysis. Finally, portions of the transmission line corridor were visited with State Soil Scientists David Rocque on August 18, 2010, and November 9, 2010.

Based on review of the existing U.S. Department of Agriculture soil maps and field surveys, most of the soils along the proposed project route appear suitable for the proposed development. There are limitations inherent to some of the soils identified at the site, but any limitations may be overcome by planning and site preparation in these areas. During field investigations, site features such as the depth to bedrock, runoff volumes, seasonal soil saturation depths, potential for frost and erosion activity, rock out-crops, and wetland areas were investigated. Following is a summary of identified areas and on-site features whose soils may potentially impact development of the project.

- Steep slopes located in the proposed corridor may require cuts to install utility pole structures. Special attention to erosion control practices and stabilization of these areas will address this limitation.
- The route generally has a "very deep" (greater than 60 inches) depth to bedrock classification of mineral soil over bedrock. Areas with shallow bedrock may require drilling and/or blasting to install poles. Erosion control is especially important in shallow soils.
- Wetland areas and hydric soils are present in the existing transmission line corridor. Impacts to these areas will be avoided to the extent practicable. Any pole placement that impacts wetland areas will be minimized.
- The three areas identified as hydrologically sensitive should be crossed using temporary mats, or constructed under frozen conditions.

Prior to any construction activities, implementation of accepted Best Management Practices for erosion and sedimentation control is recommended to reduce the potential for site erosion and sedimentation. See Section 14 of this application for the Erosion and Sedimentation Control Plan for the project.

This report contains:

- The methodology and results of the Class D soils survey (Appendix 11-1);
- The methodology and results of the Hybrid Class L soils survey (Appendix 11-2); and
- The results of the site visits with David Rocque (Appendix 11-3).

**Appendix 11-1**  
**Class D Soils Survey**

## **1.0 INTRODUCTION**

Stantec Consulting (Stantec) compiled soil survey information in association with a proposed generator lead transmission line project located in Penobscot and Aroostook Counties, Maine (Figure 1). The proposed project will involve the construction of approximately 59 miles of a new 115-kilovolt transmission line running from Oakfield to Chester to serve the amended Oakfield Wind Project.

The purpose of this report is to identify and describe the soil types that can be expected to occur along the proposed generator lead transmission line route, and to provide details of specific areas with the potential to be hydrologically sensitive. Each soil type description includes information on the ability or limitation of the soil to support the activities inherent to the construction and operation of the proposed line.

This report initially compiled Class D Medium-Intensity Soil Survey information from existing United States Department of Agriculture (USDA) and Natural Resources Conservation Service (NRCS) soil surveys of Aroostook and Penobscot Counties, Maine. Field investigations were then conducted for the "Hydrologically Sensitive Features" survey attached as Appendix 11-2. Descriptions in this report are based directly upon published soil maps and respective official soils descriptions. This report has been prepared as part of the project requirements and to support permitting procedures as required under the Maine Department of Environmental Protection (MDEP) Site Location of Development Act (Site Law).

## **2.0 PURPOSE OF SOIL SURVEY**

The purpose of this report is to review, identify, and describe the mapped soils that are traversed along the planned route of the proposed project. The soil information may be used to obtain hydrological grouping ratings to assist in the calculations for stormwater runoff curve values required by the MDEP, under the Site Law, 38 M.R.S.A. §§ 481-490; Section 12. This soil information may also be used for general planning purposes relating to development for the proposed project.

## **3.0 SITE DESCRIPTION**

The proposed route primarily crosses soils that are derived from and formed in glacial till. There are also soils that formed in glacio-fluvial, glacio-lacustrine, and organic deposits located in lower elevations and adjacent to waterbodies and streams. According to the soil maps and relevant soil interpretations, slopes along the proposed route are generally moderate (2 to 15%) with very few severe (25 to 45%) slopes. See attached Soil Legend (Attachment 1), and Soil Survey Map Units Summary (Attachment 2).

## **4.0 SITE INVESTIGATION**

For the purpose of this report, soil information was obtained from the existing USDA and NRCS soil surveys of Aroostook<sup>1</sup> and Penobscot<sup>2</sup> Counties. No field investigations were performed as part of the initial survey, and the information contained therein is based solely on published data and soils descriptions. Additional information was obtained via the official NRCS website.

A site investigation was conducted for areas where hydrologically sensitive soils were suspected (see Appendix 11-2 of this application). Finally, portions of the transmission line corridor were visited with State Soil Scientists David Rocque on August 18, 2010 and November 9, 2010 (Appendix 11-3 of this application).

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<sup>1</sup> USDA. 1964. *Soil Survey of Southern Aroostook County, Maine*. U.S. Government Printing Office, Washington, D.C.

<sup>2</sup> USDA. 1962. *Soil Survey of Penobscot County, Maine*. U.S. Government Printing Office, Washington, D.C.

## 5.0 SOIL CHARACTERISTICS

Soils identified along the proposed project route are primarily formed in glacial deposits. Soils formed in glacial till include Thorndike, Plaisted, Monarda, Burnham, Howland, and Dixmont. Soils formed in glaciolacustrine and glaciomarine sediments include Scantic, Buxton, Biddeford, Adams, Suffield, Melrose, and Elmwood series. Soils formed in glaciofluvial deposits include Adams, Stetson, Colton, Red Hook, and Atherton and Allagash series. Soils formed in alluvial or outwash deposits include Saco series. Soils formed in decomposed organic matter include Muck and Peat and Muck. While some mapped units represent a single soil series, many others represent complexes or associations where more than one soil series can be expected to occur. Soil interpretations for each of the identified soil series are located in Attachment 2 of this report.

The following table provides a brief summary of the soil map units along the proposed corridor.

**Table 1. Soil units along the Oakfield II T-line corridor**

Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Total Area (acres)
AaB	Adams loamy sand, 0 to 8 percent slopes	Somewhat excessively drained	A	Not Hydric	Not highly erodible land	2.2
AgB	Allagash fine sandy loam, 2 to 8 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	22.5
BoA	Biddeford silt loam, 0 to 3 percent slopes	Very poorly drained	D	All Hydric	Not highly erodible land	131.2
BuB	Buxton silt loam, 2 to 8 percent slopes	Somewhat poorly drained	D	Not Hydric	Potentially highly erodible land	35.4
BxB	Buxton, Scantic, and Biddeford stony silt loams, 0 to 8 percent slopes	Very poorly drained	D	Partially Hydric	Not highly erodible land	1.2
CnB	Colton gravelly sandy loam, dark materials, 2 to 8 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	14.7
CnC	Colton gravelly sandy loam, dark materials, 8 to 15 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	12.1
DxB	Dixmont silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	0.2
DyB	Dixmont very stony silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Not highly erodible land	2.6
EwB	Elmwood fine sandy loam, 0 to 8 percent slopes	Moderately well drained	C	Not Hydric	Potentially highly erodible land	19.9
HoB	Howland gravelly loam, 0 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	56.0
HvB	Howland very stony loam, 0 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	144.8

Appendix 11-1: MDEP NRPA/Site Location of Development Combined Application  
 Maine GenLead 115kV Generator Lead Transmission Line, Aroostook and Penobscot Counties, ME

Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Total Area (acres)
HvC	Howland very stony loam, 8 to 15 percent slopes	Moderately well drained	C	Not Hydric	Potentially highly erodible land	24.6
Md	Made land	Moderately well drained		Not Hydric	Not highly erodible land	0.5
MeC	Melrose fine sandy loam, 8 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	0.4
MoA	Monarda and Burnham silt loams, 0 to 2 percent slopes	Poorly to very poorly drained	D	All Hydric	Not highly erodible land	268.3
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	89.7
MoB	Monarda silt loam, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible lands	35.1
Mu	Muck	Very poorly drained	D	All Hydric	Not highly erodible lands	7.7
Pa	Peat and Muck	Very poorly drained	D	All Hydric	Not highly erodible land	45.0
PvB	Plaisted and Howland very stony loams, 0 to 8 percent slopes	Moderately well drained	C	Not Hydric	Potentially highly erodible land	100.4
PvC	Plaisted and Howland very stony loams, 8 to 15 percent slopes	Moderately well drained	C	Not Hydric	Potentially highly erodible land	40.3
PgB	Plaisted gravelly loam, 2 to 8 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	45.4
PgC	Plaisted gravelly loam, 8 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	53.1
PrB	Plaisted very stony loam, 0 to 8 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	29.5
PrE	Plaisted very stony loam, 15 to 45 percent slopes	Well drained	C	Not Hydric	Highly erodible land	2.0
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	83.9
RaB	Red Hook and Atherton silt loams, 0 to 8 percent slopes	Poorly drained	C	All Hydric	Potentially highly erodible land	5.1
Sa	Saco silt loam	Very poorly drained	D	All Hydric	Not highly erodible land	10.6
ScB	Scantic silt loam, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Potentially highly erodible land	24.2
SfC	Stetson-Suffield complex, 0 to 15 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	13.9

Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Total Area (acres)
SfE	Stetson-Suffield complex, 15 to 45 percent slopes	Well drained	B	Not Hydric	Highly erodible land	3.6
SuB	Suffield silt loam, 2 to 8 percent	Well drained	C	Not Hydric	Highly erodible land	2.3
TsB	Thorndike and Howland soils, 0 to 8 percent slopes	Somewhat excessively drained	C/D	Not Hydric	Potentially highly erodible land	54.1
TsC	Thorndike and Howland soils, 8 to 15 percent slopes	Somewhat excessively drained	C/D	Not Hydric	Potentially highly erodible land	22.9
ThB	Thorndike shaly silt loam, 2 to 8 percent slopes	Somewhat excessively drained	C/D	Not Hydric	Potentially highly erodible land	10.8
ThC	Thorndike shaly silt loam, 8 to 15 percent slopes	Somewhat excessively drained	C/D	Not Hydric	Potentially highly erodible land	21.1
ThD	Thorndike shaly silt loam, 15 to 25 percent slopes	Somewhat excessively drained	C/D	Not Hydric	Potentially highly erodible land	3.9
TkC	Thorndike very rocky silt loam, 8 to 15 percent slopes	Somewhat excessively drained	C/D	Not Hydric	Potentially highly erodible land	7.6
TvB	Thorndike very stony silt loam, 2 to 8 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	18.3
W	Water bodies			Unknown Hydric	Not rated	7.6
Wn	Winooski silt loam	Moderately well drained	B	Not Hydric	Potentially highly erodible land	3.3

## 6.0 SOIL MAP AND MAP UNIT DESCRIPTIONS

The attached soil survey maps depict the size and location of the soil map units relative to each other and existing site features. Each soil map unit for Aroostook and Penobscot Counties consists of three letters (e.g., BnB). The first two letters represent a phase of the established soil series or complex found within a given soil map unit. The letter at the end of the map unit name indicates surface slope gradient for that map unit; a scale of A-E describes slope ranges, from slight to steep, respectively. Three letter soil map unit abbreviations are county-specific; a map unit abbreviation in Penobscot County may not represent the same soil series or complex in Aroostook County.

Map units that represent a soil complex (e.g., TsB, Thorndike and Howland, 0 to 8% slopes) contain two or more component soils and may exhibit properties of multiple soils series within a given map unit. Descriptions of all soil series that appear in complexes have been included in Attachment 2. When planning work within a map unit that represents a soil complex, properties of all component soil series should be reviewed and considered.

Several soil series named in the USDA and NRCS soil surveys (e.g., Red Hook, Atherton) are no longer used in Maine due to changes in soil temperature regime zones that have occurred since these soil surveys were performed. However, descriptions of these soil series are still accurate representations of

the soil conditions and limitations found within these map units; therefore, they have been included in this report.

The map unit phase name is a representation of the soil characteristics such as texture, stoniness, drainage, and depth to bedrock, each of which may affect the use and management of the soil. There may be small areas of different soils within a soil map unit, known as inclusions. Inclusions may exist within a delineated soil map unit, although the size of the inclusion may be too small to stand as a soil map unit alone. Soil map units identified along the proposed transmission line route are listed in Attachment 2 of this report.

Four map units (Made land, Muck, Peat and Muck, and Water bodies) are not included among the soil series descriptions in Attachment 2. "Made land" map units have been altered by human activity and may contain non-native fill soils. "Muck" and "Peat and Muck" map units are hydric soils that contain organic materials in the first 48 inches of the soil profile. These map units are wetland areas and would pose limitations due to wetness. "Water bodies" are areas of permanent open water such as lakes and rivers.

## **7.0 STUDY LIMITATIONS**

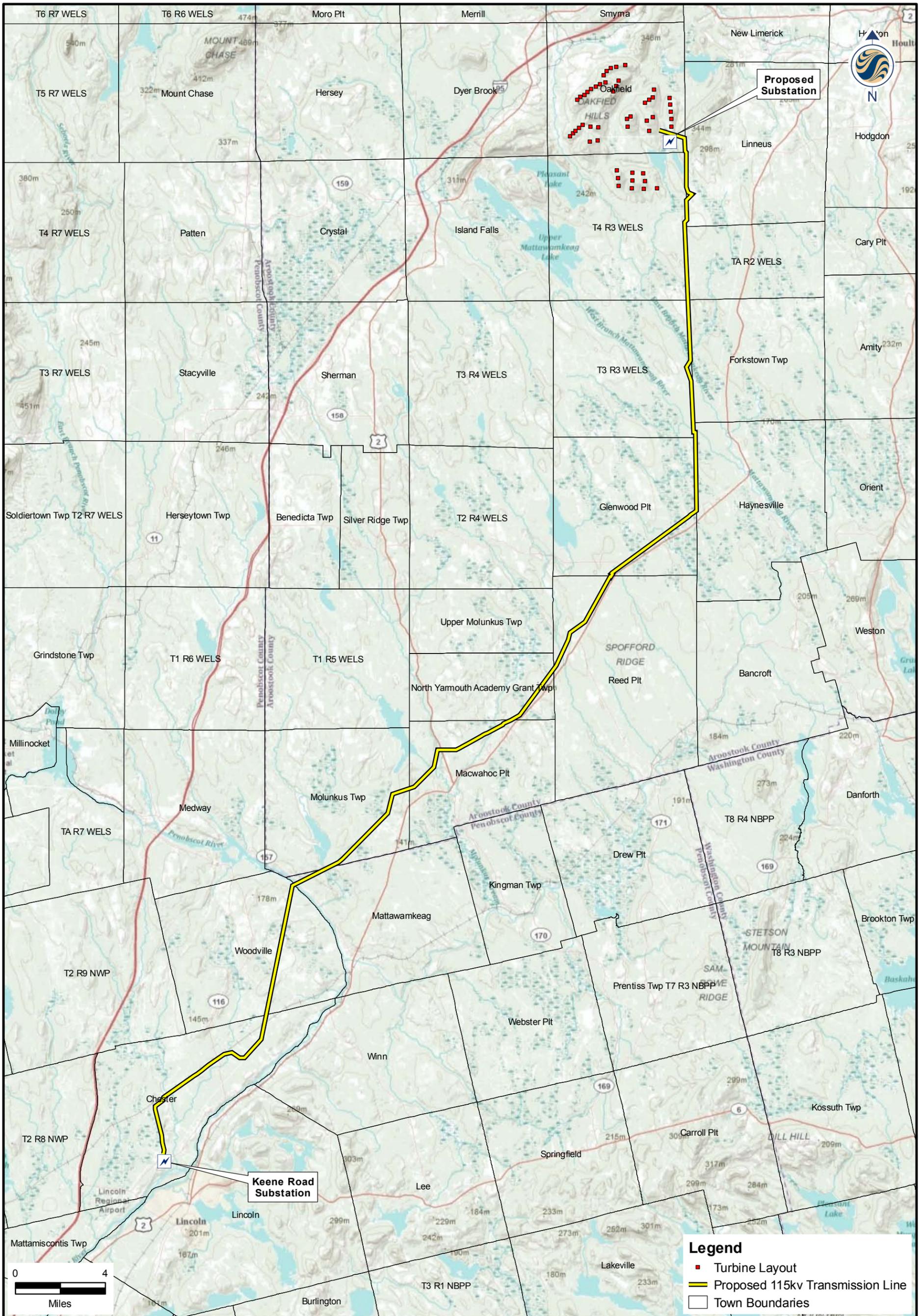
The scope of this investigation has been limited to a compilation of Class D Medium-Intensity Soil Survey data in general accordance with standards and guidelines established by the Maine Association of Professional Soil Scientists<sup>3</sup>, and investigation of specific potentially hydrologically sensitive areas. This soil report and these soil maps have been prepared for exclusive use by Maine GenLead for specific application to their proposed construction of the 115-kilovolt generator lead transmission line from Oakfield to Chester, Maine.

No other warranty, expressed or implied, is made. The conclusions and recommendations presented in this soil report are based on data obtained from the USDA / NRCS soil maps and information. Data from this soil report and soil map should not be used for any other purpose other than the construction of the proposed Project.

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<sup>3</sup> Maine Association of Professional Soil Scientists. 1989 rev. 2004. *Guidelines for Maine Certified Soil Scientists for Soil Identification and Mapping*. [www.mapss.org](http://www.mapss.org)

## **Soils Maps**



Prepared By:



**Stantec**

Project:

Revised Oakfield Wind Project  
Penobscot and Aroostook Counties

Sheet Title:

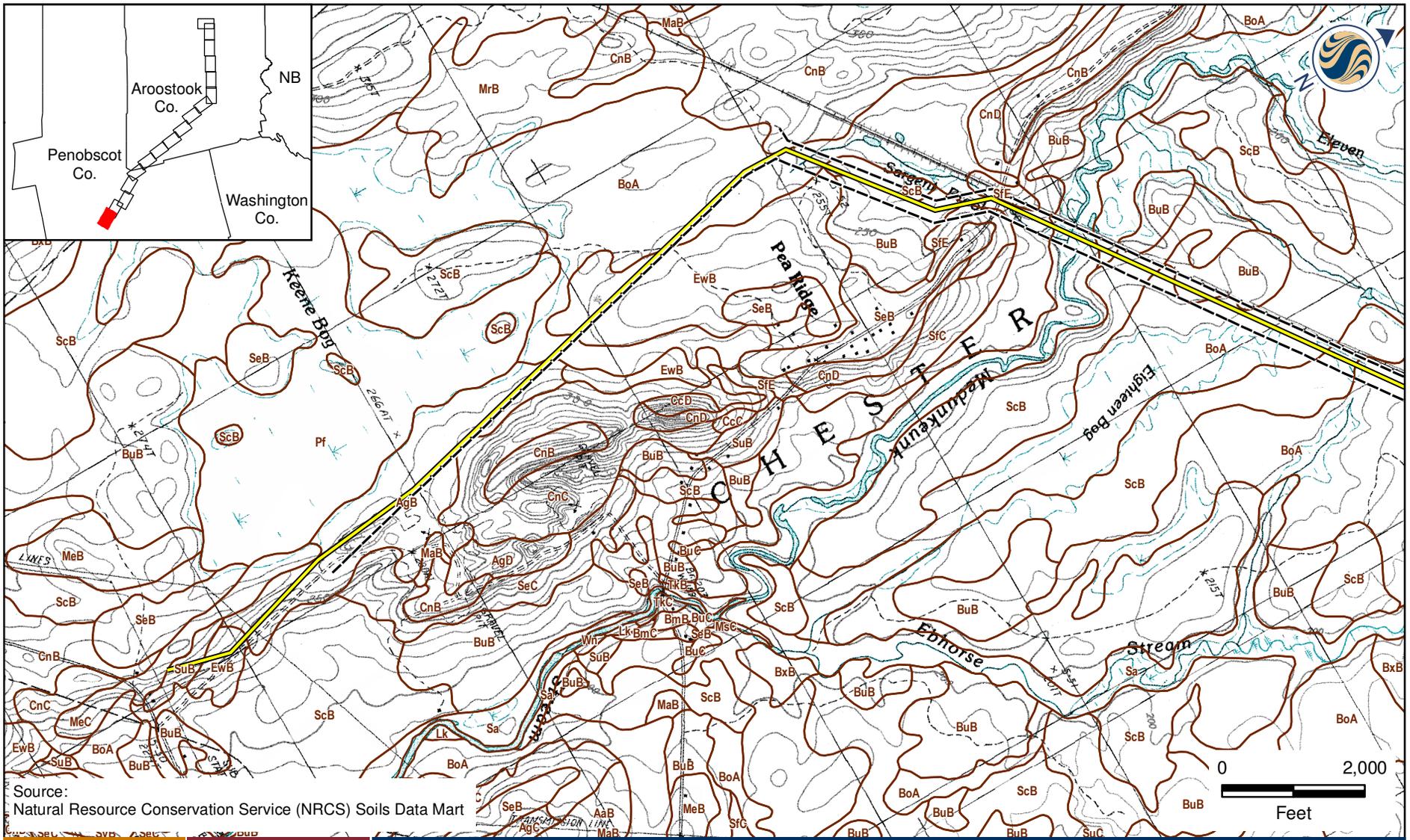
Maine GenLead 115kV Generator  
Lead Transmission Line Corridor

Date: May 2011

Scale: As Shown

Proj. No.: 195600518

Figure: 1



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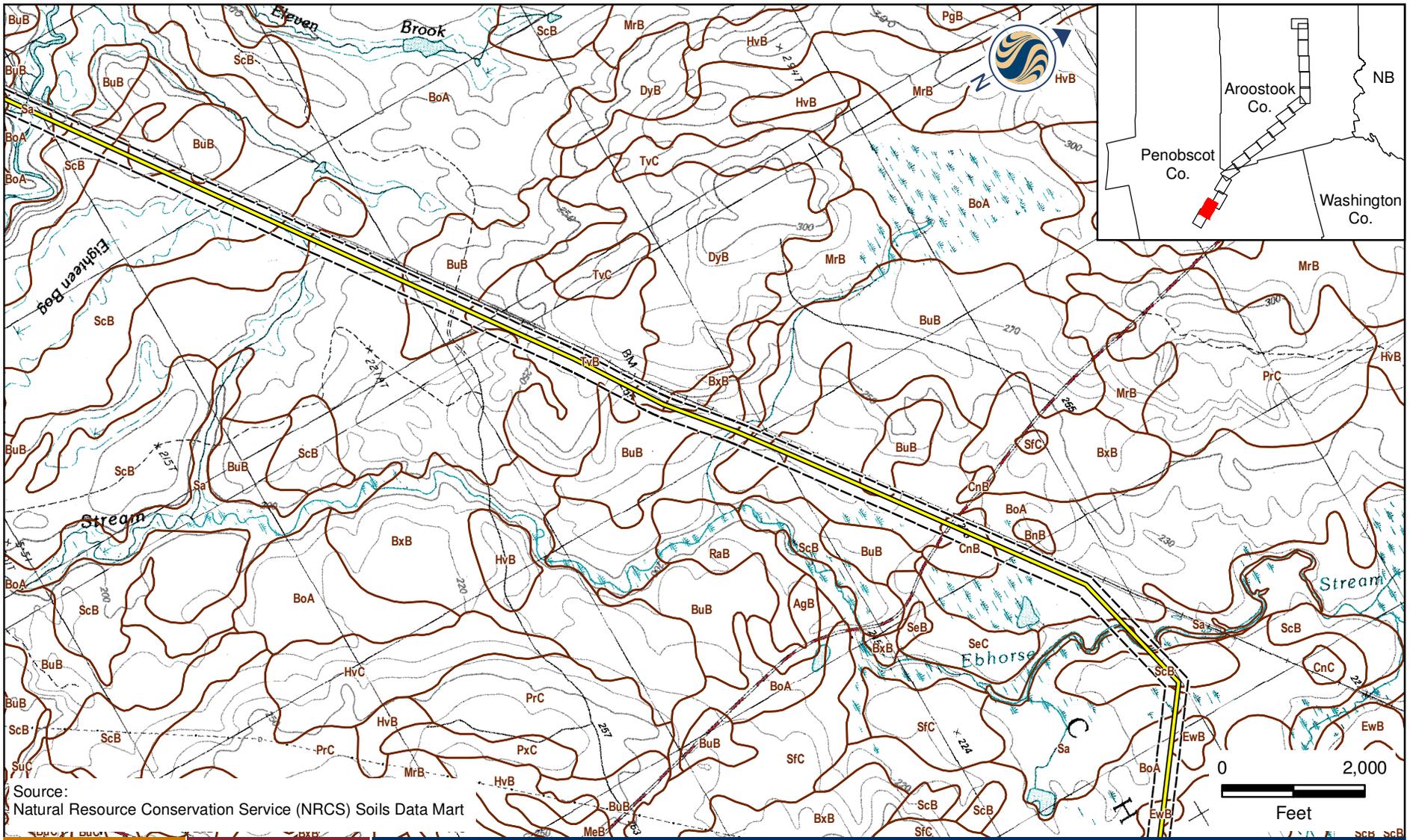
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-  Proposed Transmission Line Corridor
-  Soil Series Boundary

Client/Project  
Maine GenLead, LCC  
115kV Transmission Line  
Aroostook and Penobscot Counties, Maine

Figure No.  
**1 of 17**

Title  
**Soil Survey Map**

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**Legend**

-  Proposed Transmission Line
-  Proposed Transmission Line Corridor
-  Soil Series Boundary

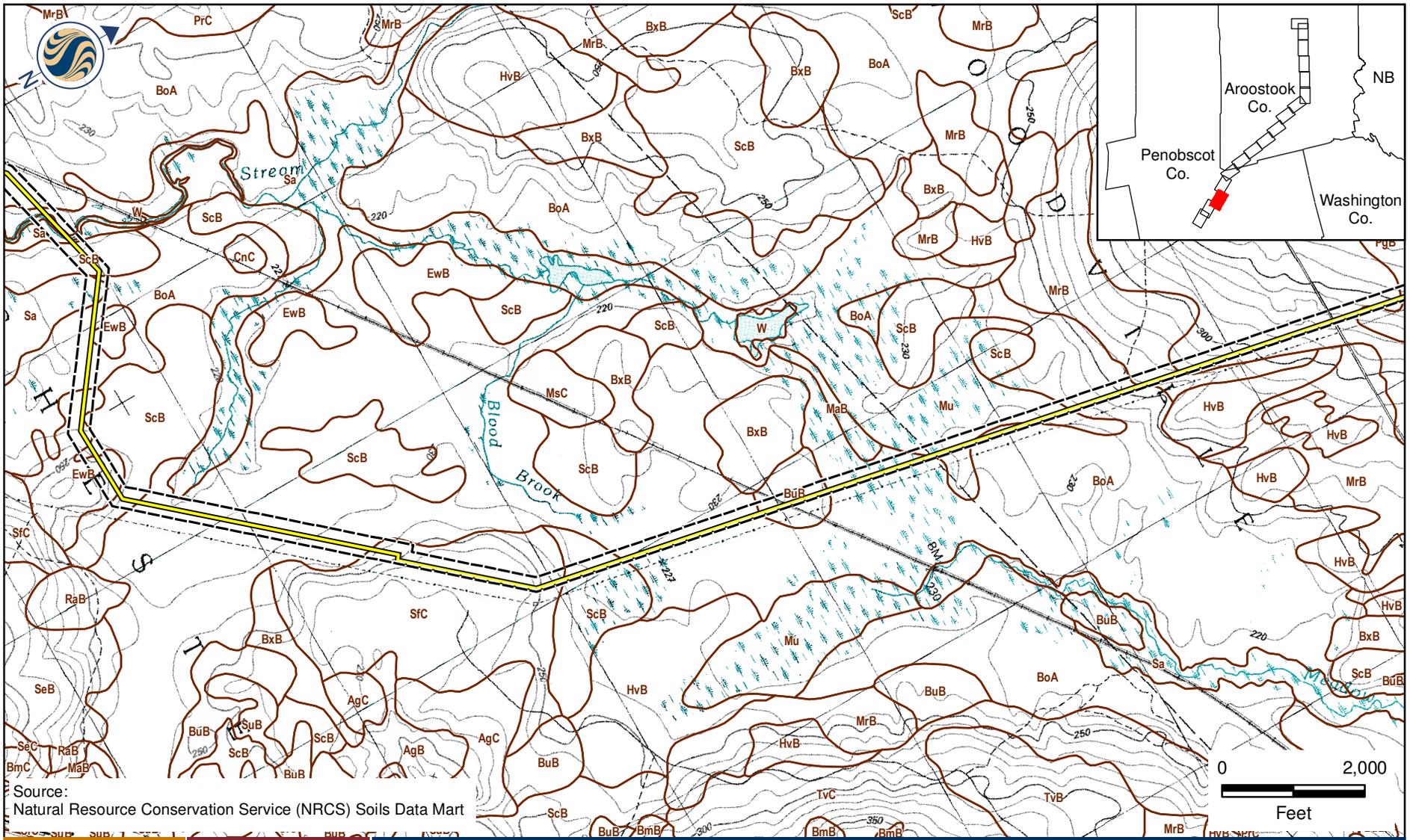
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115kV Transmission Line  
Aroostook and Penobscot Counties, Maine

Figure No.  
**2 of 17**

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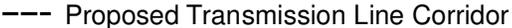
**Soil Survey Map**

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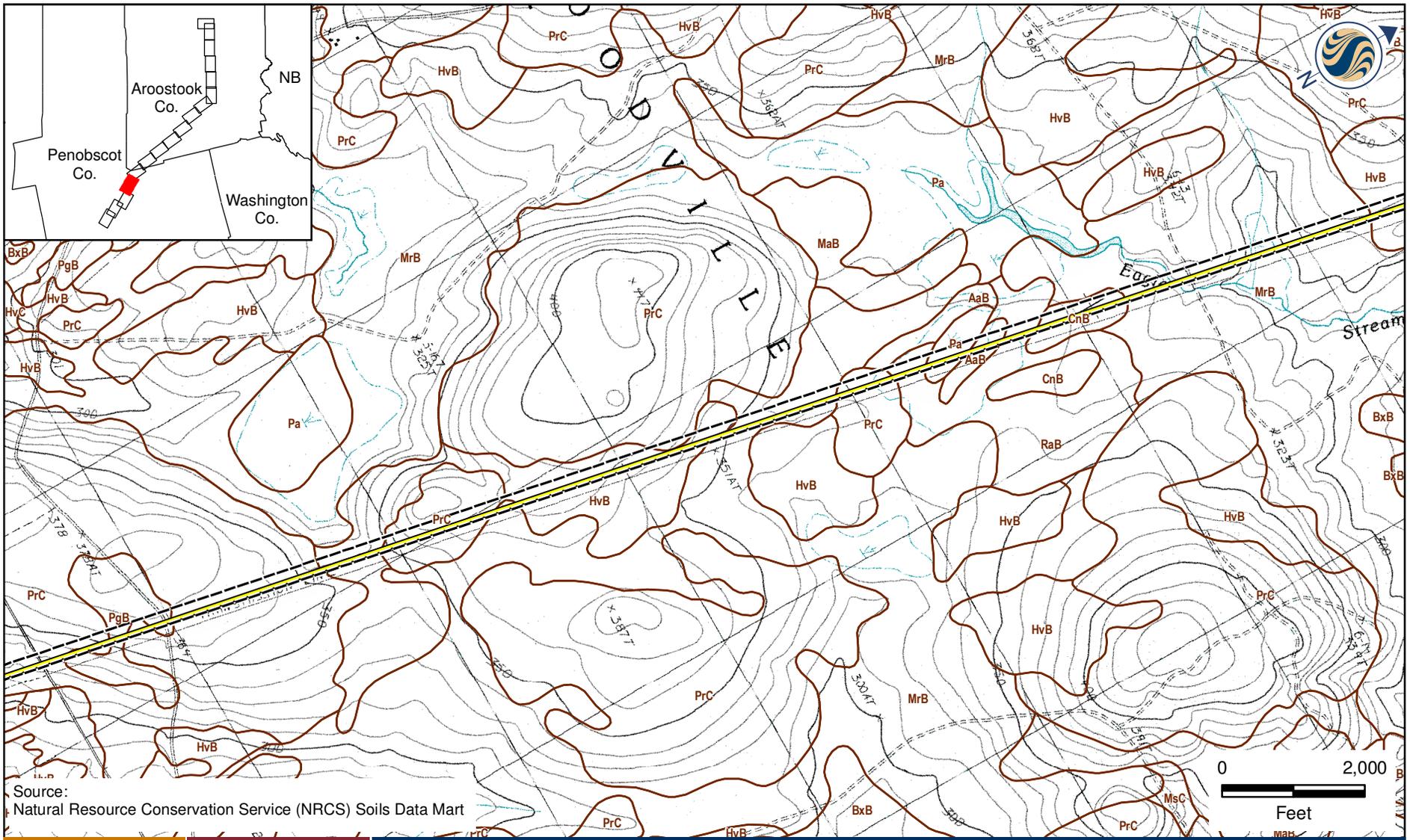
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**3 of 17**

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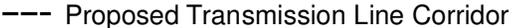
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115kV Transmission Line  
Aroostook and Penobscot Counties, Maine

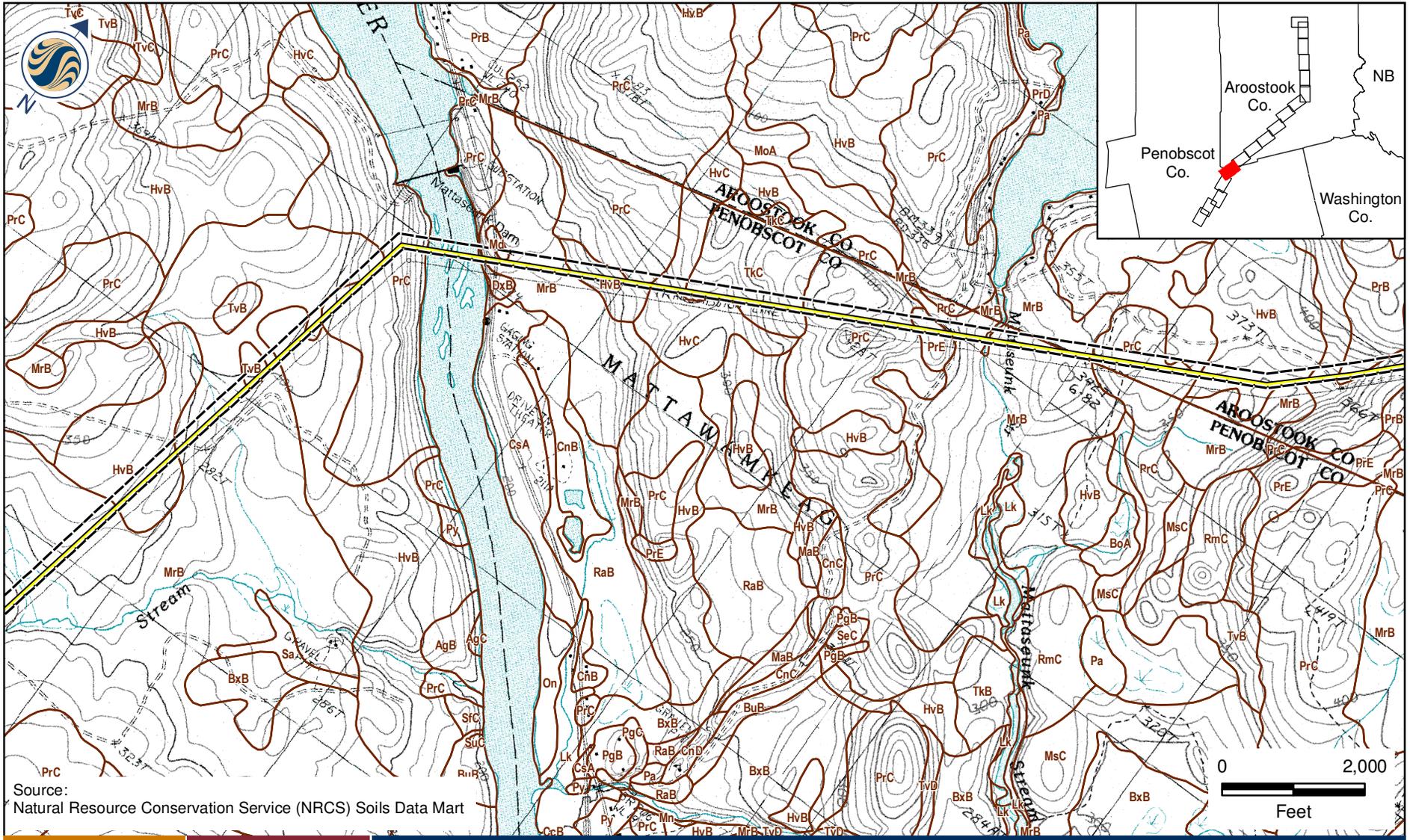
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Source:  
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**Legend**

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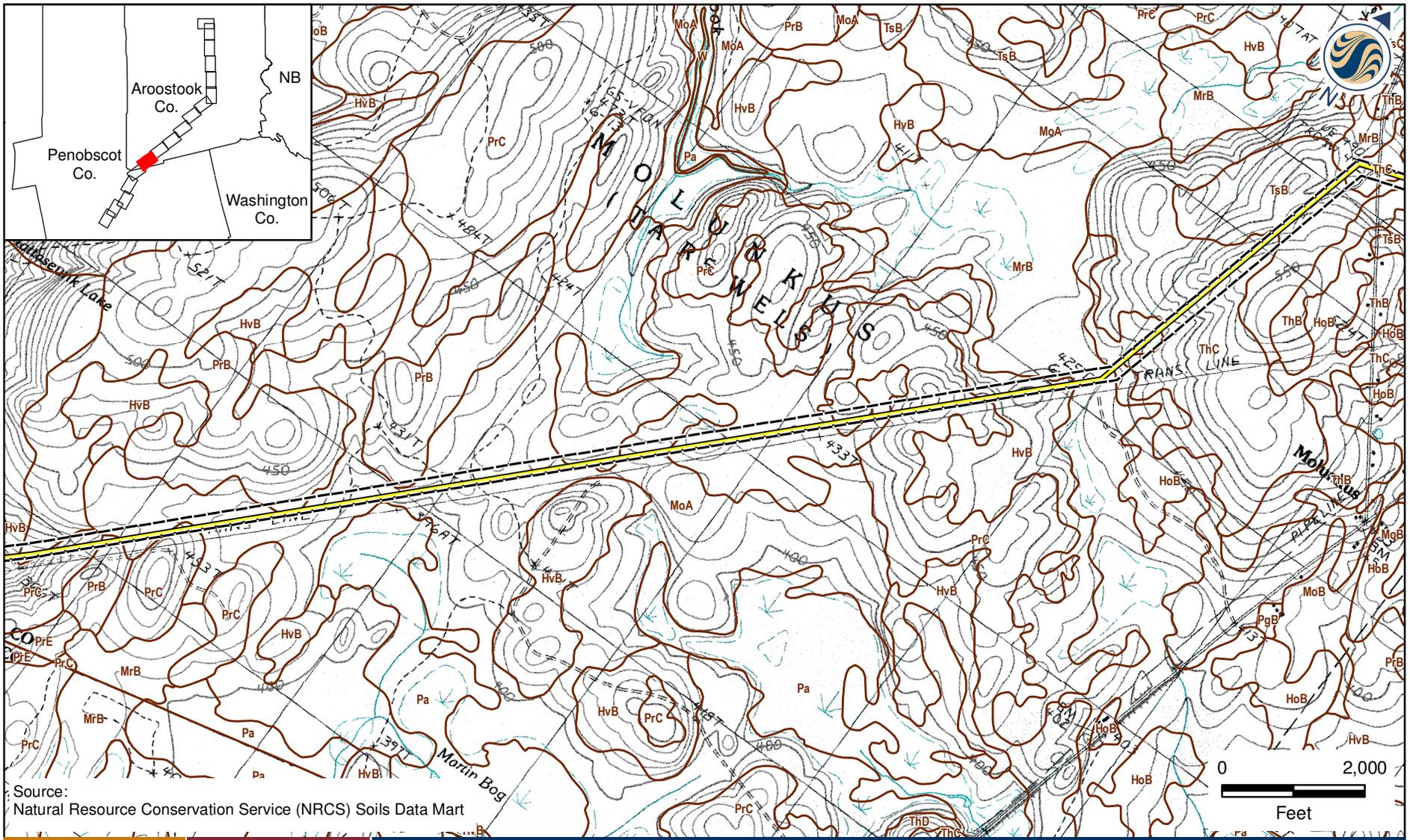
Client/Project  
Maine GenLead, LCC  
115kV Transmission Line  
Aroostook and Penobscot Counties, Maine

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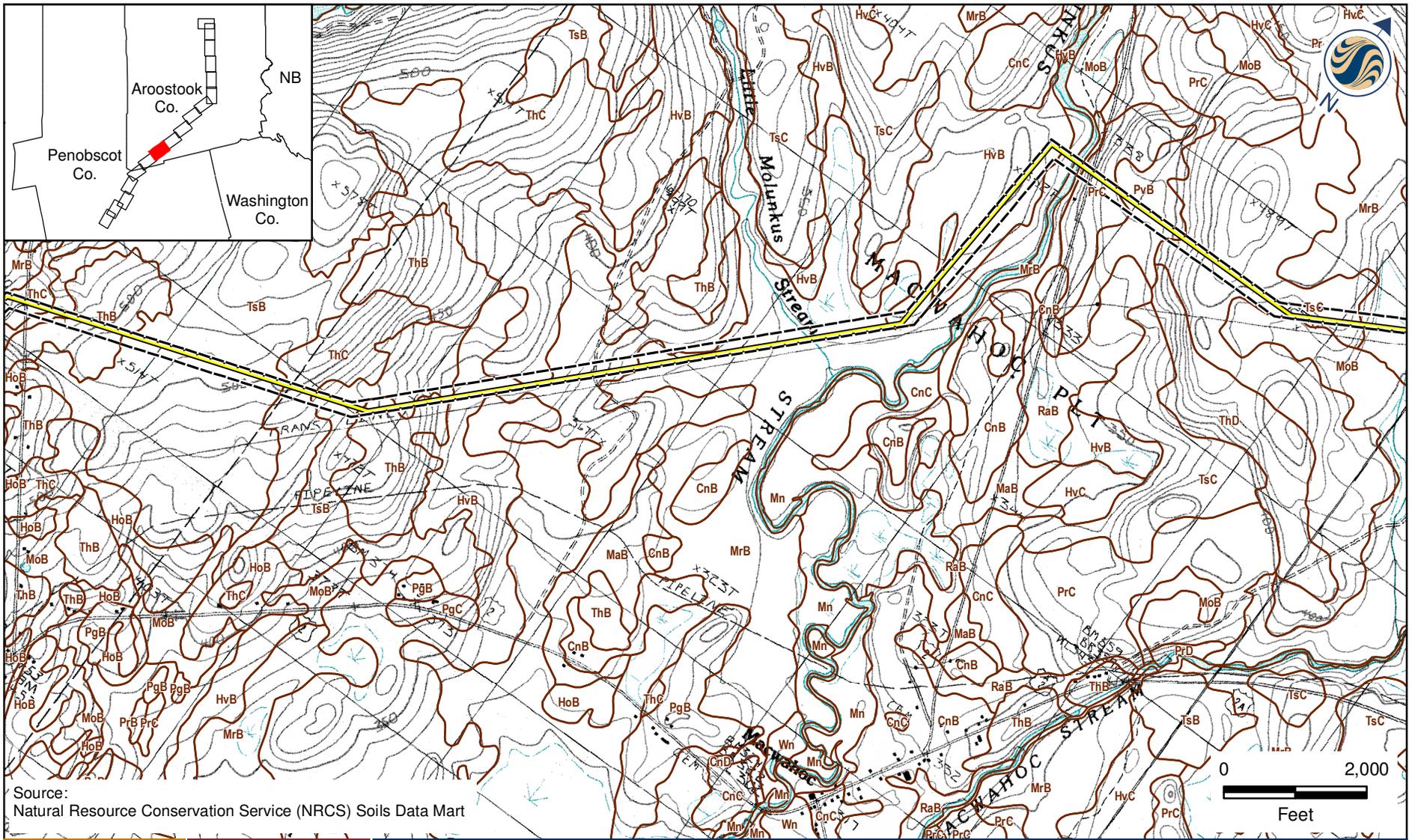
**Client/Project**  
Maine GenLead, LCC  
115kV Transmission Line  
Aroostook and Penobscot Counties, Maine

Figure No.  
**6 of 17**

Title

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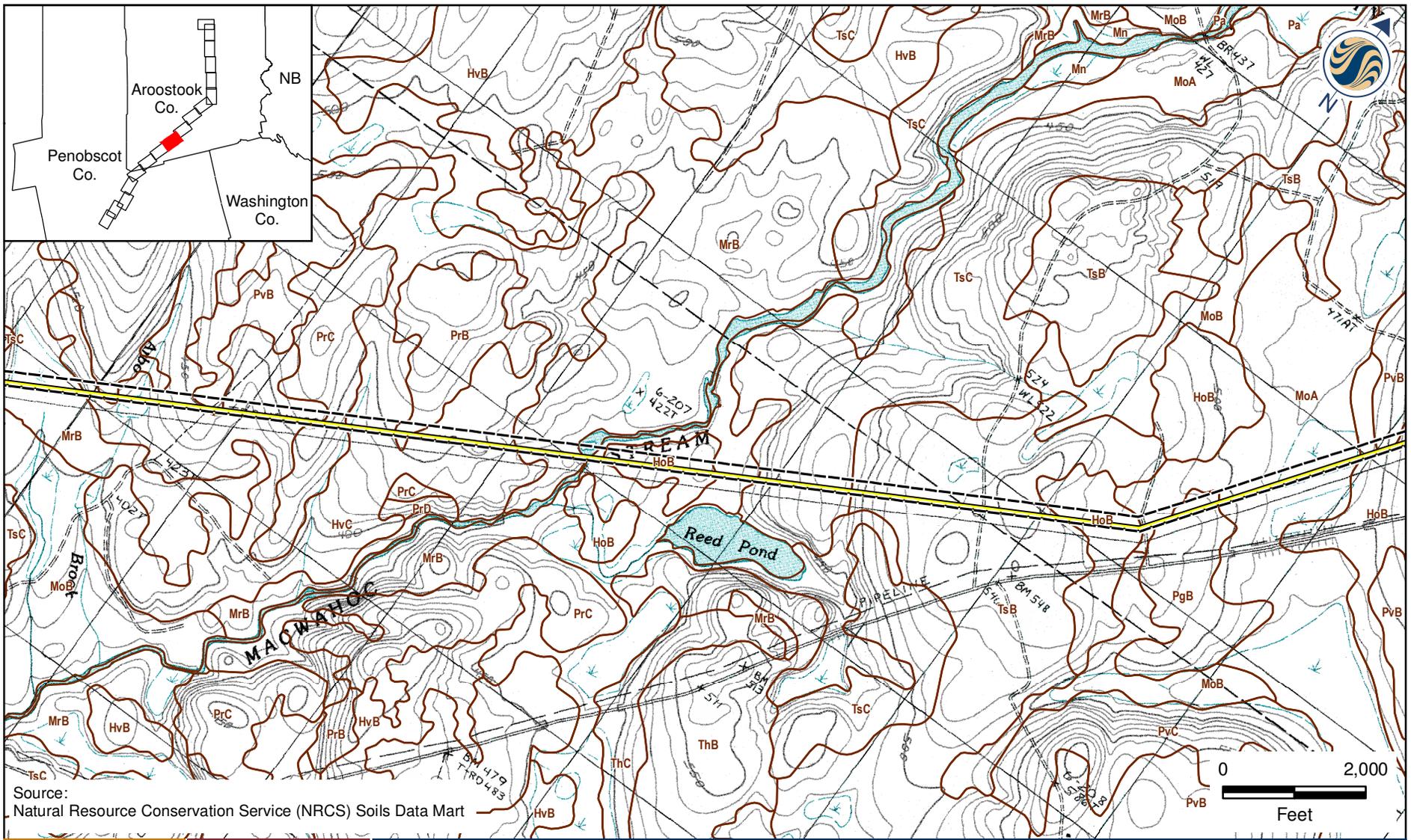
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- Soil Series Boundary

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-  Proposed Transmission Line
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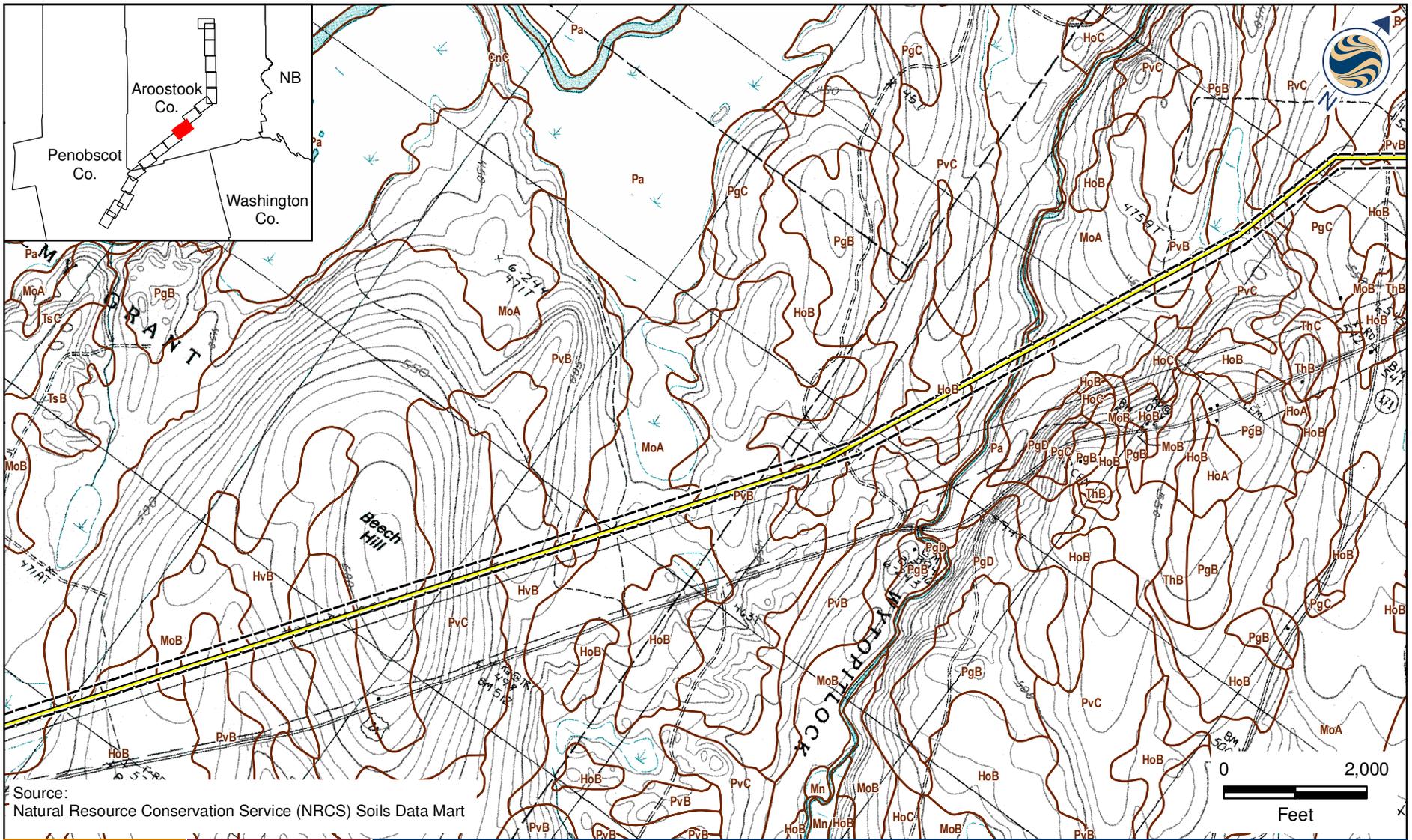
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Aroostook and Penobscot Counties, Maine

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**Soil Survey Map**

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115kV Transmission Line

Aroostook and Penobscot Counties, Maine

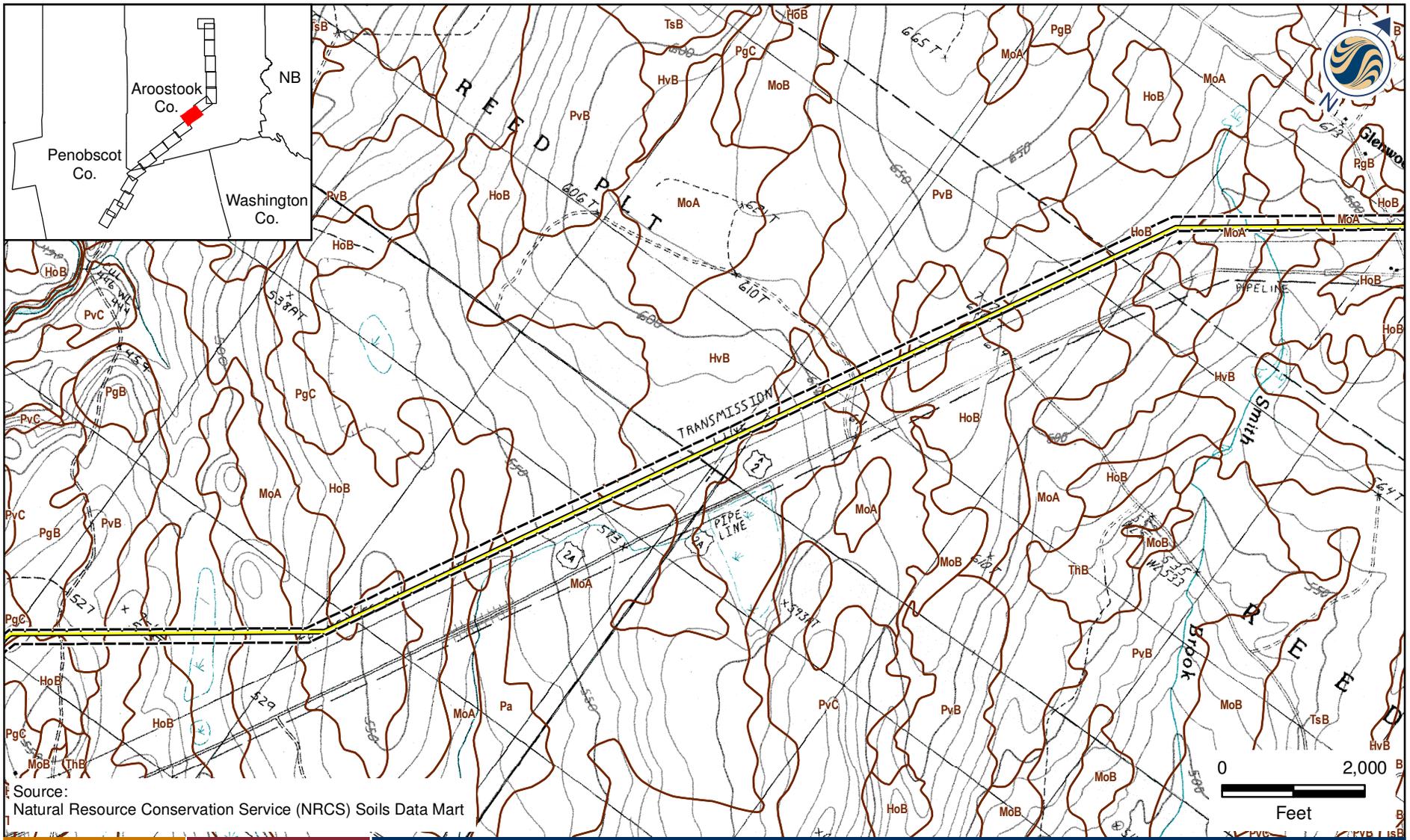
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**Soil Survey Map**

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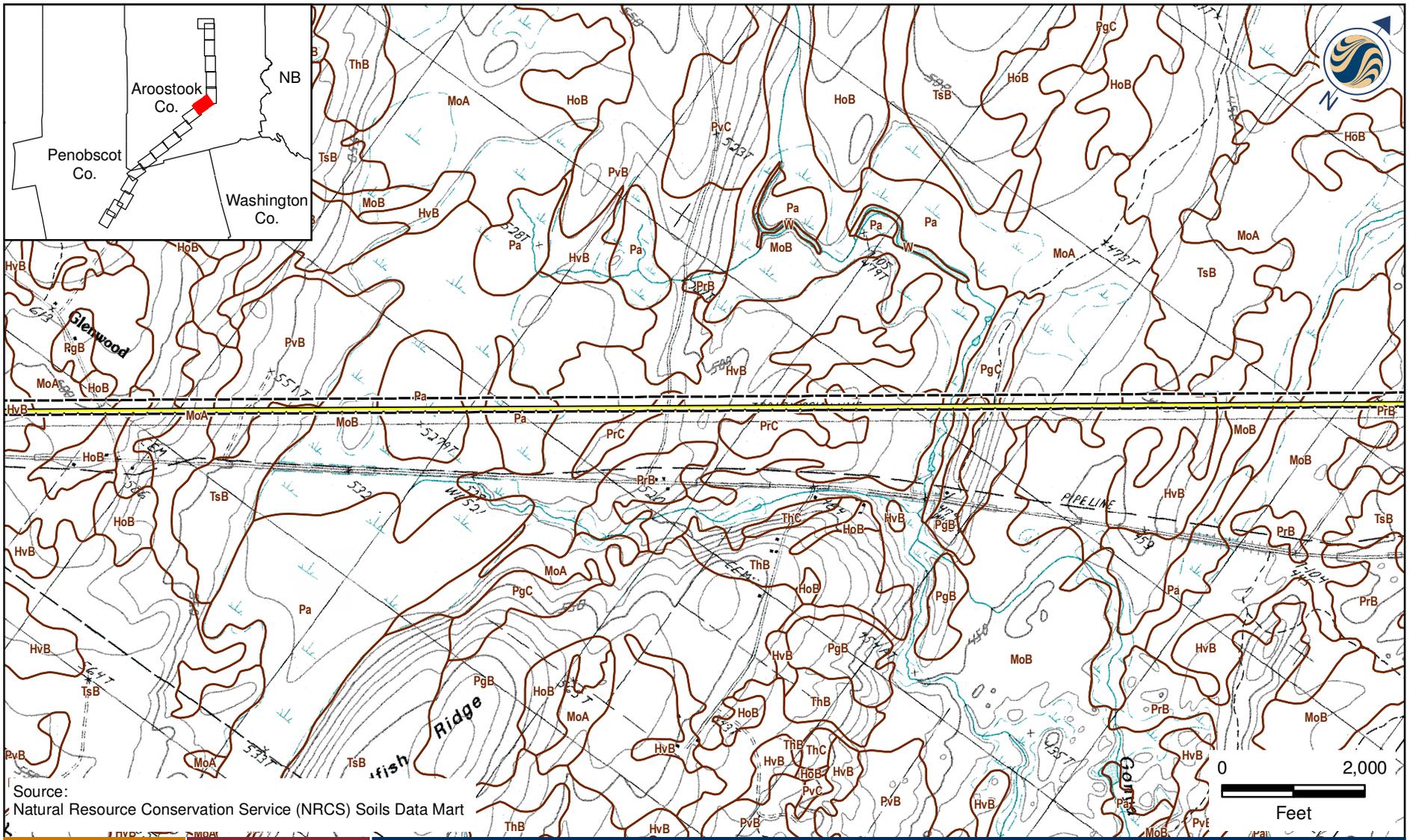
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Aroostook and Penobscot Counties, Maine

Figure No.  
**10 of 17**

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**Soil Survey Map**

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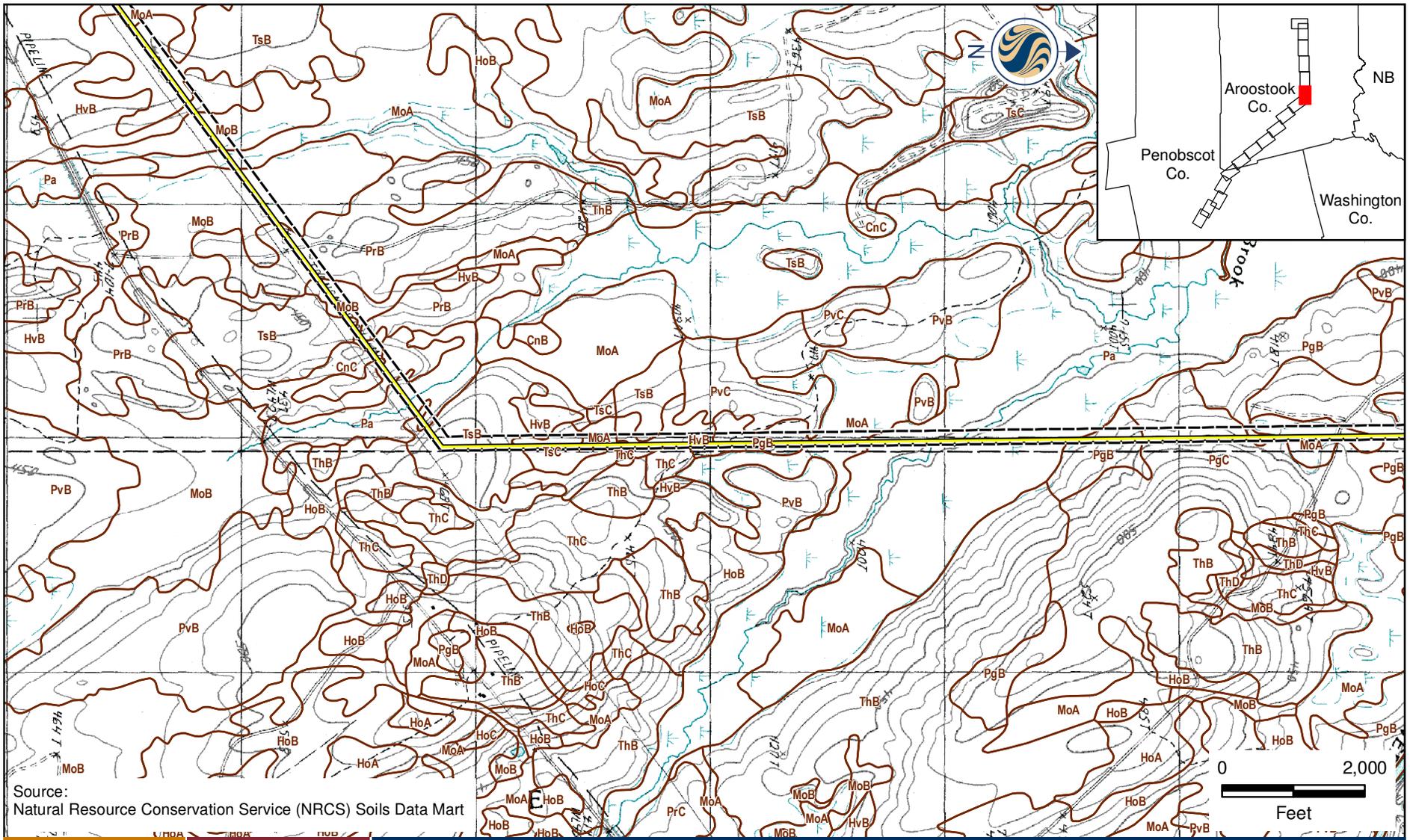
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**11 of 17**

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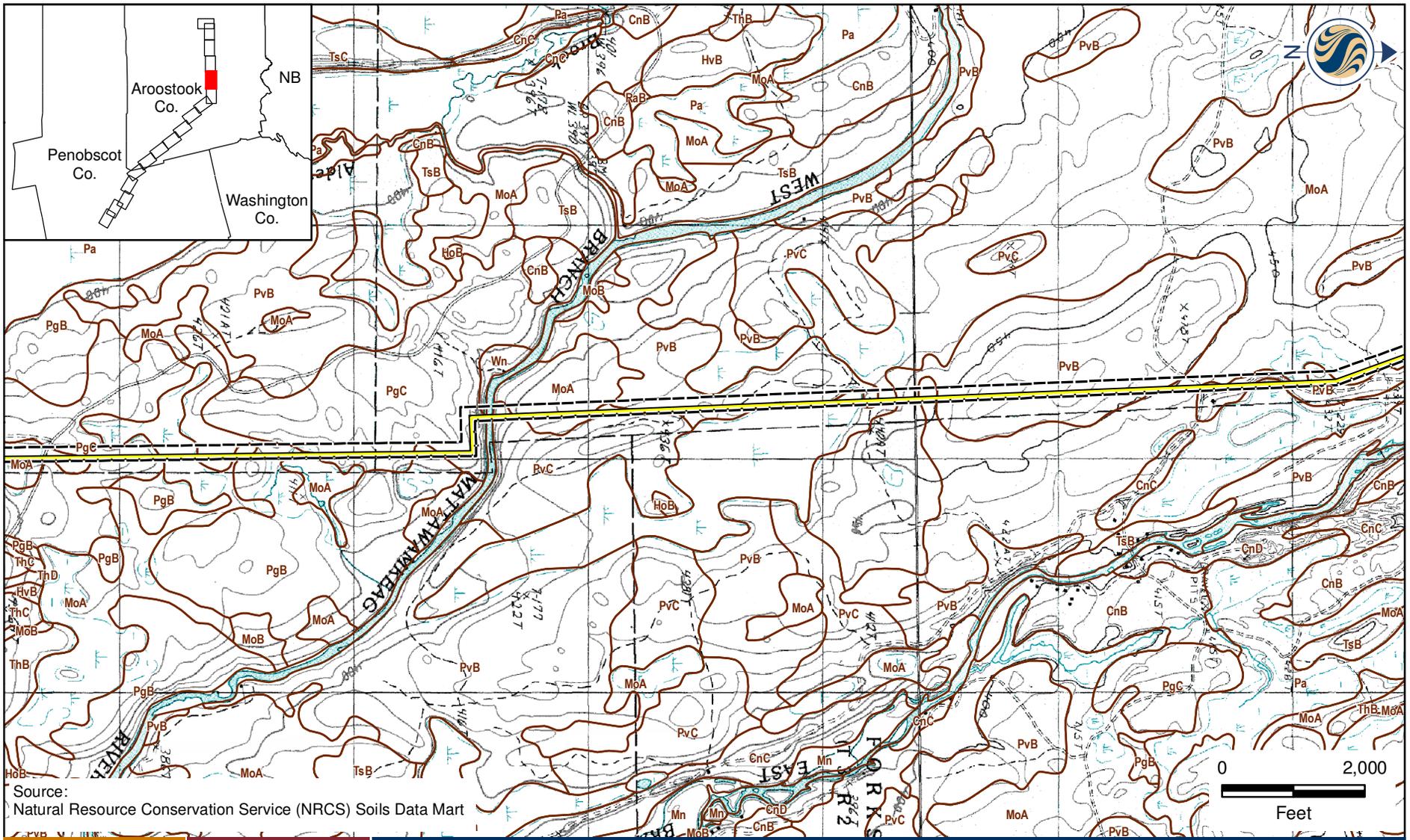
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-  Proposed Transmission Line Corridor
-  Soil Series Boundary

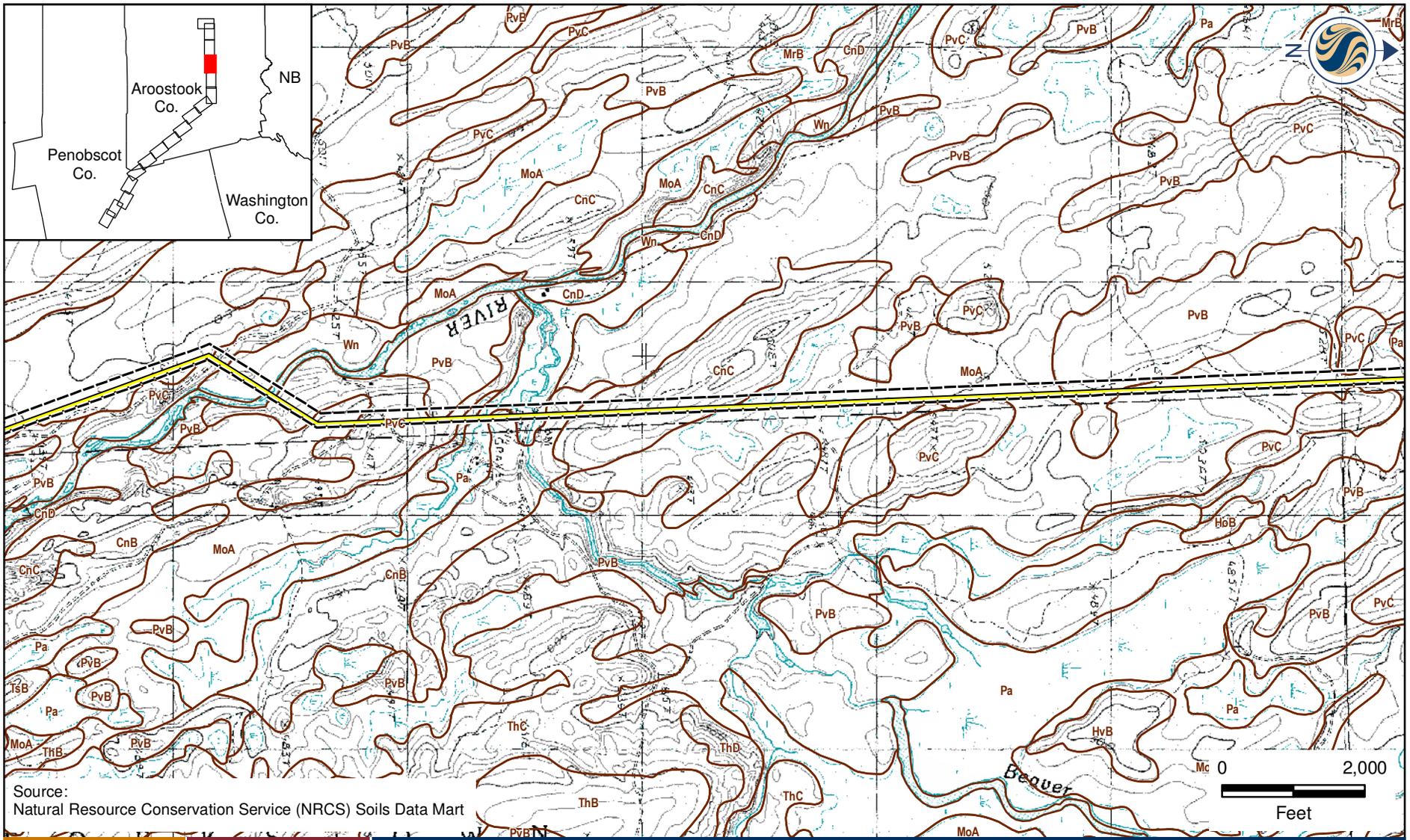
**Client/Project**  
Maine GenLead, LCC  
115kV Transmission Line  
Aroostook and Penobscot Counties, Maine

Figure No.  
**13 of 17**

Title

**Soil Survey Map**

6/2/2010



195600518



**Stantec**

**Stantec Consulting Services Inc.**

30 Park Drive  
Topsham, ME USA  
04086

Phone (207) 729-1199

Fax: (207) 729-2715

www.stantec.com

**Legend**

-  Proposed Transmission Line
-  Proposed Transmission Line Corridor
-  Soil Series Boundary

Client/Project

Maine GenLead, LCC

115kV Transmission Line

Aroostook and Penobscot Counties, Maine

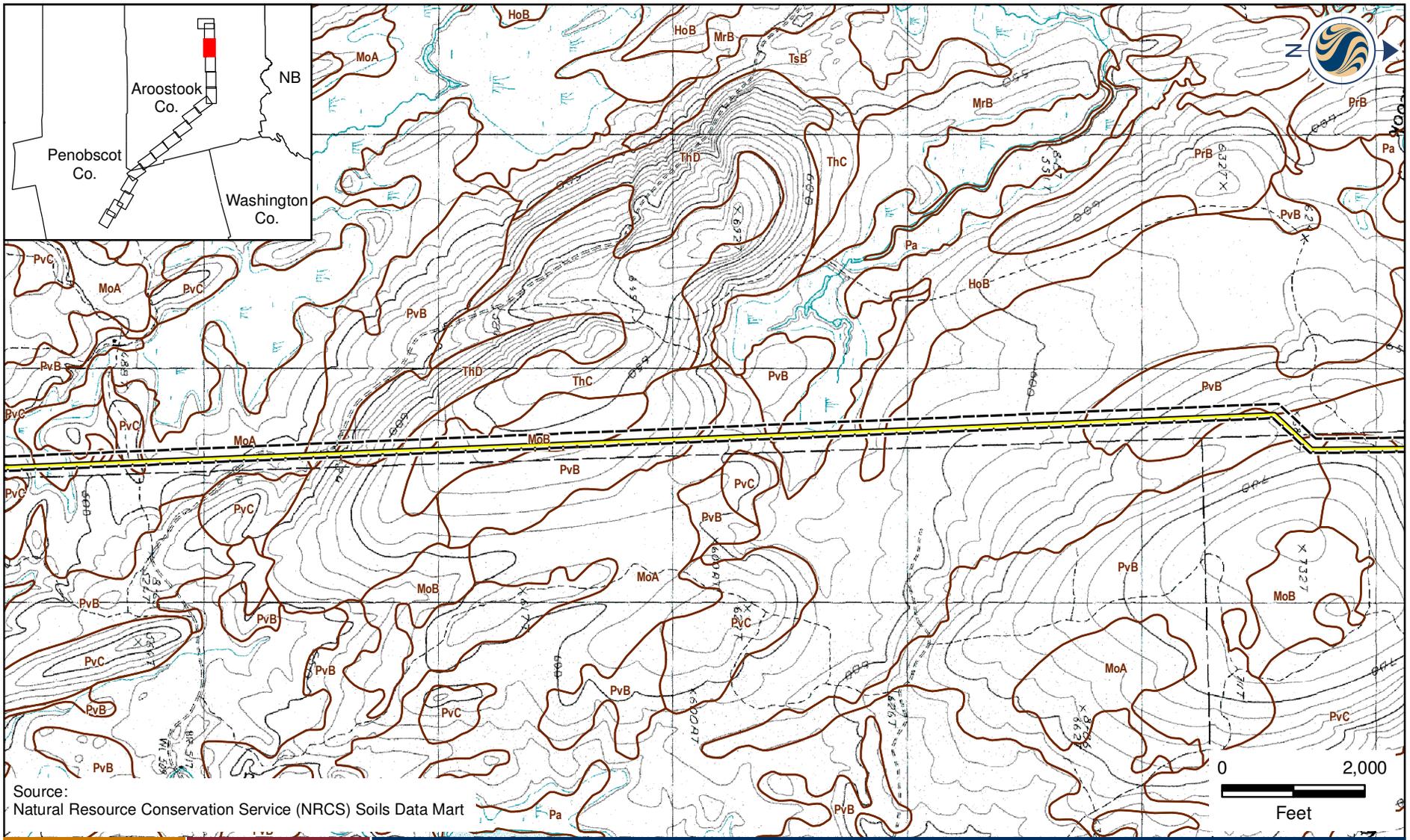
Figure No.

**14 of 17**

Title

**Soil Survey Map**

6/2/2010



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 04086  
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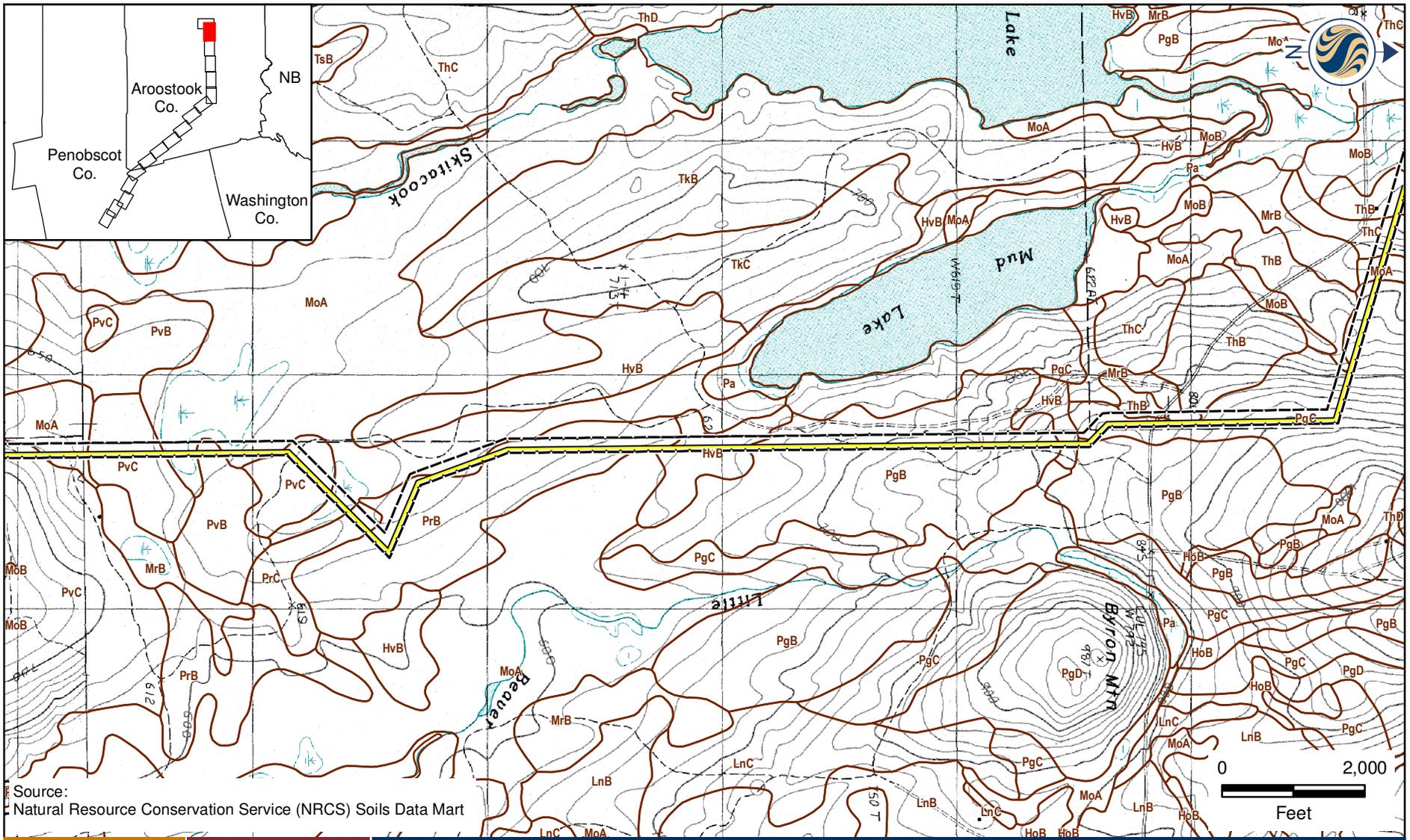
**Legend**

- Proposed Transmission Line
- Proposed Transmission Line Corridor
- Soil Series Boundary

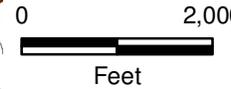
**Client/Project**  
 Maine GenLead, LCC  
 115kV Transmission Line  
 Aroostook and Penobscot Counties, Maine

Figure No.  
**15 of 17**

Title  
**Soil Survey Map**  
 6/2/2010



Source:  
Natural Resource Conservation Service (NRCS) Soils Data Mart



195600518



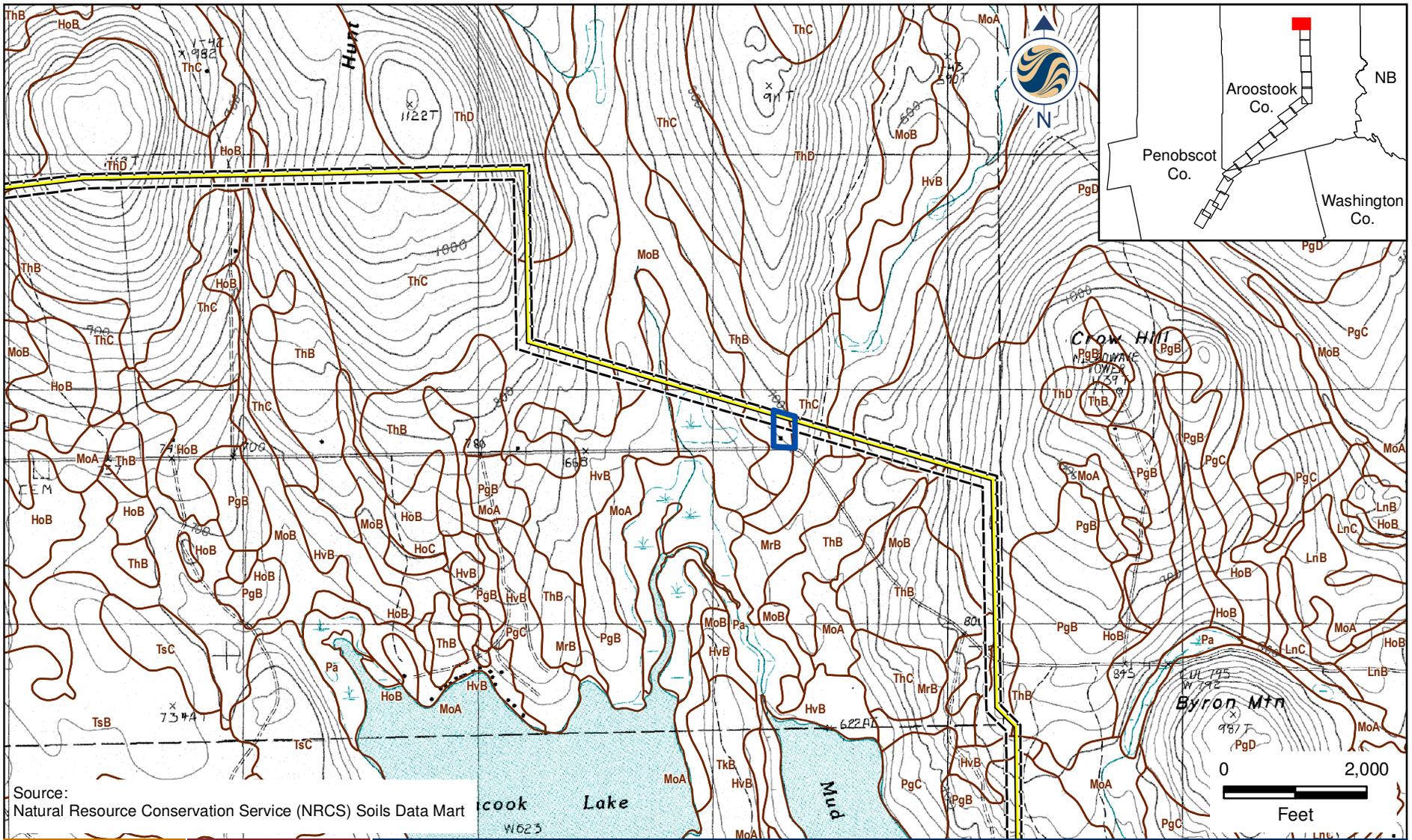
**Stantec Consulting Services Inc.**  
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- Legend**
- Proposed Transmission Line
  - Proposed Transmission Line Corridor
  - Soil Series Boundary

**Client/Project**  
Maine GenLead, LCC  
115kV Transmission Line  
Aroostook and Penobscot Counties, Maine

Figure No.  
**16 of 17**

Title  
**Soil Survey Map**  
6/2/2010



Source:  
Natural Resource Conservation Service (NRCS) Soils Data Mart



**Stantec**

00518-F17-Soil.mxd

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**Legend**

-  Proposed Transmission Line
-  Proposed Transmission Line Corridor
-  Substation (Approximate)
-  Soil Series Boundary

**Client/Project**

Maine GenLead, LCC  
115kV Transmission Line  
Aroostook and Penobscot Counties, Maine

Figure No.

**17 of 17**

Title

**Soil Survey Map**

6/2/2010

195600518

## **Attachment 1**

### Soils Table

Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Area (sq. ft.)	Area (acres)
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	1,442.42	0.03
Md	Made land	Moderately well drained		Not Hydric	Not highly erodible land	159,111.84	3.65
RaB	Red Hook and Atherton silt loams, 0 to 8 percent slopes	Poorly drained	C	All Hydric	Potentially highly erodible land	28,503.41	0.65
BoA	Biddeford silt loam, 0 to 3 percent slopes	Very poorly drained	D	All Hydric	Not highly erodible land	109,594.05	2.52
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	1,834.82	0.04
BoA	Biddeford silt loam, 0 to 3 percent slopes	Very poorly drained	D	All Hydric	Not highly erodible land	330,746.91	7.59
BoA	Biddeford silt loam, 0 to 3 percent slopes	Very poorly drained	D	All Hydric	Not highly erodible land	217,724.42	5.00
W	Water bodies			Unknown Hydric	Not rated	10,949.05	0.25
W	Water bodies			Unknown Hydric	Not rated	30,248.53	0.69
W	Water bodies			Unknown Hydric	Not rated	68,665.01	1.58
W	Water bodies			Unknown Hydric	Not rated	59,033.29	1.36
BxB	Buxton, Scantic, and Biddeford stony silt loams, 0 to 8 percent slopes	Very poorly drained	D	Partially Hydric	Not highly erodible land	16,732.66	0.38
ScB	Scantic silt loam, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Potentially highly erodible land	14,893.74	0.34
ScB	Scantic silt loam, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Potentially highly erodible land	178,065.19	4.09
ScB	Scantic silt loam, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Potentially highly erodible land	67,369.46	1.55

Section 11: MDEP NRPA/Site Location of Development Combined Application  
 Maine GenLead 115kV Generator Lead Transmission Line, Aroostook and Penobscot Counties, Maine

Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Area (sq. ft.)	Area (acres)
CnB	Colton gravelly sandy loam, dark materials, 2 to 8 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	36,711.42	0.84
CnB	Colton gravelly sandy loam, dark materials, 2 to 8 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	26,496.71	0.61
BuB	Buxton silt loam, 2 to 8 percent slopes	Somewhat poorly drained	D	Not Hydric	Potentially highly erodible land	106,166.71	2.44
ScB	Scantic silt loam, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Potentially highly erodible land	94,227.45	2.16
BuB	Buxton silt loam, 2 to 8 percent slopes	Somewhat poorly drained	D	Not Hydric	Potentially highly erodible land	934.91	0.02
BuB	Buxton silt loam, 2 to 8 percent slopes	Somewhat poorly drained	D	Not Hydric	Potentially highly erodible land	121.70	0.00
SfE	Stetson-Suffield complex, 15 to 45 percent slopes	Well drained	B	Not Hydric	Highly erodible land	62,699.88	1.44
SfE	Stetson-Suffield complex, 15 to 45 percent slopes	Well drained	B	Not Hydric	Highly erodible land	5,907.67	0.14
Pa	Peat and Muck	Very poorly drained	D	All Hydric	Not highly erodible land	17,858.31	0.41
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	58,105.61	1.33
BuB	Buxton silt loam, 2 to 8 percent slopes	Somewhat poorly drained	D	Not Hydric	Potentially highly erodible land	85,240.95	1.96
ScB	Scantic silt loam, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Potentially highly erodible land	201,879.88	4.63
Md	Made land	Moderately well drained		Not Hydric	Not highly erodible land	12,682.17	0.29

Section 11: MDEP NRPA/Site Location of Development Combined Application  
 Maine GenLead 115kV Generator Lead Transmission Line, Aroostook and Penobscot Counties, Maine

Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Area (sq. ft.)	Area (acres)
BxB	Buxton, Scantic, and Biddeford stony silt loams, 0 to 8 percent slopes	Very poorly drained	D	Partially Hydric	Not highly erodible land	64,786.00	1.49
Sa	Saco silt loam	Very poorly drained	D	All Hydric	Not highly erodible land	104,330.87	2.40
BuB	Buxton silt loam, 2 to 8 percent slopes	Somewhat poorly drained	D	Not Hydric	Potentially highly erodible land	60,200.68	1.38
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	224,443.72	5.15
EwB	Elmwood fine sandy loam, 0 to 8 percent slopes	Moderately well drained	C	Not Hydric	Potentially highly erodible land	126,790.75	2.91
DyB	Dixmont very stony silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Not highly erodible land	26,936.01	0.62
BoA	Biddeford silt loam, 0 to 3 percent slopes	Very poorly drained	D	All Hydric	Not highly erodible land	152,714.92	3.51
PrE	Plaisted very stony loam, 15 to 45 percent slopes	Well drained	C	Not Hydric	Highly erodible land	206,079.34	4.73
DxB	Dixmont silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	1,734.60	0.04
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	21,812.25	0.50
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	164,485.96	3.78
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	28,261.55	0.65
Sa	Saco silt loam	Very poorly drained	D	All Hydric	Not highly erodible land	80,491.12	1.85
HvB	Howland very stony loam, 0 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	120,591.97	2.77

Section 11: MDEP NRPA/Site Location of Development Combined Application  
 Maine GenLead 115kV Generator Lead Transmission Line, Aroostook and Penobscot Counties, Maine

Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Area (sq. ft.)	Area (acres)
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	340,345.77	7.81
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	292,572.20	6.72
HvB	Howland very stony loam, 0 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	23,549.77	0.54
HvB	Howland very stony loam, 0 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	128,246.59	2.94
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	32,070.84	0.74
HvC	Howland very stony loam, 8 to 15 percent slopes	Moderately well drained	C	Not Hydric	Potentially highly erodible land	71,425.07	1.64
RdB	Red Hook and Atherton fine sandy loams, 0 to 8 percent slopes	Poorly drained	C	All Hydric	Potentially highly erodible land	23,610.28	0.54
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	36,211.30	0.83
CnB	Colton gravelly sandy loam, dark materials, 2 to 8 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	27,546.25	0.63
CnB	Colton gravelly sandy loam, dark materials, 2 to 8 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	22.96	0.00
Pa	Peat and Muck	Very poorly drained	D	All Hydric	Not highly erodible land	123,191.18	2.83
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	366,581.14	8.42

Section 11: MDEP NRPA/Site Location of Development Combined Application  
 Maine GenLead 115kV Generator Lead Transmission Line, Aroostook and Penobscot Counties, Maine

Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Area (sq. ft.)	Area (acres)
CnC	Colton gravelly sandy loam, dark materials, 8 to 15 per cent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	31,501.93	0.72
HvB	Howland very stony loam, 0 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	3,047.77	0.07
Pa	Peat and Muck	Very poorly drained	D	All Hydric	Not highly erodible land	25,195.50	0.58
Sa	Saco silt loam	Very poorly drained	D	All Hydric	Not highly erodible land	53,361.76	1.23
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	109,906.09	2.52
TvC	Thorndike very stony silt loam, 8 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	7,024.96	0.16
BoA	Biddeford silt loam, 0 to 3 percent slopes	Very poorly drained	D	All Hydric	Not highly erodible land	499,909.92	11.48
AaB	Adams loamy sand, 0 to 8 percent slopes	Somewhat excessively drained	A	Not Hydric	Not highly erodible land	84,213.07	1.93
DxB	Dixmont silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	53,155.37	1.22
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	25,383.38	0.58
AaB	Adams loamy sand, 0 to 8 percent slopes	Somewhat excessively drained	A	Not Hydric	Not highly erodible land	64,877.94	1.49
HvB	Howland very stony loam, 0 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	299,467.28	6.87
ThC	Thorndike shaly silt loam, 8 to 15 percent slopes	Somewhat excessively drained	C/D	Not Hydric	Potentially highly erodible land	39,958.50	0.92
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	166,575.34	3.82

Section 11: MDEP NRPA/Site Location of Development Combined Application  
 Maine GenLead 115kV Generator Lead Transmission Line, Aroostook and Penobscot Counties, Maine

Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Area (sq. ft.)	Area (acres)
CnB	Colton gravelly sandy loam, dark materials, 2 to 8 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	26,559.72	0.61
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	143,799.89	3.30
RdB	Red Hook and Atherton fine sandy loams, 0 to 8 percent slopes	Poorly drained	C	All Hydric	Potentially highly erodible land	82,040.47	1.88
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	219,359.36	5.04
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	377,537.97	8.67
CnC	Colton gravelly sandy loam, dark materials, 8 to 15 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	51,684.45	1.19
BuB	Buxton silt loam, 2 to 8 percent slopes	Somewhat poorly drained	D	Not Hydric	Potentially highly erodible land	28,562.08	0.66
Sa	Saco silt loam	Very poorly drained	D	All Hydric	Not highly erodible land	59,362.80	1.36
BxB	Buxton, Scantic, and Biddeford stony silt loams, 0 to 8 percent slopes	Very poorly drained	D	Partially Hydric	Not highly erodible land	104,889.62	2.41
AaB	Adams loamy sand, 0 to 8 percent slopes	Somewhat excessively drained	A	Not Hydric	Not highly erodible land	97,901.02	2.25
TvC	Thorndike very stony silt loam, 8 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	713,112.49	16.37
PgB	Plaisted gravelly loam, 2 to 8 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	29,502.90	0.68

Section 11: MDEP NRPA/Site Location of Development Combined Application  
 Maine GenLead 115kV Generator Lead Transmission Line, Aroostook and Penobscot Counties, Maine

Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Area (sq. ft.)	Area (acres)
DxB	Dixmont silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	43,895.65	1.01
ThC	Thorndike shaly silt loam, 8 to 15 percent slopes	Somewhat excessively drained	C/D	Not Hydric	Potentially highly erodible land	14,953.24	0.34
DxB	Dixmont silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	37,104.06	0.85
ThB	Thorndike shaly silt loam, 2 to 8 percent slopes	Somewhat excessively drained	C/D	Not Hydric	Potentially highly erodible land	14,413.55	0.33
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	36,623.77	0.84
Pa	Peat and Muck	Very poorly drained	D	All Hydric	Not highly erodible land	58,971.71	1.35
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	92,332.39	2.12
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	196,959.32	4.52
PgB	Plaisted gravelly loam, 2 to 8 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	39,821.68	0.91
RdB	Red Hook and Atherton fine sandy loams, 0 to 8 percent slopes	Poorly drained	C	All Hydric	Potentially highly erodible land	159,428.69	3.66
DyB	Dixmont very stony silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Not highly erodible land	152,549.67	3.50
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	27,214.72	0.62
HoB	Howland gravelly loam, 0 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	34,106.17	0.78

Section 11: MDEP NRPA/Site Location of Development Combined Application  
 Maine GenLead 115kV Generator Lead Transmission Line, Aroostook and Penobscot Counties, Maine

Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Area (sq. ft.)	Area (acres)
BxB	Buxton, Scantic, and Biddeford stony silt loams, 0 to 8 percent slopes	Very poorly drained	D	Partially Hydric	Not highly erodible land	3,479.39	0.08
HvB	Howland very stony loam, 0 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	103,461.07	2.38
HvB	Howland very stony loam, 0 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	28,868.94	0.66
DxB	Dixmont silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	5,959.92	0.14
DyB	Dixmont very stony silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Not highly erodible land	75,741.56	1.74
Pa	Peat and Muck	Very poorly drained	D	All Hydric	Not highly erodible land	45,777.45	1.05
CnB	Colton gravelly sandy loam, dark materials, 2 to 8 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	10,603.58	0.24
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	50,049.67	1.15
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	38,788.32	0.89
PgC	Plaisted gravelly loam, 8 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	23,385.50	0.54
CnC	Colton gravelly sandy loam, dark materials, 8 to 15 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	55,807.30	1.28
HvB	Howland very stony loam, 0 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	133,635.20	3.07
CnB	Colton gravelly sandy loam, dark materials, 2 to 8 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	135,077.40	3.10

Section 11: MDEP NRPA/Site Location of Development Combined Application  
 Maine GenLead 115kV Generator Lead Transmission Line, Aroostook and Penobscot Counties, Maine

Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Area (sq. ft.)	Area (acres)
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	44,191.32	1.01
BxB	Buxton, Scantic, and Biddeford stony silt loams, 0 to 8 percent slopes	Very poorly drained	D	Partially Hydric	Not highly erodible land	32,997.98	0.76
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	105,063.38	2.41
BxB	Buxton, Scantic, and Biddeford stony silt loams, 0 to 8 percent slopes	Very poorly drained	D	Partially Hydric	Not highly erodible land	2,726.60	0.06
RaB	Red Hook and Atherton silt loams, 0 to 8 percent slopes	Poorly drained	C	All Hydric	Potentially highly erodible land	51,397.89	1.18
CnC	Colton gravelly sandy loam, dark materials, 8 to 15 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	83,342.09	1.91
CnB	Colton gravelly sandy loam, dark materials, 2 to 8 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	64,105.55	1.47
HvB	Howland very stony loam, 0 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	133,484.11	3.06
RaB	Red Hook and Atherton silt loams, 0 to 8 percent slopes	Poorly drained	C	All Hydric	Potentially highly erodible land	67,755.52	1.56
HvB	Howland very stony loam, 0 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	215,502.72	4.95
BxB	Buxton, Scantic, and Biddeford stony silt loams, 0 to 8 percent slopes	Very poorly drained	D	Partially Hydric	Not highly erodible land	278,185.39	6.39
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	76,802.97	1.76

Section 11: MDEP NRPA/Site Location of Development Combined Application  
 Maine GenLead 115kV Generator Lead Transmission Line, Aroostook and Penobscot Counties, Maine

Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Area (sq. ft.)	Area (acres)
RdB	Red Hook and Atherton fine sandy loams, 0 to 8 percent slopes	Poorly drained	C	All Hydric	Potentially highly erodible land	44,951.83	1.03
HvB	Howland very stony loam, 0 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	30,390.78	0.70
DyB	Dixmont very stony silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Not highly erodible land	99,948.97	2.29
PgB	Plaisted gravelly loam, 2 to 8 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	45,312.61	1.04
TkC	Thorndike very rocky silt loam, 8 to 15 percent slopes	Somewhat excessively drained	C/D	Not Hydric	Potentially highly erodible land	28,606.73	0.66
Pa	Peat and Muck	Very poorly drained	D	All Hydric	Not highly erodible land	23,200.83	0.53
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	140,311.07	3.22
HvB	Howland very stony loam, 0 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	36,933.91	0.85
CnC	Colton gravelly sandy loam, dark materials, 8 to 15 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	59,064.90	1.36
TvB	Thorndike very stony silt loam, 2 to 8 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	183,508.75	4.21
TkC	Thorndike very rocky silt loam, 8 to 15 percent slopes	Somewhat excessively drained	C/D	Not Hydric	Potentially highly erodible land	10,468.93	0.24
TkC	Thorndike very rocky silt loam, 8 to 15 percent slopes	Somewhat excessively drained	C/D	Not Hydric	Potentially highly erodible land	1,708.16	0.04
PrE	Plaisted very stony loam, 15 to 45 percent slopes	Well drained	C	Not Hydric	Highly erodible land	28,040.79	0.64

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Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Area (sq. ft.)	Area (acres)
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	6,570.86	0.15
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	124,294.81	2.85
TvB	Thorndike very stony silt loam, 2 to 8 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	26,878.08	0.62
HvB	Howland very stony loam, 0 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	46,607.97	1.07
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	110,317.15	2.53
BoA	Biddeford silt loam, 0 to 3 percent slopes	Very poorly drained	D	All Hydric	Not highly erodible land	78,392.72	1.80
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	53,043.69	1.22
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	19,545.34	0.45
TvB	Thorndike very stony silt loam, 2 to 8 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	60,445.83	1.39
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	74,552.79	1.71
HvB	Howland very stony loam, 0 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	53,629.26	1.23
RaB	Red Hook and Atherton silt loams, 0 to 8 percent slopes	Poorly drained	C	All Hydric	Potentially highly erodible land	22,675.77	0.52

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Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Area (sq. ft.)	Area (acres)
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	29,863.61	0.69
BxB	Buxton, Scantic, and Biddeford stony silt loams, 0 to 8 percent slopes	Very poorly drained	D	Partially Hydric	Not highly erodible land	49,120.83	1.13
TvC	Thorndike very stony silt loam, 8 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	83,572.31	1.92
BxB	Buxton, Scantic, and Biddeford stony silt loams, 0 to 8 percent slopes	Very poorly drained	D	Partially Hydric	Not highly erodible land	5,217.69	0.12
DyB	Dixmont very stony silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Not highly erodible land	157,823.18	3.62
BxB	Buxton, Scantic, and Biddeford stony silt loams, 0 to 8 percent slopes	Very poorly drained	D	Partially Hydric	Not highly erodible land	6,000.78	0.14
BxB	Buxton, Scantic, and Biddeford stony silt loams, 0 to 8 percent slopes	Very poorly drained	D	Partially Hydric	Not highly erodible land	15,469.08	0.36
HvB	Howland very stony loam, 0 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	78,629.39	1.81
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	25,533.10	0.59
TvB	Thorndike very stony silt loam, 2 to 8 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	39,120.31	0.90
DxB	Dixmont silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	21,313.61	0.49
AgB	Allagash fine sandy loam, 2 to 8 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	467,945.18	10.74

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Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Area (sq. ft.)	Area (acres)
AgB	Allagash fine sandy loam, 2 to 8 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	16,256.58	0.37
BoA	Biddeford silt loam, 0 to 3 percent slopes	Very poorly drained	D	All Hydric	Not highly erodible land	559,388.92	12.84
DyB	Dixmont very stony silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Not highly erodible land	5,433.84	0.12
HvB	Howland very stony loam, 0 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	162,418.76	3.73
DyB	Dixmont very stony silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Not highly erodible land	52,479.51	1.20
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	36,175.31	0.83
TkC	Thorndike very rocky silt loam, 8 to 15 percent slopes	Somewhat excessively drained	C/D	Not Hydric	Potentially highly erodible land	44,746.69	1.03
DyB	Dixmont very stony silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Not highly erodible land	90,291.67	2.07
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	71,080.99	1.63
DyB	Dixmont very stony silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Not highly erodible land	365,757.76	8.40
Pa	Peat and Muck	Very poorly drained	D	All Hydric	Not highly erodible land	107,892.74	2.48
SfC	Stetson-Suffield complex, 0 to 15 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	435,224.70	9.99
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	135,544.42	3.11

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Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Area (sq. ft.)	Area (acres)
ScB	Scantic silt loam, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Potentially highly erodible land	22,751.77	0.52
RdB	Red Hook and Atherton fine sandy loams, 0 to 8 percent slopes	Poorly drained	C	All Hydric	Potentially highly erodible land	58,817.95	1.35
TkC	Thorndike very rocky silt loam, 8 to 15 percent slopes	Somewhat excessively drained	C/D	Not Hydric	Potentially highly erodible land	58,036.50	1.33
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	102,306.48	2.35
W	Water bodies			Unknown Hydric	Not rated	31,178.76	0.72
BuB	Buxton silt loam, 2 to 8 percent slopes	Somewhat poorly drained	D	Not Hydric	Potentially highly erodible land	113,456.21	2.60
BoA	Biddeford silt loam, 0 to 3 percent slopes	Very poorly drained	D	All Hydric	Not highly erodible land	167,746.02	3.85
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	40,154.03	0.92
DyB	Dixmont very stony silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Not highly erodible land	134,520.39	3.09
TvC	Thorndike very stony silt loam, 8 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	545,869.76	12.53
ScB	Scantic silt loam, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Potentially highly erodible land	132,397.79	3.04
MeC	Melrose fine sandy loam, 8 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	47,386.26	1.09
MeC	Melrose fine sandy loam, 8 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	50,217.54	1.15
BuB	Buxton silt loam, 2 to 8 percent slopes	Somewhat poorly drained	D	Not Hydric	Potentially highly erodible land	60,241.55	1.38

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Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Area (sq. ft.)	Area (acres)
Sa	Saco silt loam	Very poorly drained	D	All Hydric	Not highly erodible land	48,358.53	1.11
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	71,845.28	1.65
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	71,786.96	1.65
ScB	Scantic silt loam, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Potentially highly erodible land	102,921.37	2.36
ScB	Scantic silt loam, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Potentially highly erodible land	94,029.76	2.16
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	91,545.71	2.10
ThB	Thorndike shaly silt loam, 2 to 8 percent slopes	Somewhat excessively drained	C/D	Not Hydric	Potentially highly erodible land	76,792.38	1.76
ThC	Thorndike shaly silt loam, 8 to 15 percent slopes	Somewhat excessively drained	C/D	Not Hydric	Potentially highly erodible land	119,043.30	2.73
ThB	Thorndike shaly silt loam, 2 to 8 percent slopes	Somewhat excessively drained	C/D	Not Hydric	Potentially highly erodible land	10,600.65	0.24
EwB	Elmwood fine sandy loam, 0 to 8 percent slopes	Moderately well drained	C	Not Hydric	Potentially highly erodible land	30,641.40	0.70
TvB	Thorndike very stony silt loam, 2 to 8 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	3,671.18	0.08
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	609,254.68	13.99
DyB	Dixmont very stony silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Not highly erodible land	71,729.33	1.65

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Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Area (sq. ft.)	Area (acres)
EwB	Elmwood fine sandy loam, 0 to 8 percent slopes	Moderately well drained	C	Not Hydric	Potentially highly erodible land	177,423.64	4.07
BuB	Buxton silt loam, 2 to 8 percent slopes	Somewhat poorly drained	D	Not Hydric	Potentially highly erodible land	62,405.85	1.43
CnB	Colton gravelly sandy loam, dark materials, 2 to 8 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	99,975.28	2.30
DxB	Dixmont silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	3,477.85	0.08
BxB	Buxton, Scantic, and Biddeford stony silt loams, 0 to 8 percent slopes	Very poorly drained	D	Partially Hydric	Not highly erodible land	33,765.51	0.78
DyB	Dixmont very stony silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Not highly erodible land	42,417.26	0.97
TvB	Thorndike very stony silt loam, 2 to 8 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	353,786.07	8.12
BuB	Buxton silt loam, 2 to 8 percent slopes	Somewhat poorly drained	D	Not Hydric	Potentially highly erodible land	126,393.09	2.90
TvB	Thorndike very stony silt loam, 2 to 8 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	373,346.11	8.57
BuB	Buxton silt loam, 2 to 8 percent slopes	Somewhat poorly drained	D	Not Hydric	Potentially highly erodible land	151,289.40	3.47
CnB	Colton gravelly sandy loam, dark materials, 2 to 8 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	61,746.51	1.42
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	23,996.94	0.55
HvC	Howland very stony loam, 8 to 15 percent slopes	Moderately well drained	C	Not Hydric	Potentially highly erodible land	65,412.12	1.50

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Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Area (sq. ft.)	Area (acres)
ScB	Scantic silt loam, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Potentially highly erodible land	0.18	0.00
ScB	Scantic silt loam, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Potentially highly erodible land	0.18	0.00
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	0.07	0.00
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	0.07	0.00

### Abbreviated Soils Table

Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Total Area (sq. ft.)	Total Area (acres)
AaB	Adams loamy sand, 0 to 8 percent slopes	Somewhat excessively drained	A	Not Hydric	Not highly erodible land	246,992.03	5.67
AgB	Allagash fine sandy loam, 2 to 8 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	484,201.76	11.11
BoA	Biddeford silt loam, 0 to 3 percent slopes	Very poorly drained	D	All Hydric	Not highly erodible land	3,002,273.95	68.92
BuB	Buxton silt loam, 2 to 8 percent slopes	Somewhat poorly drained	D	Not Hydric	Potentially highly erodible land	795,013.12	18.25
BxB	Buxton, Scantic, and Biddeford stony silt loams, 0 to 8 percent slopes	Very poorly drained	D	Partially Hydric	Not highly erodible land	613,371.53	14.08
CnB	Colton gravelly sandy loam, dark materials, 2 to 8 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	488,845.38	11.22
CnC	Colton gravelly sandy loam, dark materials, 8 to 15 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	281,400.66	6.46
DxB	Dixmont silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	166,641.06	3.83
DyB	Dixmont very stony silt loam, 2 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Not highly erodible land	1,275,629.15	29.28
EwB	Elmwood fine sandy loam, 0 to 8 percent slopes	Moderately well drained	C	Not Hydric	Potentially highly erodible land	334,855.80	7.69
HoB	Howland gravelly loam, 0 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	34,106.17	0.78
HvB	Howland very stony loam, 0 to 8 percent slopes	Somewhat poorly drained	C	Not Hydric	Potentially highly erodible land	1,598,465.49	36.70
HvC	Howland very stony loam, 8 to 15 percent slopes	Moderately well drained	C	Not Hydric	Potentially highly erodible land	136,837.19	3.14
Md	Made land	Moderately well drained		Not Hydric	Not highly erodible land	171,794.01	3.94

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Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Hydric Rating	Erosion Hazard	Total Area (sq. ft.)	Total Area (acres)
MeC	Melrose fine sandy loam, 8 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	97,603.80	2.24
MrB	Monarda and Burnham very stony silt loams, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Not highly erodible land	3,459,111.22	79.41
Pa	Peat and Muck	Very poorly drained	D	All Hydric	Not highly erodible land	402,087.70	9.23
PgB	Plaisted gravelly loam, 2 to 8 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	114,637.20	2.63
PgC	Plaisted gravelly loam, 8 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	23,385.50	0.54
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	1,740,884.13	39.97
PrE	Plaisted very stony loam, 15 to 45 percent slopes	Well drained	C	Not Hydric	Highly erodible land	234,120.13	5.37
RaB	Red Hook and Atherton silt loams, 0 to 8 percent slopes	Poorly drained	C	All Hydric	Potentially highly erodible land	170,332.59	3.91
Sa	Saco silt loam	Very poorly drained	D	All Hydric	Not highly erodible land	345,905.08	7.94
ScB	Scantic silt loam, 0 to 8 percent slopes	Poorly drained	D	All Hydric	Potentially highly erodible land	908,536.76	20.86
SfC	Stetson-Suffield complex, 0 to 15 percent slopes	Well drained	B	Not Hydric	Potentially highly erodible land	435,224.70	9.99
SfE	Stetson-Suffield complex, 15 to 45 percent slopes	Well drained	B	Not Hydric	Highly erodible land	68,607.55	1.58
ThB	Thorndike shaly silt loam, 2 to 8 percent slopes	Somewhat excessively drained	C/D	Not Hydric	Potentially highly erodible land	101,806.57	2.34
ThC	Thorndike shaly silt loam, 8 to 15 percent slopes	Somewhat excessively drained	C/D	Not Hydric	Potentially highly erodible land	173,955.04	3.99

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<b>Map Unit Symbol</b>	<b>Map Unit Name</b>	<b>Drainage Class</b>	<b>Hydrologic Group</b>	<b>Hydric Rating</b>	<b>Erosion Hazard</b>	<b>Total Area (sq. ft.)</b>	<b>Total Area (acres)</b>
TkC	Thorndike very rocky silt loam, 8 to 15 percent slopes	Somewhat excessively drained	C/D	Not Hydric	Potentially highly erodible land	143,567.02	3.30
TvB	Thorndike very stony silt loam, 2 to 8 percent slopes	Well drained	C	Not Hydric	Potentially highly erodible land	1,040,756.33	23.89
W	Water bodies			Unknown Hydric	Not rated	200,074.63	4.59

## **Attachment 2**

## ADAMS SERIES

### SETTING

**Parent Material:** Sandy glaciofluvial deposits

**Landform:** Outwash plains, outwash terraces and kame terraces

**Position in Landscape:** Backslope, summit, footslopes and toeslopes

**Slope Gradient Ranges:** 0-3% 3-8%

### COMPOSTION AND SOIL CHARACTERISTICS

#### **Typical Profile:**

**Oe--**0 to 10 centimeters; black (10YR 2/1) humus (hemic material)

**E--**10 to 20 centimeters; pinkish gray (7.5YR 7/2) sand

**Bhs--**20 to 25 centimeters; dark reddish brown (5YR 2/2) loamy sand

**Bs1--**25 to 36 centimeters; brown (7.5YR 4/4) loamy sand

**Bs2--**36 to 51 centimeters; brown (7.5YR 4/4) sand

**BC--**51 to 76 centimeters; yellowish brown (10YR 5/4) sand

**C--**76 to 183 centimeters; grayish brown (10YR 5/2) sand

**Taxonomic Class:** Sandy, mixed, frigid Typic Haplorthods

**Drainage Class:** Somewhat excessively drained

**Hydrologic Group:** Group A

**Permeability:** high or very high

**Depth to Bedrock:** >60"

**Hazard to Flooding:** None

### USE AND MANAGEMENT

There are few limitations associated with this soil type relative to the proposed development. Runoff is negligible to medium, water table is generally > 60" below the surface and shrink-swell potential is low.

## **ALLAGASH SERIES**

### **SETTING**

**Parent Material:** Coarse-loamy glaciofluvial deposits

**Landform:** Deltas, stream terraces

**Position in Landscape:** Summit

**Slope Gradient Ranges:** 2-8%

### **COMPOSTION AND SOIL CHARACTERISTICS**

**Typical Profile:**

**Oe--** 0 to 1 inch; hemic material

**E--** 1 to 2 inches; light brownish gray (10YR 6/2) fine sandy loam; 2 percent fine gravel

**Bhs--** 2 to 3 inches; dark reddish brown (5YR 3/2) fine sandy loam; 5 percent fine gravel

**Bs1--** 3 to 8 inches; yellowish red (5YR 4/6) fine sandy loam; 5 percent fine gravel; few very dusky red (2.5YR 2/2) concretions

**Bs2--** 8 to 14 inches; yellowish brown (10YR 5/8) fine sandy loam; 5 percent fine gravel

**BC--** 14 to 28 inches; light olive brown (2.5Y 5/6) fine sandy loam; 5 percent fine gravel

**2C--** 28 to 65 inches; olive gray (5Y 5/2) and olive (5Y 5/3) fine sand; 5 percent fine gravel

**Taxonomic Class:** Coarse-loamy over sandy or sandy-skeletal, mixed, frigid Typic Haplorthods

**Drainage Class:** Well drained

**Hydrologic Group:** Group B

**Permeability:** Moderate in the solum and rapid in the substratum

**Depth to Bedrock:** >60"

**Hazard to Flooding:** None

### **USE AND MANAGEMENT**

There are few limitations associated with this soil type relative to the proposed development. The potential for surface runoff is low to medium, water table is generally > 60" below the surface and shrink-swell potential is low.

## **BIDDEFORD SERIES**

### **SETTING**

**Parent Material:** Marine and lacustrine sediments

**Landform:** Nearly level lowlands

**Position in Landscape:** Usually occupies the lowest position in the landscape

**Slope Gradient Ranges:** 0-3%

### **COMPOSTION AND SOIL CHARACTERISTICS**

**Typical Profile:**

**Oe**--0 to 12 inches; very dark brown (10YR 2/2) mucky peat (hemic material)

**Eg**--12 to 16 inches; gray (5Y 5/1) silt loam; few fine prominent dark yellowish brown (10YR 4/4) masses of iron accumulation

**Bgl**--16 to 22 inches olive gray (5Y 4/2) silty clay; many fine and medium prominent dark yellowish brown (10YR 4/4) masses of iron accumulation and many fine and medium distinct grayish brown (2.5Y 5/2) iron depletions

**Bg2**--22 to 35 inches; dark gray (5Y 4/1) silty clay; common fine prominent light olive brown (2.5Y 5/4) and dark yellowish brown (10YR 4/4) masses of iron accumulation

**BCg**--35 to 45 inches; olive gray (5Y 4/2) silty clay; many fine prominent dark brown (7.5YR 4/4) and olive brown (2.5Y 4/4) masses of iron accumulation, and many fine faint gray (5Y 5/1) iron depletions

**Cg**--45 to, 65 inches; gray (5Y 5/1) silty clay loam; many fine and medium prominent dark brown (7.5YR 4/4) and olive brown (2.5Y 4/4) masses of iron accumulations, and many fine and medium prominent gray (N 6/0) iron depletions

**Taxonomic Class:** Fine, illitic, nonacid, frigid Histic Humaquepts

**Drainage Class:** Very poorly drained soils.

**Hydrologic Group:** Group D

**Permeability:** Internal drainage is very slow. Permeability is moderate or moderately slow in the Eg horizon and slow or very slow below.

**Depth to Bedrock:** Deep, greater than 60 inches.

**Hazard to Flooding:** None or rare; ponding may occur October through July

### **USE AND MANAGEMENT**

The limiting factor for building site development is wetness due to the presence of a water table at or near the soil surface for a significant portion of the year. Biddeford soil has severe limitations for construction, due to the instability of thick organic deposits and ponding. Proper foundation drainage or other site modification is recommended for construction. This soil type is listed as hydric.

## BUXTON SERIES

### SETTING

**Parent Material:** Glaciolacustrine or glaciomarine deposits

**Landform:** Coastal plains

**Position in Landscape:** Backslope

**Slope Gradient Ranges:** 2-8%

### COMPOSTION AND SOIL CHARACTERISTICS

#### **Typical Profile:**

**Ap**--0 to 8 inches; dark brown (10YR 3/3) silt loam, pale brown (10YR 6/3)

**Bw1**--8 to 16 inches; dark yellowish brown (10YR 4/4) silt loam

**Bw2**--16 to 21 inches; light olive brown (2.5Y 5/4) silty clay loam; common medium prominent olive gray (5Y 5/2) iron depletions, and common medium prominent dark brown (7.5YR 4/4) masses of iron accumulation

**BC**--21 to 35 inches; olive (5Y 5/3) silty clay; common medium faint olive gray (5Y 5/2) iron depletions, and common medium prominent dark brown (7.5YR 4/4) masses of iron accumulation

**C**--35 to 65 inches; olive gray (5Y 4/2) silty clay; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation

**Taxonomic Class:** Fine, illitic, frigid Aeric Haplaquepts

**Drainage Class:** Moderately well drained.

**Hydrologic Group:** Group C

**Permeability:** Moderate or moderately slow in the surface layer, moderately slow or slow in the upper part of the subsoil, and slow or very slow in the lower part of the subsoil and the substratum.

**Depth to Bedrock:** Deep, greater than 60 inches.

**Hazard to Flooding:** None

### USE AND MANAGEMENT

This soil has few limitations for the proposed project. Surface runoff is medium or rapid depending on slope, but erosion hazard can be circumvented by using proper erosion control techniques.

## COLTON SERIES

### SETTING

**Parent Material:** Sandy-skeletal glaciofluvial deposits

**Landform:** Outwash terraces, kames, eskers

**Position in Landscape:** Footslopes

**Slope Gradient Ranges:** 2-8%      8-15%

### COMPOSTION AND SOIL CHARACTERISTICS

#### **Typical Profile:**

**Ap**--0 to 7 inches; grayish brown (10YR 5/2) gravelly loamy sand; 25 percent gravel

**E**--7 to 8 inches; pinkish gray (7.5YR 7/2) gravelly loamy sand; 25 percent gravel

**Bhs**--8 to 11 inches; dark reddish brown (5YR 2/2) gravelly loamy sand; 30 percent gravel

**Bs**--11 to 16 inches; reddish brown (5YR 4/4) gravelly loamy sand; 30 percent gravel and cobbles

**BC**--16 to 22 inches; yellowish brown (10YR 5/4) very gravelly sand; 35 percent gravel

**C**--22 to 72 inches; pale brown (10YR 6/3) and grayish brown (10YR 5/2) stratified extremely gravelly sand; 70 percent gravel

**Taxonomic Group:** Sandy-skeletal, isotic, frigid Typic Haplorthods

**Drainage Class:** Excessively drained

**Hydrologic Group:** Group B

**Permeability:** Rapid or very rapid in the solum and very rapid in substratum

**Depth to Bedrock:** Deep, greater than 60 inches

**Hazard to Flooding:** None

### USE AND MANAGEMENT

There are few limitations associated with this soil type. Erosion hazard is slight and the potential for surface runoff is very low to medium.

## DIXMONT SERIES

### SETTING

**Parent Material:** Coarse-loamy glacial till  
**Landform:** Till plains and ridges  
**Position in Landscape:** Upper positions in landscape  
**Slope Gradient Ranges:** 2-8% 8-15%

### COMPOSTION AND SOIL CHARACTERISTICS

#### **Typical Profile:**

- A**--0 to 2 inches, very dark grayish brown (10YR 3/2) silt loam, light brownish gray (2.5Y 6/2) dry; friable; 10 percent rock fragments
- Bs1**--2 to 8 inches, brown (7.5YR 4/4) silt loam; friable; many fine roots; 10 percent rock fragments
- Bs2**--8 to 13 inches; dark yellowish brown (10YR 4/4) gravelly silt loam; friable; 15 percent rock fragments
- Bs3**--13 to 20 inches; olive brown (2.5Y 4/4) silt loam; friable; 10 percent rock fragments; many coarse prominent yellowish red (5YR 5/6) masses of iron accumulation and many distinct grayish brown (2.5Y 5/2) iron depletions
- BC**--20 to 26 inches, light olive brown (2.5Y 5/4) silt loam; firm in place, friable when removed; 10 percent rock fragments; many coarse prominent light brownish gray (10YR 6/2) iron depletions; many fine prominent strong brown (7.5YR 5/6) and coarse distinct light olive brown (2.5Y 5/6) masses of iron accumulation
- C**--26 to 65 inches, olive (5Y 5/3) silt loam; firm; 10 percent rock fragments; many coarse prominent strong brown (7.5YR 5/6) masses of iron accumulation

**Taxonomic Class:** Coarse-loamy, isotic, frigid Aquic Haplorthods  
**Drainage Class:** Moderately well to somewhat poorly drained  
**Hydrologic Group:** Group C  
**Permeability:** Permeability is moderate in the A and upper part of the B horizons, and moderately slow or slow in the lower B and C horizons  
**Depth to Bedrock:** Very deep; greater than 60"  
**Hazard to Flooding:** None

### USE AND MANAGEMENT

There are few limitations associated with this soil type. Some areas within this map unit may have a groundwater table within 1 foot of the mineral soil surface during heavy precipitation or following spring snowmelt.

## ELMWOOD SERIES

### SETTING

**Parent Material:** Coarse-loamy glaciolacustrine and/or silty marine deposits

**Landform:** Plains

**Position in Landscape:** Usually found in intermediate positions in the landscape

**Slope Gradient Ranges:** 0-8%

### COMPOSTION AND SOIL CHARACTERISTICS

#### **Typical Profile:**

**Ap**--0 to 9 inches; dark brown (10YR 4/3) fine sandy loam;

**Bw1**--9 to 16 inches; yellowish brown (10YR 5/6) sandy loam;

**Bw2**--16 to 21 inches; light olive brown (2.5Y 5/6) sandy loam; common medium prominent strong brown (7.5YR 5/8) masses of iron accumulation

**Eg**--21 to 23 inches; olive gray (5Y 5/2) sandy loam; common medium prominent dark yellowish brown (10YR 4/4) masses of iron accumulation

**2Bw**--23 to 31 inches; pale olive (5Y 6/3) silty clay loam; common medium prominent yellowish brown (10YR 5/8) masses of iron accumulation

**2C**--31 to 65 inches; olive (5Y 4/3) silty clay loam; manganese stains on faces of peds

**Drainage Class:** Moderately well drained

**Taxonomic Class:** Coarse-loamy over clayey, mixed over illitic, superactive, frigid Aquic Dystric Eutrudepts

**Hydrologic Group:** Group C

**Permeability:** Moderately rapid in the loamy mantle and slow to very slow in the clayey substratum

**Depth to Bedrock:** >60"

**Hazard to Flooding:** None

### USE AND MANAGEMENT

There are few limitations associated with this soil type relative to the proposed development; occasional wetness within 18 inches of the mineral soil surface may occur during some periods of the year.

## HOWLAND SERIES

### SETTING

<b>Parent Material:</b>	Coarse-loamy glacial till
<b>Landform:</b>	Drumlins and till ridges
<b>Position in Landscape:</b>	Upper positions and side slopes
<b>Slope Gradient Ranges:</b>	0-8%    8-15%

### COMPOSTION AND SOIL CHARACTERISTICS

#### Typical Profile:

- Oa**--0 to 1 inch; black (10YR 2/1) sapric material; very friable
- E**--1 to 2 inches; grayish brown (10YR 5/2) silt loam; very friable; 5 percent gravel
- Bh**--2 to 4 inches; dark reddish brown (5YR 3/4) silt loam; very friable; 5 percent gravel
- Bs1**--4 to 13 inches; dark brown (7.5YR 4/4) silt loam; very friable; 5 percent gravel, 3 percent cobbles
- Bs2**--13 to 17 inches; yellowish brown (10YR 5/6) gravelly silt loam; very friable; 15 percent gravel and 3 percent cobbles
- BC1**--17 to 21 inches; light olive brown (2.5Y 5/4) gravelly silt loam; very friable; few fine prominent strong brown (7.5YR 4/6) masses of iron accumulation; 15 percent gravel, 3 percent cobbles and 1 percent stones
- BC2**--21 to 25 inches; olive (5Y 5/3) gravelly silt loam; friable; common coarse faint light olive gray (5Y 6/2) iron depletions; 15 percent gravel, 3 percent cobbles and 1 percent stones
- Cd**--25 to 65 inches; olive (5Y 4/3) gravelly silt loam; very firm; common coarse prominent light brownish gray (2.5Y 6/2) iron depletions; 20 percent gravel, 5 percent cobbles and 3 percent stones

<b>Taxonomic Class:</b>	Coarse-loamy, isotic, frigid Aquic Haplorthods
<b>Drainage Class:</b>	Moderately well to somewhat poorly drained.
<b>Hydrologic Group:</b>	Group C
<b>Permeability:</b>	Moderate in the solum and moderately slow or slow in the dense substratum.
<b>Depth to Bedrock:</b>	Deep, greater than 60 inches.
<b>Hazard to Flooding:</b>	None

### USE AND MANAGEMENT

There are few limitations associated with this soil type relative to the proposed development; occasional wetness within 18 inches of the mineral soil surface may occur during some periods of the year.

## **MELROSE SERIES**

### **SETTING**

**Parent Material:** Loamy glaciolacustrine and/or glaciomarine deposits

**Landform:** Coastal plains, deltas, outwash plains

**Position in Landscape:** Intermediate to lower positions (footslopes) in landscapes

**Slope Gradient Ranges:** 8-15%

### **COMPOSTION AND SOIL CHARACTERISTICS**

**Typical Profile:**

**Ap**--0 to 7 inches; very dark grayish brown (10YR 3/2) fine sandy loam

**Bw**--7 to 17 inches; yellowish brown (10YR 5/8) fine sandy loam

**BC**--17 to 23 inches; light yellowish brown (2.5 6/4) sandy loam

**2C1**--23 to 30 inches; olive (5Y 4/3) silty clay loam

**2C2**--30 to 65 inches; olive (5Y 4/3) silty clay

**Taxonomic Class:** Coarse-loamy over clayey, mixed over illitic, superactive, frigid Oxyaquic Dystrudepts

**Drainage Class:** Well drained

**Hydrologic Group:** Group C

**Permeability:** moderately rapid in the loamy mantle and slow or very slow in the clayey substratum

**Depth to Bedrock:** > 60"

**Hazard to Flooding:** none

### **USE AND MANAGEMENT**

There are few limitations associated with this soil type for the proposed development.

## MONARDA - BURNHAM COMPLEX

### SETTING

<b>Parent Material:</b>	Coarse - loamy glacial till
<b>Landform:</b>	Lower slopes, slight depressions and nearly level soils
<b>Position in Landscape:</b>	Lower positions in landscape, bases of long slopes, swales and depressions
<b>Slope Gradient Ranges:</b>	0-8%

### COMPOSTION AND SOIL CHARACTERISTICS

#### **Typical Monarda Profile:**

**Oe**--0 to 3 inches; black (5YR 2/1) mucky peat (hemic material); very friable

**Eg**--3 to 6 inches; light gray (10YR 7/2) silt loam; friable; 5 percent gravel

**Bg1**--6 to 11 inches; light brownish gray (2.5Y 6/2) silt loam; friable; many medium distinct pale olive (5Y 6/3) masses of iron accumulation; 10 percent gravel

**Bg2**--11 to 16 inches; light olive gray (5Y 6/2) silt loam; firm; many medium prominent light olive brown (2.5Y 5/4) masses of iron accumulation; 10 percent gravel; (The combined thickness of the Bg horizon is 2 to 16 inches.)

**BC**--16 to 20 inches; olive (5Y 5/4) silt loam; firm; many medium distinct light olive brown (2.5Y 5/4) masses of iron accumulation and common fine distinct gray (5Y 6/1) iron depletions; 10 percent gravel

**Cd**--20 to 65 inches; olive (5Y 4/3) gravelly silt loam; firm, olive gray (5Y 5/2) faces of prisms which are separated from interiors of prisms by a thin layer of brown (7.5YR 4/4); common fine distinct gray (5Y 6/1) iron depletions and common medium distinct light olive brown (2.5Y 5/4) masses of iron accumulation; 15 percent gravel

#### **Typical Burnham Profile:**

**Oa1**--0 to 4 inches; black (10YR 2/1) muck (sapric material); very friable

**Oa2**--4 to 13 inches; dark reddish brown (5YR 2/2) muck (sapric material); friable

**Bg**--13 to 18 inches; gray (N 5/0) channery silt loam; firm; many coarse prominent olive (5YR 5/3) masses of iron accumulation; 10 percent channers, 5 percent cobbles

**Cdg1**--18 to 34 inches; olive gray (5Y 4/2) channery silt loam; firm; many coarse prominent dark gray (N 4/0) iron depletions and many medium prominent light olive brown (2.5Y 5/4) masses of iron accumulation; 15 percent channers

**Cdg2**--34 to 65 inches; dark grayish brown (2.5Y 4/2) channery silt loam; firm; many medium distinct gray (5Y 5/1) iron depletions and many medium prominent yellowish brown (10YR 5/4) masses of iron accumulation; 20 percent channers

#### **Monarda**

**Taxonomic Class:** Loamy, mixed, active, acid, frigid, shallow Aeric Endoaquepts

**Drainage Class:** Poorly drained

#### **Burnham**

**Taxonomic Class:** Loamy, mixed, superactive, nonacid, frigid, shallow Histic Humaquepts

**Drainage Class:** Very poorly drained soils.

#### **Monarda and Burnham**

**Hydrologic Group:** Group D

**Permeability:** Permeability is moderately slow to moderately rapid in the organic surface, moderately slow in the subsoil, and slow or very slow in the substratum.

**Depth to Bedrock:** Very deep; greater than 60 inches.

**Hazard to Flooding:** Soil is not flooded but frequently ponded

#### **USE AND MANAGEMENT**

Equipment limitations are severe for Monarda Burnham complexes. These soils have a seasonal high water table at or close to the mineral soil surface, and can be compacted if exposed to heavy equipment when wet. Thick organic surface layers can lead to soil instability. This complex is listed as a hydric soil.

## PLAISTED SERIES

### SETTING

<b>Parent Material:</b>	Loamy glacial till
<b>Landform:</b>	Drumlins and till ridges
<b>Position in Landscape:</b>	Upper positions in landscape
<b>Slope Gradient Ranges:</b>	(B) 2-8% (C) 8-15% (D) 15-45%

### COMPOSTION AND SOIL CHARACTERISTICS

#### Typical Profile

- Oa**--0 to 2 inches; dark reddish brown (5YR 2/2) highly decomposed plant material; very friable
- E**--2 to 3 inches; grayish brown (10YR 5/2) silt loam; very friable; 5 percent gravel and 1 percent cobbles
- Bh**--3 to 4 inches; reddish brown (5YR 4/3) silt loam; very friable; 5 percent gravel and 2 percent cobbles
- Bs1**--4 to 7 inches; brown (7.5YR 4/4) silt loam; very friable; 5 percent gravel and 5 percent cobbles
- Bs2**--7 to 9 inches; strong brown (7.5YR 5/6) silt loam; friable; 5 percent gravel and 5 percent cobbles
- Bs3**--9 to 19 inches; yellowish brown (10YR 5/4) silt loam; friable; 5 percent gravel and 5 percent cobbles
- BC**--19 to 28 inches; light olive brown (2.5Y 5/4), with yellowish brown (10YR 5/4) faces of peds, gravelly silt loam; friable; strong brown (7.5YR 5/6) channels from decayed roots; 10 percent gravel and 5 percent cobbles
- Cd**--28 to 65 inches; olive (5Y 4/3), with light olive brown (2.5Y 5/4) faces of peds, and olive (5Y 5/3) crushed, gravelly silt loam; firm; 15 percent gravel and 10 percent cobbles

<b>Taxonomic Class:</b>	Coarse-loamy, isotic, frigid Oxyaquic Haplorthods
<b>Drainage Class:</b>	Well drained.
<b>Hydrologic Group:</b>	Group C
<b>Permeability:</b>	Moderate in the solum and moderately slow or slow in substratum.
<b>Depth to Bedrock:</b>	Deep, greater than 60 inches.
<b>Hazard to Flooding:</b>	None

### USE AND MANAGEMENT

There are few limitations associated with this soil type for the proposed development.

## RED HOOK - ATHERTON COMPLEX

### SETTING

**Parent Material:** Coarse-loamy glaciofluvial deposits

**Landform:** Outwash plains, outwash terraces, depressions

**Position in Landscape:** Lower positions in landscape; toeslopes and backslopes

**Slope Gradient Ranges:** 0-8%

### COMPOSTION AND SOIL CHARACTERISTICS

#### **Typical Red Hook Profile:**

**Ap**-- 0 to 6 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2); 10 percent rock fragments

**Bw1**-- 6 to 8 inches; brown (10YR 4/3) silt loam; few fine faint grayish brown (10YR 5/2) areas of iron depletion in the matrix; 10 percent rock fragments

**Bw2**-- 8 to 13 inches; brown (10YR 5/3) loam; many medium faint grayish brown (10YR 5/2) areas of iron depletion in the matrix and many medium faint dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; 10 percent rock fragments

**Bg**-- 13 to 22 inches; grayish brown (10YR 5/2) loam; many medium distinct brown (7.5YR 4/4) and prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 10 percent rock fragments

**Cg**-- 22 to 72 inches; grayish brown (10YR 5/2) gravelly loam; few medium prominent brownish yellow (10YR 6/6) and distinct dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; 30 percent rock fragments

#### **Typical Atherton Profile:**

**Ap**-- 0 to 9 inches; very dark gray (10YR 3/1) silt loam; few medium distinct dark red (2.5YR 3/6) masses of iron accumulation

**Bg**-- 9 to 22 inches; gray (5Y 5/1) silt loam; many medium distinct light olive brown (2.5Y 5/4) masses of iron accumulation; 5 percent coarse fragments

**2Bw**-- 22 to 38 inches; dark yellowish brown (10YR 4/4) gravelly silt loam; many medium and coarse distinct gray (5Y 5/1) areas of iron depletion; 25 percent coarse fragments

**2C**-- 38 to 60 inches; dark grayish brown (10YR 4/2) gravelly loam; common medium distinct gray (5Y 5/1) areas of iron depletion and common coarse distinct yellowish brown (10YR 5/6) masses of iron accumulation; 25 percent coarse fragments

**Taxonomic Class:** Fine/Coarse-loamy, mixed, nonacid, mesic Aeric Haplaquepts

**Drainage Class:** Poorly to very poorly drained

**Hydrologic Group:** Group D

**Permeability:** Moderately high to high in the mineral solum and substratum

**Depth to Bedrock:** Deep commonly greater than 60"

**Hazard to Flooding:** None

### USE AND MANAGEMENT

This soil complex presents limitations due to wetness. Severe frost action is a concern for road and pole stability. Complexes of Red Hook and Atherton are considered hydric. The Red Hook and Atherton series are no longer recognized in the state of Maine due to their mesic temperature regime.

## **SACO SERIES**

### **SETTING**

**Parent Material:** Coarse-silty alluvium

**Landform:** Flood plains

**Position in Landscape:** Lower areas of landscape

**Slope Gradient Ranges:** 0-2%

### **COMPOSTION AND SOIL CHARACTERISTICS**

**Typical Profile:**

**A--**0 to 12 inches; very dark gray (10YR 3/1) silt loam

**Cg1--**12 to 32 inches; gray (10YR 5/1) silt loam; common medium faint light brownish gray (10YR 6/2) iron depletions and common medium prominent strong brown (7.5YR 5/8) masses of iron accumulation

**Cg2--**32 to 48 inches; gray (5Y 5/1) silt loam

**2Cg3--**48 to 60 inches; gray (10YR 6/1 and 5/1) stratified coarse sand and medium sand

**Taxonomic Class:** Coarse-silty, mixed, active, nonacid, mesic Fluvaquentic Humaquepts

**Drainage Class:** Very poorly drained soils

**Hydrologic Group:** Group D

**Permeability:** Internal drainage is moderate in the silty layers and rapid or very rapid in the underlying sandy materials.

**Depth to Bedrock:** Deep, greater than 60 inches.

**Hazard to Flooding:** Subject to long-duration flooding from March-October

### **USE AND MANAGEMENT**

The Saco soils have many limiting factors for site development, mainly wetness due to the presence of a water table at or near the soil surface for a significant portion of the year. Saco soil has limitations for construction, due to the instability of silty deposits and ponding. Saco soils are hydric. Saco soils are no longer mapped in Maine due to the mesic temperature regime designation; for this reason, the Saco series has been replaced with the Medomak series in Maine.

## SCANTIC SERIES

### SETTING

**Parent Material:** Marine or lacustrine sediments

**Landform:** Level or gently sloping marine or lake plains

**Position in Landscape:** Lower to intermediate positions

**Slope Gradient Ranges:** 0-8%

### COMPOSITION AND SOIL CHARACTERISTICS

#### **Typical Profile:**

**Ap1**--0 to 4 inches; dark grayish brown (10YR 4/2) silt loam

**Ap2**--4 to 9 inches; dark grayish brown (2.5Y 4/2) silt loam, common medium distinct olive gray (5Y 5/2) iron depletions throughout

**Eg**--9 to 11 inches; olive gray (5Y 5/2) silt loam; common medium prominent light olive brown (2.5Y 5/6) masses of iron accumulation

**Bg1**--11 to 16 inches; olive gray (5Y 5/2) silty clay loam; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation; many coarse prominent olive brown (2.5Y 4/4) masses of iron accumulation; common medium faint gray (5Y 6/1) iron depletions

**Bg2**--16 to 22 inches; olive gray (5Y 5/2) silty clay; weak medium platy structure parting to moderate very fine subangular blocky; firm; few very fine and fine roots; few pores; common medium faint gray (5Y 6/1) iron depletions; common medium prominent light olive brown (2.5Y 5/4) masses of iron accumulation

**Bg3**--22 to 29 inches; olive gray (5Y 4/2) silty clay; common medium prominent light olive brown (2.5Y 5/6) masses of iron accumulation; common medium faint olive gray (5Y 5/2) iron depletions

**Cg**--29 to 65 inches; olive gray (5Y 4/2) clay; few medium prominent light olive brown (2.5Y 5/6) masses of iron accumulation; few fine faint gray (5Y 5/1) iron depletions

**Taxonomic Class:** Fine, illitic, nonacid, frigid Typic Epiaquepts

**Drainage Class:** Poorly drained

**Hydrologic Group:** Group D

**Permeability:** Moderate or moderately slow to slow or very slow

**Depth to Bedrock:** >60"

**Hazard to Flooding:** None

### USE AND MANAGEMENT

The potential erosion hazard for these soils is slight. However, equipment limitations can be severe. This soil type has a seasonal high water table within 7 inches of the mineral soil surface, and can be compacted if exposed to heavy equipment when wet. This can be circumvented by performing activities during dry or frozen seasons. This soil type is listed as hydric.

## **STETSON - SUFFIELD COMPLEX**

### **SETTING**

**Parent Material:** Sandy and gravelly glaciofluvial and fine glaciolacustrine and glaciomarine deposits

**Landform:** outwash and dissected plains, terraces, kames, and eskers

**Position in Landscape:** Summits to backslopes

**Slope Gradient Ranges:** 0-15% 15-45%

### **COMPOSTION AND SOIL CHARACTERISTICS**

#### **Typical Stetson Profile:**

**Oe**--0 to 1 inch; hemic material.

**E**--1 to 2 inches; light brownish gray (10YR 6/2) fine sandy loam; 10 percent fine gravel

**Bhs**--2 to 3 inches; dusky red (2.5YR 3/2) fine sandy loam; 10 percent fine gravel

**Bs1**--3 to 8 inches; yellowish red (5YR 5/8) fine sandy loam; 10 percent gravel

**Bs2**--8 to 22 inches; strong brown (7.5YR 5/6) very gravelly fine sandy loam; 35 percent gravel

**BC**--22 to 28 inches; yellowish brown (10YR 5/4) very gravelly loamy sand; 40 percent gravel

**C**--28 to 65 inches; intermingled dark olive gray (5Y 3/2) and olive (5Y 5/3) very gravelly sand; strata of sand and gravel; 50 percent gravel

#### **Typical Suffield Profile**

**Ap**--0 to 7 inches; dark brown (10YR 3/3) silt loam

**Bw1**--7 to 12 inches; light olive brown (2.5Y 5/4) silt loam

**Bw2**--12 to 24 inches; light olive brown (2.5Y 5/4) silt loam

**Bw3**--24 to 35 inches; light olive brown (2.5Y 5/4) silt loam

**2C**--35 to 65 inches; light olive brown (2.5Y 5/4) ped interiors, light brownish gray (2.5Y 6/2) and olive brown (2.5Y 4/4) ped faces with overall texture of silty clay

#### **Stetson**

**Taxonomic Class:** Sandy-skeletal, isotic, frigid Typic Haplorthods

**Drainage Class:** Well drained and somewhat excessively drained

**Hydrologic Group:** Group B

**Permeability:** moderate or moderately rapid to rapid or very rapid

#### **Suffield**

**Taxonomic Class:** Coarse-silty over clayey, mixed, active, mesic Dystric Eutrudepts

**Drainage Class:** Well drained soils

**Hydrologic Group:** Group C

**Permeability:** Moderate in the silty mantle and slow or very slow in the underlying sandy materials

#### **Stetson and Suffield**

**Depth to Bedrock:** Deep, greater than 60 inches

**Hazard to Flooding:** None

### **USE AND MANAGEMENT**

This soil complex poses few limitations with regard to the proposed development. The Suffield series is no longer recognized in Maine due to its mesic temperature regime.

## THORNDIKE SERIES

### SETTING

**Parent Material:** Loamy melt-out till

**Landform:** Till plains, ridges, hills

**Position in Landscape:** Upper positions in the landscape (shoulders)

**Slope Gradient Ranges:** 2-8% 8-15%

### COMPOSTION AND SOIL CHARACTERISTICS

#### Typical Profile

**Oa**--0 to 3 inches; black (10YR 2/1) sapric material

**E**--3 to 4 inches; pinkish gray (7.5YR 6/2) channery silt loam; 30 percent channers

**Bh**--4 to 6 inches; yellowish red (5YR 4/6) channery silt loam; 30 percent channers

**Bs1**--6 to 8 inches; brown (7.5YR 5/4) channery silt loam; 30 percent channers

**Bs2**--8 to 18 inches; dark yellowish brown (10YR 4/6) very channery silt loam; 40 percent channers

**R**--18 inches; fractured bedrock.

**Taxonomic Class:** Loamy-skeletal, isotic, frigid Lithic Haplorthods

**Drainage Class:** Somewhat excessively well drained soils.

**Hydrologic Group:** Group C/D

**Surface Runoff:** Slow to rapid, depending upon slope gradient and bedrock exposure.

**Permeability:** Moderate.

**Depth to Bedrock:** 10 to 20 inches.

**Hazard to Flooding:** None

### USE AND MANAGEMENT

The limiting factor for this soil is shallow depth to bedrock. Drilling and/or blasting may be necessary to accomplish excavation for pole placement in this soil type. Erosion can be of concern in shallow soils, if they are exposed. This concern can be addressed by applying common erosion control practices.

## WINOOSKI SERIES

### SETTING

**Parent Material:** Coarse-loamy lodgement till

**Landform:** Floodplains

**Position in Landscape:** Backslopes and lower positions in the landform

**Slope Gradient Ranges:** 0-3%

### **Typical Profile:**

**Ap**--0 to 8 inches; very dark grayish brown (10YR 3/2) very fine sandy loam

**Bw1**--8 to 18 inches; brown (10YR 4/3) very fine sandy loam

**Bw2**--18 to 26 inches; olive brown (2.5Y 4/4) very fine sandy loam, common medium prominent pinkish gray (5YR 7/2) and faint brown (10YR 5/3) iron depletions

**BC**--26 to 43 inches; olive gray (5Y 5/2) very fine sandy loam; common medium faint light gray (5Y 7/2) iron depletions and faint brown (10YR 5/3) masses of iron accumulation

**C**--43 to 65 inches; olive (5Y 5/3) loamy very fine sand; common medium distinct light brownish gray (10YR 6/2) iron depletions and prominent strong brown (7.5YR 5/8) masses of iron accumulation

**Taxonomic Class:** Coarse-silty, mixed, active, mesic Fluvaquent Dystrudepts

**Drainage Class:** Moderately well drained soils.

**Hydrologic Group:** Group B

**Permeability:** Saturated hydraulic conductivity is moderately high or high.

**Depth to Bedrock:** Deep, greater than 60 inches

**Hazard to Flooding:** Flooding frequency varies from twice a year to once in 10 years.

### USE AND MANAGEMENT

The limiting factor for this soil is frequent flooding. Flooding is most likely to occur during late winter and spring and during periods of heavy rainfall. The Winooski series is no longer recognized in Maine due to its mesic temperature regime; this series has been replaced with the Lovewell series.

## **Appendix 11-2**

### **Hybrid Class L Soils Survey and Investigation for Hydrologically Sensitive Soils**

## **1.0 Introduction**

In July, August and October 2010, Stantec Consulting (Stantec) conducted a survey to identify hydrologically sensitive features that may be associated with the Maine GenLead generator lead transmission line project located in Penobscot and Aroostook Counties. The proposed project will involve construction of approximately 59 miles of new transmission line running from Oakfield to Chester and is part of the Revised Oakfield Wind Project.

The purpose of this report is to identify and describe areas along the corridor where natural hydrology unique to portions of Maine's landscape have created soil conditions that will require additional planning prior to construction of roads and installation of infrastructure.

## **2.0 Purpose of Unique Soil Feature Evaluation**

Soils containing wetland hydrology generally develop readily identifiable morphological indicators (e.g., redoximorphic features, depleted soil matrix) in response to the anaerobic conditions caused by the groundwater table. Certain soils, however, will mask or fail to develop redoximorphic features despite the presence of groundwater. This phenomenon occurs in Maine, most commonly in northern, mountainous portions of the state, where soils have been altered, have dark parent materials, contain translocated soil materials, or where groundwater remains oxygenated.

Areas with rolling to very steep topography may contain unique soils features (e.g., groundwater seeps, surface drainages, underground streams, boulder fields) where groundwater is seasonally or permanently near the mineral soils surface yet redoximorphic features are not observable. These areas may not be mapped as jurisdictional wetlands or streams because hydrophytic vegetation is not dominant, the soils may not meet current hydric soils criteria, and surface flows occur too infrequently for development of stream characteristics such as defined banks and aquatic vegetation. Due to the small area encompassed by these features, they do not appear as soil series in a Class D Medium-Intensity Soil Survey. Therefore, unique soil features like those described above may not be identified or described on maps identifying regulated resources. Knowing the location of these features is important for project planning and design in order to avoid the alteration of natural hydrology.

These areas in some instances may be avoided or construction practices can be employed to minimize the alteration of natural hydrology. For this reason, Stantec identified these unique soils features where they occur within the proposed transmission line corridor. This survey is intended for use in conjunction with the Class D Medium-Intensity Soil Survey and the Delineated Natural Resource Map, both of which are included in Section 11 of this permit application.

## **3.0 Methods**

During the weeks of July 26, August 2, October 4, and October 11, 2010, Stantec visited areas along the proposed transmission line corridor suspected of containing soils with unique hydrologic features. Areas of interest were selected using topography, mapped wetlands, aerial photos and the existing Class D Soil Survey. Specifically, sites were chosen where elevation changes rapidly over a small area, where hillsides overlook toe-of-slope wetlands, and where the Class D Soil Survey shows an abrupt transition from a well-drained soil to a soil with poor drainage. Additionally, sites were investigated where little to no slope exists in areas between and around small mapped wetlands.

Upon arriving at areas of interest, site conditions were used to determine where to dig test pits. These site conditions included landscape position, soil surface stoniness, soil surface topography (i.e., pit and mound topography), vegetation type and rooting depth, and surface soil consistence (i.e., muckiness).

At each selected location, test pits or borings were dug to a depth of 18 or more inches using a drain spade and/or hand auger. Pits were marked in the field with pink flagging labeled with a unique pit identifier (e.g., TP-6) and located with a Global Positioning System (GPS) Trimble Pro-XT backpack unit. Between one and four pits were dug along different segments or transects of sloped locations such as

side slope and shoulder slope. In addition, GPS points were taken to mark other areas of interest such as surface drainages, boulder fields and outcrops. Photographs also were taken of representative soil pits and the surrounding landscape.

#### 4.0 Findings

In total, 69 soil pits or borings (#1–51 & 74-93) were dug and described at observation locations throughout the 59-mile proposed transmission corridor. Test pit and boring locations, as well as other located site features, are shown on the maps in Attachment 1 and further documented on the data sheets in Attachment 2. In addition to test pit areas, several areas of interest were visited but no pits were dug because site conditions made it apparent that unique soil features were not present.

In total, 16 locations displayed unique hydrologic features that, along with other identified natural resources, should be taken into account during project planning.

Three locations (B-6, B-43 and TP-47 in Oakfield, Mattawamkeag and Woodville, respectively) occurred on gentle to strong (6-15%) sideslopes above mapped wetlands. These areas are stony to extremely bouldery at the soil surface with very dark, mucky surface horizons. Evidence of channelized surface flow could be seen in or near these areas, and tree roots often displayed buttressing or were wrapped around large boulders. Soils beneath the mucky surface horizons were coarse-textured and contained free water despite visits occurring during the dry summer months.



Looking up a strong bouldery slope near B-6 in Oakfield



Looking downslope from B-43 in Mattawamkeag



Surface drainage near TP-47 in Woodville

Four locations (TP-9, TP-16, TP-84 and TP-88 in T4 R3, NYA Grant, Reed and Macwahoc, respectively) occurred on gently sloped (3-8%) areas near the bottom of longer, steeper sustained slopes. These areas had several inches of dry duff over a thick, dark (often mucky) A horizon that was extremely cobbly at the mineral soil surface. Beneath the A horizon, these soils displayed a muted olive silt loam layer with many small coarse fragments. Redoximorphic features often could be observed within 12 inches of the mineral soil surface.



Close-up of dark A over olive-brown silt loam on gentle slope, TP-9 in T4 R3 WELS



Landscape photo of gently sloping area near TP-16 in North Yarmouth Academy TWP Grant

The remaining locations (TP-75, TP-76, TP-77/78, TP-80/81, TP-86, TP-89, TP-90, TP-92, TP-93) occurred in nearly level to gently sloping (0-5%) areas near or between mapped wetlands. These areas generally had pit-mound topography, were stony or bouldery and mossy at the surface, and had shallow-rooted (often coniferous) trees with many tip-ups and blow-downs. Soils had several inches of dry duff over a thick dark (often mucky) A or O horizon and were extremely cobbly throughout the upper 10 inches. Beneath the A/O horizon, soils were generally a dusky gray silt loam with small coarse fragments. Free water was present throughout the coarse silty loam and often into the lower portions of the A/O horizon.



Bouldery, mossy nearly-level pit area near TP-76 in T3 R3 WELS



Cobbly, mossy nearly-level pit area near TP-81 in T3 R3 WELS

## **5.0 Recommendations**

The majority of the proposed 59-mile transmission corridor does not contain unique features occasionally found in mountainous areas that require additional planning and engineering prior to construction. However, in areas surrounding the test pits described above, as well as areas where surface drainages have been identified, temporary or permanent hydrology at or near the soil surface must be taken into account prior to construction.

Areas on gentle to strong slopes likely have flowing groundwater near the soil surface. This hydrology may be permanently altered if roads or equipment remove surface rocks and boulders or cut into the water table. These areas should be avoided when possible. When it is necessary for roads or infrastructure to transect these sloped areas, care should be taken not to remove or disturb surface boulders and mucky surface soil horizons. Roads in these areas should be constructed along the contours, with temporary mats, or a rock sandwich road base design should be used to allow groundwater to pass and be discharged on the down-gradient side of the road.

Areas with nearly level slopes that are near or between wetlands should be treated in the same manner as the adjacent wetlands. Timber mats should be laid down prior to crossing these areas with heavy equipment.

**SOIL PROFILE/CLASSIFICATION INFORMATION**

Detailed Description of Subsurface Conditions at Project Sites

<b>Project Name:</b> Oakfield II Wind Project	<b>Applicant Name:</b>	<b>Project Location (municipality):</b> Chester
--	------------------------	--

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol:	B-51	<input type="checkbox"/> Test Pit	<input checked="" type="checkbox"/> Boring
0' Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1			
2	Fine Sand	Friable	10YR 6/6 Brownish Yellow
3			
4			
5			
6			
7			
8			
9			
10			
12			
14			
16		2.5Y 6/6 Olive Yellow	
18			
20			
30			
40			
42			
50			
60			

<input checked="" type="checkbox"/> hydric <input type="checkbox"/> non-hydric	Slope % 3-8	Limiting factor >42"	<input type="checkbox"/> ground water <input type="checkbox"/> restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
l.s.e. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol:		<input type="checkbox"/> Test Pit	<input type="checkbox"/> Boring
0' Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
12			
14			
16			
18			
20			
30			
40			
50			
60			

<input type="checkbox"/> hydric <input type="checkbox"/> non-hydric	Slope %	Limiting factor	<input type="checkbox"/> ground water <input type="checkbox"/> restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
l.s.e. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol:		<input type="checkbox"/> Test Pit	<input type="checkbox"/> Boring
0' Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
12			
14			
16			
18			
20			
30			
40			
50			
60			

<input type="checkbox"/> hydric <input type="checkbox"/> non-hydric	Slope %	Limiting factor	<input type="checkbox"/> ground water <input type="checkbox"/> restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
l.s.e. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol:		<input type="checkbox"/> Test Pit	<input type="checkbox"/> Boring
0' Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
12			
14			
16			
18			
20			
30			
40			
50			
60			

<input type="checkbox"/> hydric <input type="checkbox"/> non-hydric	Slope %	Limiting factor	<input type="checkbox"/> ground water <input type="checkbox"/> restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
l.s.e. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

**Professional Endorsements (as applicable)**

<b>C.S.S.</b> signature:	Date:
name printed/typed:	Lic. #:
<b>L.S.E.</b> signature:	Date: 8/6/10
name printed/typed: <b>Michael Glessner</b>	Lic. #: 397

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**SOIL PROFILE/CLASSIFICATION INFORMATION**

Detailed Description of Subsurface Conditions at Project Sites

<b>Project Name:</b> Oakfield II Wind Project	<b>Applicant Name:</b>	<b>Project Location (municipality):</b> Woodville
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SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-47</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
0. Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
Silt Loam w/ 10% Coarse Fragments	Friable	2.5Y 3/2 Very Dark Grayish Brown	
Gravelly Sandy Loam		2.5Y 4/3 Olive Brown	Few, Fine, Faint
Loamy Coarse Sand		2.5Y 5/4 Light Olive Brown	Common, Medium, Distinct
Sand		2.5Y 6/4 Lt Yellow Brn	
Limit of Excavation = 28"			
<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric	Slope % 8-15	Limiting factor 11"	<input type="checkbox"/> ground water <input type="checkbox"/> restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-49</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
0. Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
Silt Loam	Friable	2.5Y 4/2 Dark Grayish Brown	
Sandy Loam w/ 5% Coarse Fragments		2.5Y 5/3 Light Olive Brown	
			Firm
Sand w/ 8% Coarse Fragments	Very Firm	2.5Y 5/4 Light Olive Brown	Common, Medium, Faint
Limit of Excavation = 22"			
<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric	Slope % 3-8	Limiting factor 15"	<input type="checkbox"/> ground water <input type="checkbox"/> restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-48</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
0. Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
Silt Loam	Friable	2.5Y 4/3 Olive Brown	
			Firm
		2.5Y 4/2 Dark Grayish Brown	Common, Medium, Distinct
Loamy Coarse Sand	Friable	2.5Y 5/2 Grayish Brown	
Limit of Excavation = 26"			
<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric	Slope % 0-3	Limiting factor 14"	<input type="checkbox"/> ground water <input type="checkbox"/> restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>B-50</b> <input type="checkbox"/> Test Pit <input checked="" type="checkbox"/> Boring			
3. Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
Loam	Friable	2.5Y 3/1 Very Dark Gray	
Silt Loam w/ 15% Coarse Fragments		2.5Y 4/1 Dark Gray	Few, Fine, Faint
Loamy Fine Sand		5Y 6/1 Gray	
Loamy Very Fine Sand	Firm	2.5Y 6/4 Lt Yellow Brwn	Common, Med., Distinct
Silty Clay Loam	Very Firm	2.5Y 5/6 Light Olive Brown	Many, Coarse, Prominent
Limit of Excavation = 18"			
<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric	Slope % 0-3	Limiting factor 1"	<input type="checkbox"/> ground water <input type="checkbox"/> restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

**Professional Endorsements (as applicable)**

<b>C.S.S.</b> signature: _____	Date: _____
name printed/typed: _____	Lic.#: _____
<b>L.S.E.</b> signature: _____	Date: _____
name printed/typed: <b>Michael Glessner</b>	Lic.#: _____

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**SOIL PROFILE/CLASSIFICATION INFORMATION**

Detailed Description of Subsurface Conditions at Project Sites

<b>Project Name:</b> Oakfield II Wind Project	<b>Applicant Name:</b>	<b>Project Location (municipality):</b> Mattawamkeag
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SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>B-43</b> <input type="checkbox"/> Test Pit <input checked="" type="checkbox"/> Boring			
0" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
Coarse Sand w/ 5% Coarse Fragments	Loose	2.5Y 4/2 Dark Grayish Brown	Common, Medium, Distinct
Very Fine Sand	Firm	2.5Y 6/2 Light Brownish Gray	Many, Coarse, Prominent
Boulder or Ledge @ 10"; Free Water @ 0" 50% surface boulders averaging 2' diameter			
hydic non-hydric <input type="checkbox"/> Slope % <u>3-8</u> Limiting factor <u>0"</u> <input type="checkbox"/> ground water restrictive layer bedrock <input type="checkbox"/>			
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
l.s.e. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-45</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
0" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
Loam	Friable	10YR 3/3 Very Dark Gray Brown	None
Loamy Sand		2.5Y 8/1 White	
		10YR 7/8 Yellow	
Fine Sand	Loose	2.5Y 7/6 Yellow	
Limit of Excavation = 27"			
hydic non-hydric <input type="checkbox"/> Slope % <u>15-25</u> Limiting factor <u>&gt;27"</u> <input type="checkbox"/> ground water restrictive layer bedrock <input type="checkbox"/>			
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
l.s.e. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-44</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
0" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
Loam	Friable	10YR 3/3 Dark Brown	
Loamy Sand		10YR 7/1 Light Gray	
		7.5YR 4/6 Strong Brown	
		2.5Y 7/8 Yellow	
Loamy Sand w/ 5% Coarse Fragments			
	Somewhat Firm	2.5Y 6/6 Olive Yellow	Few, Fine, Faint
Rock or Ledge @ 38"			
hydic non-hydric <input type="checkbox"/> Slope % <u>8-15</u> Limiting factor <u>30"</u> <input type="checkbox"/> ground water restrictive layer bedrock <input type="checkbox"/>			
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
l.s.e. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-46</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
1" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
Loamy Sand	Friable	10YR 7/1 Light Gray	
		5YR 5/8 Yellowish Red	None
		10YR 6/8 Brownish Yellow	
Loamy Fine Sand		2.5Y 7/6 Yellow	
Fine Sand		2.5Y 7/3 Pale Yellow	
Limit of Excavation = 36" Less than 1% surface boulders, averaging 4' diameter			
hydic non-hydric <input type="checkbox"/> Slope % <u>3-8</u> Limiting factor <u>&gt;36"</u> <input type="checkbox"/> ground water restrictive layer bedrock <input type="checkbox"/>			
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
l.s.e. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

**Professional Endorsements (as applicable)**

<b>C.S.S.</b> signature: _____	Date: _____
name printed/typed: _____	Lic.#: _____
<b>L.S.E.</b> signature: _____	Date: <b>8/5/10</b>
name printed/typed: <b>Michael Glessner</b>	Lic.#: <b>397</b>

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**SOIL PROFILE/CLASSIFICATION INFORMATION**

Detailed Description of Subsurface Conditions at Project Sites

<b>Project Name:</b> Oakfield II Wind Project	<b>Applicant Name:</b>	<b>Project Location (municipality):</b> Macwahoc
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SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-38</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
2" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
Loam	Friable	2.5Y 4/2 Dark Grayish Brown	None
Loamy Sand		2.5Y 7/1 Light Gray	
		2.5Y 6/8 Olive Yellow	
Limit of Excavation = 17"			
<input type="checkbox"/> hydric non-hydric      Slope % <b>0-3</b> Limiting factor <b>&gt;17"</b> <input type="checkbox"/> ground water restrictive layer bedrock			
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-40</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
2" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
Loam	Friable	10YR 3/3 Dark Brown 10YR 7/1 Light Gray	
Loamy Sand w/ 15% Shale		10YR 4/6 Dk Yellow Brn	
Coarse Fragments		2.5Y 6/8 Olive Yellow	
Rock or Ledge @ 12"			
<input type="checkbox"/> hydric non-hydric      Slope % <b>3-8</b> Limiting factor <b>12"</b> <input type="checkbox"/> ground water restrictive layer bedrock			
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>B-39</b> <input type="checkbox"/> Test Pit <input checked="" type="checkbox"/> Boring			
4" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
Loam w/ 25% Coarse Fragments	Friable	5Y 2.5/1 Black	
Silt Loam w/ 75% Coarse Fragments		5Y 4/1 Dark Gray	
Silt Loam w/ 50% Coarse Fragments			Common, Medium, Distinct
Limit of Excavation = 13"			
<input type="checkbox"/> hydric non-hydric      Slope % <b>0-3</b> Limiting factor <b>0"</b> <input checked="" type="checkbox"/> ground water restrictive layer bedrock			
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-41</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
1" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
Loam	Friable	10YR 3/3 Dark Brown 10YR 7/1 Light Gray	
Loamy Sand		10YR 4/6 Dk Yellow Brn	
		2.5Y 6/8 Olive Yellow	
Limit of Excavation = 16"			
<input type="checkbox"/> hydric non-hydric      Slope % <b>0-3</b> Limiting factor <b>&gt;16"</b> <input type="checkbox"/> ground water restrictive layer bedrock			
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

Professional Endorsements (as applicable)	
c.s.s. signature: _____ name printed/typed: _____	Date: _____ Lic.#: _____
L.S.E. signature: _____ name printed/typed: <b>Michael Glessner</b>	Date: <b>8/4/10</b> Lic.#: <b>397</b>

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**SOIL PROFILE/CLASSIFICATION INFORMATION**

Detailed Description of Subsurface Conditions at Project Sites

<b>Project Name:</b> Oakfield II Wind Project	<b>Applicant Name:</b>	<b>Project Location (municipality):</b> Reed
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SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-36</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
0' Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1			
2	Very Fine Sandy Loam	Friable	2.5Y 5/3 Light Olive Brown
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14	Silt Loam w/ 5% Coarse Fragments	Firm	
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
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48			
49			
50			
51			
52			
53			
54			
55			
56			
57			
58			
59			
60			

<input checked="" type="checkbox"/> hydric non-hydric	Slope % <b>0-3</b>	Limiting factor <b>0"</b>	<input checked="" type="checkbox"/> ground water restrictive layer bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <input type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
_____ Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
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47			
48			
49			
50			
51			
52			
53			
54			
55			
56			
57			
58			
59			
60			

<input type="checkbox"/> hydric non-hydric	Slope % _____	Limiting factor _____	<input type="checkbox"/> ground water restrictive layer bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-37</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
3' Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1	Loam	Friable	10YR 3/3 Dark Brown
2	Loamy Sand w/ 5% Coarse Fragments		10YR 7/1 Light Gray 10YR 5/8 Yellowish Brown
3			
4			
5			
6			2.5Y 6/6
7			Olive Yellow
8			
9			
10			
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58			
59			
60			

<input type="checkbox"/> hydric non-hydric	Slope % <b>8-15</b>	Limiting factor <b>&gt;21"</b>	<input type="checkbox"/> ground water restrictive layer bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <input type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
_____ Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
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60			

<input type="checkbox"/> hydric non-hydric	Slope % _____	Limiting factor _____	<input type="checkbox"/> ground water restrictive layer bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

<b>Professional Endorsements (as applicable)</b>	
c.s.s. signature: _____	Date: _____
name printed/typed: _____	Lic.#: _____
L.S.E. signature: _____	Date: <b>8/4/10</b>
name printed/typed: <b>Michael Glessner</b>	Lic.#: <b>397</b>

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**SOIL PROFILE/CLASSIFICATION INFORMATION**

Detailed Description of Subsurface Conditions at Project Sites

<b>Project Name:</b> Oakfield II Wind Project	<b>Applicant Name:</b>	<b>Project Location (municipality):</b> Reed
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SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-33</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
0. Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1 Silt Loam	Mucky	5Y 2.5/1 Black	Few, Fine, Faint
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17 Silty Clay Loam	Somewhat Firm	5Y 4/1 Dark Gray	Common, Medium, Distinct
18			
19			
20			
21			
Rock or Ledge @ 21"; Free Water @ 14"			
22			
23			
24			
25			
26			
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59			
60			
<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric	Slope % <b>0-3</b>	Limiting factor <b>0"</b>	<input checked="" type="checkbox"/> ground water restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
l.s.e. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-34</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
1. Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1 Loamy Sand w/ 5% Coarse Fragments	Friable	10YR 7/1 Light Gray	None
2		10YR 6/8 Brownish Yellow	
3			
4			
5			
6		10YR 5/6 Yellowish Brown	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
Limit of Excavation = 18"			
21			
22			
23			
24			
25			
26			
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31			
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33			
34			
35			
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59			
60			
<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric	Slope % <b>8-15</b>	Limiting factor <b>&gt;18"</b>	<input type="checkbox"/> ground water restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
l.s.e. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-35</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1 Loamy Sand w/ 5% Coarse Fragments	Friable	10YR 7/1 Light Gray	None
2		10YR 6/8 Brownish Yellow	
3			
4			
5			
6		10YR 5/6 Yellowish Brown	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
Limit of Excavation = 18"			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
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59			
60			
<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric	Slope % <b>3-8</b>	Limiting factor <b>&gt;18"</b>	<input type="checkbox"/> ground water restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
l.s.e. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <input type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
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54			
55			
56			
57			
58			
59			
60			
<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric	Slope %	Limiting factor	<input type="checkbox"/> ground water restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
l.s.e. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

**Professional Endorsements (as applicable)**

<b>C.S.S.</b> signature: _____	Date: _____
name printed/typed: _____	Lic.#: _____
<b>L.S.E.</b> signature: _____	Date: <b>8/4/10</b>
name printed/typed: <b>Michael Glessner</b>	Lic.#: <b>397</b>

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**SOIL PROFILE/CLASSIFICATION INFORMATION**

Detailed Description of Subsurface Conditions at Project Sites

<b>Project Name:</b> Oakfield II Wind Project	<b>Applicant Name:</b>	<b>Project Location (municipality):</b> Glenwood
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SOIL DESCRIPTION AND CLASSIFICATION				
Exploration Symbol: <u>B-31</u> <input type="checkbox"/> Test Pit <input checked="" type="checkbox"/> Boring				
1-3" Depth of Organic Horizon Above Mineral Soil				
	<b>Texture</b>	<b>Consistency</b>	<b>Color</b>	<b>Mottling</b>
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
12				
14				
16				
18				
20				
21				
22				
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32				
34				
36				
38				
40				
42				
44				
46				
48				
50				
52				
54				
56				
58				
60				
<input checked="" type="checkbox"/> hydric non-hydric <input type="checkbox"/> Slope % <u>0-3</u> <input type="checkbox"/> Limiting factor <u>0"</u>		<input checked="" type="checkbox"/> ground water restrictive layer bedrock <input type="checkbox"/>		
C.S.S. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____				
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____				

SOIL DESCRIPTION AND CLASSIFICATION				
Exploration Symbol: <u>TP-32</u> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring				
1-3" Depth of Organic Horizon Above Mineral Soil				
	<b>Texture</b>	<b>Consistency</b>	<b>Color</b>	<b>Mottling</b>
0				
1	Sandy Loam	Friable	10YR 5/4 Yellowish Brown	
2			10YR 8/1 White	
3	Loamy Sand w/			
4	10% Coarse Fragments			
5			10YR 5/8 Yellowish Brown	
6				
7				
8				
9				
10			2.5Y 6/6 Olive Yellow	
12				
14				
16				
18				
20				
21				
22				
24				
26				
28				
30				
32				
34				
36				
38				
40				
42				
44				
46				
48				
50				
52				
54				
56				
58				
60				
<input type="checkbox"/> hydric non-hydric <input type="checkbox"/> Slope % <u>8-15</u> <input type="checkbox"/> Limiting factor <u>&gt;21"</u>		<input type="checkbox"/> ground water restrictive layer bedrock <input type="checkbox"/>		
C.S.S. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____				
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____				

SOIL DESCRIPTION AND CLASSIFICATION				
Exploration Symbol: _____ <input type="checkbox"/> Test Pit <input type="checkbox"/> Boring				
_____ Depth of Organic Horizon Above Mineral Soil				
	<b>Texture</b>	<b>Consistency</b>	<b>Color</b>	<b>Mottling</b>
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
12				
14				
16				
18				
20				
21				
22				
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34				
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38				
40				
42				
44				
46				
48				
50				
52				
54				
56				
58				
60				
<input type="checkbox"/> hydric non-hydric <input type="checkbox"/> Slope % _____ <input type="checkbox"/> Limiting factor _____		<input type="checkbox"/> ground water restrictive layer bedrock <input type="checkbox"/>		
C.S.S. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____				
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____				

SOIL DESCRIPTION AND CLASSIFICATION				
Exploration Symbol: _____ <input type="checkbox"/> Test Pit <input type="checkbox"/> Boring				
_____ Depth of Organic Horizon Above Mineral Soil				
	<b>Texture</b>	<b>Consistency</b>	<b>Color</b>	<b>Mottling</b>
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
12				
14				
16				
18				
20				
21				
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36				
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40				
42				
44				
46				
48				
50				
52				
54				
56				
58				
60				
<input type="checkbox"/> hydric non-hydric <input type="checkbox"/> Slope % _____ <input type="checkbox"/> Limiting factor _____		<input type="checkbox"/> ground water restrictive layer bedrock <input type="checkbox"/>		
C.S.S. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____				
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____				

<b>Professional Endorsements (as applicable)</b>			
<b>C.S.S.</b>	signature: _____	Date:	
	name printed/typed: _____	Lic.#:	
<b>L.S.E.</b>	signature: _____	Date:	<b>8/3/10</b>
	name printed/typed: <b>Michael Glessner</b>	Lic.#:	<b>397</b>

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**SOIL PROFILE/CLASSIFICATION INFORMATION**

Detailed Description of Subsurface Conditions at Project Sites

<b>Project Name:</b> Oakfield II Wind Project	<b>Applicant Name:</b>	<b>Project Location (municipality):</b> Mattawamkeag
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SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-22</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
2. Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1 Silty Clay Loam	Somewhat Firm	5Y 5/1 Gray	Common, Medium, Distinct
2			
3			
4			
5 Silty Clay w/ 15% Coarse Fragments	Firm	5Y 6/1 Gray	
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20 Silty Clay	Very Firm	5Y 5/3 Olive	Few, Fine, Faint
21			
22			
23			
24			
25			
26			
27			
28			
29			
Limit of Excavation = 29"			
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
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41			
42			
43			
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52			
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54			
55			
56			
57			
58			
59			
60			
<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric	Slope % <b>0-3</b>	Limiting factor <b>0"</b>	<input type="checkbox"/> ground water <input checked="" type="checkbox"/> restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-23</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
1. Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1 Loam	Friable	10YR 3/2 Vy Dk Gray Brown	None
2 Loamy Fine Sand		10YR 7/2 Light Gray	
3 Loamy Sand		7.5YR 6/8 Reddish Yellow	
4 Sand	Loose	2.5Y 6/6 Olive Yellow	
5			
6			
7			
8			
9			
10			
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59			
60			
<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric	Slope % <b>3-8</b>	Limiting factor <b>38"</b>	<input type="checkbox"/> ground water <input checked="" type="checkbox"/> restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-24</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
3. Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1 Loam	Friable	7.5YR 3/2 Dark Brown	None
2 Loamy Sand		2.5Y 6/3 Lt Yellowish Brown	
3		7.5YR 4/6 Strong Brown	
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
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60			
<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric	Slope % <b>0-3</b>	Limiting factor <b>&gt;25"</b>	<input type="checkbox"/> ground water <input checked="" type="checkbox"/> restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <input type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
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59			
60			
<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric	Slope %	Limiting factor	<input type="checkbox"/> ground water <input checked="" type="checkbox"/> restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

**Professional Endorsements (as applicable)**

<b>C.S.S.</b> signature: _____	Date: _____
name printed/typed: _____	Lic.#: _____
<b>L.S.E.</b> signature: _____	Date: <b>8/2/10</b>
name printed/typed: <b>Michael Glessner</b>	Lic.#: <b>397</b>

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**SOIL PROFILE/CLASSIFICATION INFORMATION**

Detailed Description of Subsurface Conditions at Project Sites

<b>Project Name:</b> Oakfield II Wind Project	<b>Applicant Name:</b>	<b>Project Location (municipality):</b> Molunkus
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SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-19</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
20" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1 Silty Clay	Firm	GLE Y 1 5/5GY	None
2		Greenish Gray	
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
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59			
60			
<input type="checkbox"/> hydric	Slope %	Limiting factor	<input type="checkbox"/> ground water
<input checked="" type="checkbox"/> non-hydric	<b>0-3</b>	<b>0"</b>	<input type="checkbox"/> restrictive layer
			<input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____			
Drainage Class		Hydrologic Group	
L.S.E. Soil Classification: _____			
Profile		Design Class	

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-20</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
2" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1 Loam	Friable	10YR 3/2 Vy Dk Gray Brown	None
2 Loamy Sand		2.5Y 6/3 Lt Yellowish Brown	
3 Sandy Loam	Loose	10YR 4/6	
4 (15% Coarse Fragments)		Dark Yellowish	
5		Brown	
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
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60			
<input type="checkbox"/> hydric	Slope %	Limiting factor	<input type="checkbox"/> ground water
<input checked="" type="checkbox"/> non-hydric	<b>3-8</b>	<b>13"</b>	<input type="checkbox"/> restrictive layer
			<input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____			
Drainage Class		Hydrologic Group	
L.S.E. Soil Classification: _____			
Profile		Design Class	

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-21</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
1" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1 Loamy Fine Sand	Friable	2.5Y 8/1 White	None
2 Loamy Sand		7.5YR 4/6 Strong Brown	
3			
4 Loamy Sand w/	Loose	2.5Y 7/6	
5 3% Coarse Fragments		Yellow	
6			
7			
8			
9			
10			
11			
12			
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14			
15			
16			
17			
18			
19			
20			
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59			
60			
<input type="checkbox"/> hydric	Slope %	Limiting factor	<input type="checkbox"/> ground water
<input checked="" type="checkbox"/> non-hydric	<b>0-3</b>	<b>&gt;20"</b>	<input type="checkbox"/> restrictive layer
			<input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____			
Drainage Class		Hydrologic Group	
L.S.E. Soil Classification: _____			
Profile		Design Class	

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: _____ <input type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
_____ Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1			
2			
3			
4			
5			
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7			
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11			
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59			
60			
<input type="checkbox"/> hydric	Slope %	Limiting factor	<input type="checkbox"/> ground water
<input checked="" type="checkbox"/> non-hydric			<input type="checkbox"/> restrictive layer
			<input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____			
Drainage Class		Hydrologic Group	
L.S.E. Soil Classification: _____			
Profile		Design Class	

Professional Endorsements (as applicable)	
c.s.s. signature: _____ name printed/typed: _____	Date: _____ Lic.#: _____
L.S.E. signature: _____ name printed/typed: <b>Michael Glessner</b>	Date: <b>7/30/10</b> Lic.#: <b>397</b>

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**SOIL PROFILE/CLASSIFICATION INFORMATION**

Detailed Description of Subsurface Conditions at Project Sites

<b>Project Name:</b> Oakfield II Wind Project	<b>Applicant Name:</b>	<b>Project Location (municipality):</b> North Yarmouth Academy Grant TWP
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SOIL DESCRIPTION AND CLASSIFICATION				
Exploration Symbol: <b>TP-15</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring				
1. Depth of Organic Horizon Above Mineral Soil				
DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0	Silt Loam	Friable	2.5Y 5/2 Grayish Brown	Few, Fine, Faint
1				
2				
3				
4				
5				
6				
7		Firm		Common, Medium, Distinct
8				
9				
10				
11				
12				
13				
14				
15				
16	Limit of Excavation = 16"			
17				
18				
19				
20				
21				
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60				
<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric		Slope % <b>0-3</b>	Limiting factor <b>0"</b>	<input type="checkbox"/> ground water <input type="checkbox"/> restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____				
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____				

SOIL DESCRIPTION AND CLASSIFICATION				
Exploration Symbol: <b>TP-16</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring				
1. Depth of Organic Horizon Above Mineral Soil				
DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0	Loamy Sand	Friable	2.5Y 6/2 Light Brownish Gray	
1				
2				
3	Loamy Coarse Sand			
4				
5				
6				
7				
8				
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13				
14				
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60				
<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric		Slope % <b>3-8</b>	Limiting factor <b>9"</b>	<input type="checkbox"/> ground water <input type="checkbox"/> restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____				
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____				

SOIL DESCRIPTION AND CLASSIFICATION				
Exploration Symbol: <b>TP-17</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring				
4. Depth of Organic Horizon Above Mineral Soil				
DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam w/ 15% Coarse Fragments	Loose	10YR 3/3 Dark Brown	None
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12	Loamy Sand	Friable	2.5Y 5/4 Light Olive Brown	
13	15% Coarse Fragments			
14				
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<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric		Slope % <b>8-15</b>	Limiting factor <b>&gt;16"</b>	<input type="checkbox"/> ground water <input type="checkbox"/> restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____				
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____				

SOIL DESCRIPTION AND CLASSIFICATION				
Exploration Symbol: <b>TP-18</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring				
1. Depth of Organic Horizon Above Mineral Soil				
DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0	Loamy Fine Sand	Loose	10YR 8/1 White	None
1				
2	Loamy Sand		10YR 5/6 Yellowish Brown	
3				
4				
5				
6				
7				
8				
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60				
<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric		Slope % <b>3-8</b>	Limiting factor <b>&gt;18"</b>	<input type="checkbox"/> ground water <input type="checkbox"/> restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____				
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____				

Professional Endorsements (as applicable)	
c.s.s. signature: _____ name printed/typed: _____	Date: _____ Lic.#: _____
L.S.E. signature: _____ name printed/typed: <b>Michael Glessner</b>	Date: <b>7/29/10</b> Lic.#: <b>397</b>

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**SOIL PROFILE/CLASSIFICATION INFORMATION**

Detailed Description of Subsurface Conditions at Project Sites

<b>Project Name:</b> Oakfield II Wind Project	<b>Applicant Name:</b>	<b>Project Location (municipality):</b> Oakfield
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SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-5</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
12" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1 Sandy Loam	Loose		
2 with 85% gravel		2.5Y 7/1	None
		Light Gray	
		(Coarse fragments)	
		2.5Y 4/1	
		Dark Gray	
		(Sandy Loam)	
Refusal @ 18": Free water at 0" 35% surface boulders averaging 5" diameter			
<input checked="" type="checkbox"/> hydric non-hydric      Slope % <u>3-8</u> Limiting factor <u>0"</u> <input checked="" type="checkbox"/> ground water restrictive layer bedrock			
C.S.S. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-7</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
0" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1 Loamy Sand	Friable	10YR 3/2	None
		Very Dark Grayish Brown	
3 Loamy Sand (15% Pebble)		10YR 4/6	
		Dark Yellowish Brown	
		10YR 5/4	
		Yellowish Brown	
Limit of Excavation = 27" 15% surface boulders averaging 1" diameter			
<input type="checkbox"/> hydric non-hydric      Slope % <u>15-25</u> Limiting factor <u>&gt;27"</u> <input type="checkbox"/> ground water restrictive layer bedrock			
C.S.S. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>B-6</b> <input type="checkbox"/> Test Pit <input checked="" type="checkbox"/> Boring			
2" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1 Loam	Friable	2.5Y 3/2	None
		Very Dark Grayish Brown	
4 Sandy Loam	Mucky	5Y 3/1	
		Very Dark Gray	
Limit of Excavation 13": Free water @ 6" 50% surface boulders averaging 2" diameter			
<input type="checkbox"/> hydric non-hydric      Slope % <u>8-15</u> Limiting factor <u>6"</u> <input type="checkbox"/> ground water restrictive layer bedrock			
C.S.S. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-8</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
0" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
1 Loamy Sand	Friable	10YR 3/2	None
		Very Dark Grayish Brown	
3 Loamy Sand		10YR 4/6	
		Dark Yellowish Brown	
		10YR 5/4	
		Yellowish Brown	
Limit of Excavation = 20"			
<input type="checkbox"/> hydric non-hydric      Slope % <u>3-8</u> Limiting factor <u>&gt;20"</u> <input type="checkbox"/> ground water restrictive layer bedrock			
C.S.S. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

**Professional Endorsements (as applicable)**

<b>C.S.S.</b> signature: _____	Date: _____
name printed/typed: _____	Lic.#: _____
<b>L.S.E.</b> signature: _____	Date: <b>7/28/10</b>
name printed/typed: <b>Michael Glessner</b>	Lic.#: <b>397</b>

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**SOIL PROFILE/CLASSIFICATION INFORMATION**

Detailed Description of Subsurface Conditions at Project Sites

<b>Project Name:</b> Oakfield II Wind Project	<b>Applicant Name:</b>	<b>Project Location (municipality):</b> Macwahoc, ME
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SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-1</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
14" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
Loam	Friable	2.5Y 3/1 Very Dark Gray	None
Silty Loam		2.5Y 4/1 Dark Gray	Common, Medium, Distinct
Silty Clay Loam	Somewhat Firm	2.5Y 5/1 Gray	None
Rock or Ledge @ 18"			
<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric	Slope % <b>0-3</b>	Limiting factor <b>0"</b>	<input type="checkbox"/> ground water restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-3</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
1" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
Loam	Friable	2.5Y 3/1 Very Dark Gray	None
Loamy Fine Sand	Loose	2.5Y 6/2	
75% Cobbles		Light Brownish Gray	
Loamy Sand	Friable	7.5YR 6/8 Reddish Yellow	
Limit of Excavation = 18"			
<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric	Slope % <b>8-15</b>	Limiting factor <b>&gt;18"</b>	<input type="checkbox"/> ground water restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-2</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
2" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
Loam	Friable	2.5Y 3/1 Very Dark Gray	None
Loamy Fine Sand		2.5Y 6/3 Light Olive Brown	
Fine Sandy Loam w/ 10% Coarse Fragments		2.5Y 6/6 Olive Yellow	
Rock or Ledge @ 16"			
<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric	Slope % <b>3-8</b>	Limiting factor <b>&gt;16"</b>	<input type="checkbox"/> ground water restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

SOIL DESCRIPTION AND CLASSIFICATION			
Exploration Symbol: <b>TP-4</b> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
1" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling
Loam	Friable	2.5Y 6/2 Lt Brown Gray	None
Loamy Fine Sand		2.5Y 6/6 Olive Yellow	
Sandy Loam	Friable	2.5Y 6/4 Light Yellowish Brown	
Somewhat Firm			
Limit of Excavation = 24"			
<input type="checkbox"/> hydric <input checked="" type="checkbox"/> non-hydric	Slope % _____	Limiting factor <b>18"</b>	<input type="checkbox"/> ground water restrictive layer <input type="checkbox"/> bedrock
c.s.s. Soil Series / phase name: _____ Drainage Class _____ Hydrologic Group _____			
L.S.E. Soil Classification: _____ Profile _____ Drainage Class _____ Design Class _____			

**Professional Endorsements (as applicable)**

<b>C.S.S.</b> signature: _____	Date: _____
name printed/typed: _____	Lic.#: _____
<b>L.S.E.</b> signature: _____	Date: <b>7/27/10</b>
name printed/typed: <b>Michael Glessner</b>	Lic.#: <b>397</b>

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## **Appendix 11-3**

### **Rocque Meeting Minutes**

# Meeting Notes



**Stantec**

## Oakfield Wind Project Site Visit Minutes

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Date: August 18, 2010  
Place/Time: Oakfield, ME  
Attendees: Dale Knapp and State Soil Scientist Dave Rocque

---

**Purpose:** To familiarize Dave with the site and take him to as many portions of the project as possible. In addition to site familiarity, the visit also provided an opportunity to get feedback on Dave's concerns and recommendations to support the successful execution of the project. Included with this memo is a map of the summit showing areas visited during the course of our site visit.

### Summit

We began the site visit by driving from Thompson Settlement Road up an existing gravel road and viewed the locations of Turbine N01, N02, N06, and N05. Dave was satisfied with the approach and believed the implementation of standard construction techniques would be appropriate.

We then parked the truck at an existing met tower and walked the access road from Turbine 02 to 09. Dave had some concerns related to slope regarding necessary cut and fill but did not have significant concern with sensitive subsurface hydrology in this area. Attention should be paid to moving surface water during heavy rain events and in the spring in the project design.

Walking the existing road from Turbine N09 to N11, Dave had no issues or concerns with the design as proposed.

We drove along the North Oakfield Road to get a broader view of the property and had some brief discussion related to the agricultural windmills along the ridge, as an interesting foil to the proposed modern wind farm.

We then traveled down Thompson Settlement to view the primary access to the project site. The gradual ascent and easy slope provide optimal access to the top of the ridgeline. Dave agreed with the approach and had no concerns.

We then visited the existing road and Turbines S03, S04, and S05. Dave was of the opinion that the turbine locations were appropriate as was the access road.

We then walked the access and visited Turbine S08. Dave made the comment that he again had no concerns and the site seemed an appropriate one overall for wind power development.

Driving up the existing access and visiting Turbine S06 and S07 no concerns were noted.

One Team. Infinite Solutions.

We then drove east along the South Oakfield Road and traveled the existing road to the proposed location of Turbine E02. Dave noted a change in both vegetation and soils within and surrounding the access road and noted this as an area where special attention need be paid to cross slope hydrology and controlling large volume storm events and spring melt water. Beyond the location of Turbine E02 the elevation increases and concerns were reduced beyond Turbine E02.

We then traveled up Brown Road to Turbines E06, E07, and E08. Dave noted that the switchback was preferred over the existing road as there may be storm water issues associated with using the existing road. Dave had no concerns with the proposed turbine locations.

We then visited the final string of proposed turbines in the easterly most section of the project area, Turbines E16 through E20. Dave commented that the use of the existing infrastructure on the ridge was an appropriate choice and thought these turbines were sited in very appropriate locations.

We will provide Dave a set of plans of the proposed design as soon as they are available so he can review and provide comment. To assist in reducing his level of effort we will highlight areas that may be of interest to Dave, keeping in mind the content of our discussion during the site visit.

#### T-Line

Several locations were visited along the T-line; in order to simplify these minutes general notes will be provided. Overall Dave's concerns are focused along the Greenfield portion of the route along the northern portion of the proposed T-line along the town line of Linneus, TA R2 Wels, and Forkstown TWP. Issues present here include concerns with limited access and construction methodologies for crossing wet areas and how to identify areas of hydrologic concern. Dave also requested that we will provide adequate information detailing construction techniques, timing, and other relevant information for Dave to provide comment on as soon as possible. We also spent some time discussing the soil survey efforts along the T-line. Dave was in agreement that a hybrid class L/D combination may provide suitable information since the project preceded the amended DEP requirement. Dave suggested that after the project has been permitted, it may be possible to collect some of the soils information for areas of most concern, including those areas furthest from any road and not co-located. One action item needed for follow up is a brief meeting with Dave to walk through mapping products, techniques, and get his approval and opinions on the work that was completed along the proposed T-line.

Dave had few significant concerns over the areas where the T-line is proposed to be co-located with existing transmission infrastructure from Haynesville to Chester. This is due to ease of access and prevalent existing infrastructure in place to service the MEPCO corridor and Line 56.

**Stantec**

Oakfield Wind Project Site Visit

August 18, 2010

Page 3 of 3

**DALE F. KNAPP**

Dale F. Knapp  
Director of Water Resources

Stantec Consulting  
30 Park Dr.  
Topsham, ME 04086  
dale.knapp@stantec.com

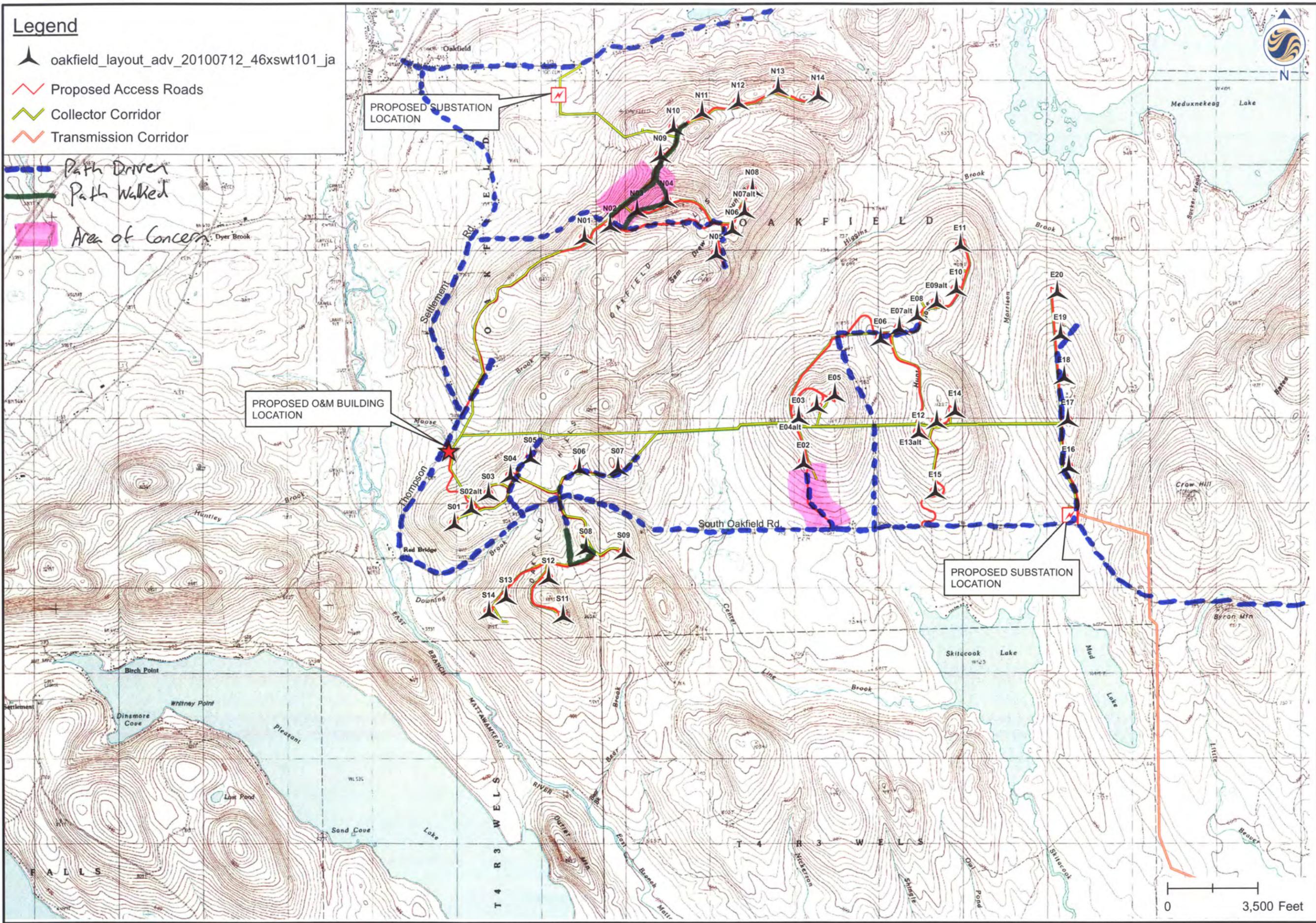
Attachment: Oakfield Summit Site Map

c. Dave Rocque, State Soil Scientist

**Legend**

-  oakfield\_layout\_adv\_20100712\_46xswt101\_ja
-  Proposed Access Roads
-  Collector Corridor
-  Transmission Corridor

*Path Driven*  
*Path Walked*  
*Area of Concern*



Date: August 12, 2010  
 Scale: As Shown  
 Proj. No.: 195600518  
 Figure: 1

Sheet Title:  
 Summit Project Development Area

Project:  
 Oakfield Phase II Wind Project  
 Oakfield, Maine

Prepared By:  
  
 195600518-F01-Summit-1x17-070210.mxd